

## **Supplement A**

**A review of the effectiveness and cost-effectiveness of personal, social and health education in primary schools focusing on sex and relationships and alcohol education for young people aged 5 to 11 years**

**FINAL REPORT**

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## Glossary

American school grades	Education is divided into 3 levels: elementary school, junior high (or middle) school and high school (see Appendix 7)
Bias	Deviation of results or inferences from the truth, or processes leading to such deviation. Any trend in the collection, analysis, interpretation, publication or review of data that can lead to conclusions that are systematically different from the truth.
Binge drinking	Consuming large quantities of alcohol over a short period of time. Often associated with drinking to become intoxicated.
Cluster randomisation	A trial where the unit of randomisation is a cluster of participants (e.g. a school).
Controlled Before and After study (CBA)	Intervention groups are tested and data collected before and after the intervention has been administered. Differ from controlled non-randomised trials in that participants are not allocated to intervention or control groups, but rather a 'convenience' control sample is used.
Drug education programmes	Programmes that include a focus on illegal drugs or tobacco in addition to alcohol.
Effect size	Effect size is a term used for a family of indices that measure the magnitude of the relationship between variables or treatment effect. Effect sizes are commonly used in meta-analyses as unlike significance tests these indices are independent of sample size.
General health education programmes	Programmes that are health based but include aspects and outcomes relating to alcohol or sex and relationships
Intention to treat analysis	A method of data analysis in which all participants are analysed in the group they were assigned to at randomisation regardless of treatment adherence.
Internal validity	How well the study has minimised sources of bias and how likely it is that the intervention caused the observed outcomes.
Key stage	Pupils' progress through school is measured in key stages. Each key stage covers a number of school years. Starting at key stage 1 and finishing at key stage 4 (see Appendix 7).
Meta-analysis	The combination of quantitative evidence from a number of studies.
Non-Randomised Controlled Trial	These are trials where participants or clusters are allocated between intervention and control groups but the allocation is not randomised or quasi-randomised (e.g. alternate allocation).
Odds ratio	The odds of the event occurring in one group (e.g.

	intervention) divided by the odds of the event occurring in the other group (e.g. control).
Randomised Controlled Trial	Individuals or, defined groups of individuals (clusters) are randomised to either an intervention or a control group. If well implemented, randomisation should ensure that intervention and control groups only differ in their exposure to treatment.
Risk ratio	The risk of the event in the one group (e.g. intervention) divided by the risk of the event in the other group (e.g. control).
Social development programmes	Programmes that aim to impact upon alcohol use or sex and relationships through social development education
Solomon group four design	Population assigned to one of four groups including two experimental and two control groups. Two groups receive a pre-test and post-test, two groups receive only a post-test
Standardised mean difference	Expresses the size of the intervention effect in each study relative to the variability observed in that study.
Systematic review	A method of locating, appraising and synthesising evidence from primary studies, which adheres to a scientific methodology.
Uncontrolled Before and After Study	Intervention groups are tested and data collected before and after the intervention has been administered. No control group is used for comparison purposes.

## List of abbreviations

AAPT	Adolescent Alcohol Prevention Trial
ALF	Allgemeine Lebenskompetenzen und Fertigkeiten
AMPS	Alcohol Misuse Prevention Study
BABES	Beginning Alcohol and Addictions Basic Education Studies
CBA	Controlled Before and After study
CMO	Chief Medical Officers
CWPT	Class wide peer tutoring
CSS	Case-control study
DARE	Drug Abuse Resistance Education
DAW	Drugs at Work
DfES	Department for Education And Skills
DH	Department of Health
ES	Effect Size
FAME	Family Action Model for Empowerment
GBG	Good Behaviour Game
GI	General information
GRAT	Get Real About Tobacco
HLAY	Here's Looking At You
ITT	Intention to treat
LEC	Life Education Centre
LIFT	Linking the Interests of Families and Teachers
LST	Life Skills Training
NICE	National Institute for Health and Clinical Excellence
NR	Not reported
NRCT	Non-Randomised Controlled Trial
OR	Odds Ratio
PADAPE	Preventing Alcohol and Drug Abuse Through Primary Education
PSHE	Personal Social and Health Education
PT	Post-test
PY/PM	Protecting You/Protecting Me
QCA	Qualifications and Curriculum Authority
R+	Rehearsal plus
RCT	Randomised Controlled Trial
RHC	Raising Healthy Children
SCW	Sex Can Wait
SD	Standard Deviation
SE	Standard Error
SR	Systematic Review

SRE	Sex and relationships education
SSDP	Seattle Social Development Project
STI	Sexually transmitted infection
SYF	Say Yes First
TITH	Tuning into Health

## Executive Summary

### Objectives

This review sought to identify effective and cost-effective interventions and programmes that focus on health literacy and personal skills in relation to alcohol and sex and relationships for primary school aged children.

### Methods

The methods for the review followed NICE protocols for the development of NICE public health guidance. Eighteen databases were searched for effectiveness and cost-effectiveness studies published since 1990. Two reviewers independently screened all titles and abstracts. All data extraction and quality assessment was undertaken by one reviewer and checked for accuracy by a second reviewer. Each study was also graded (++, + or -) based on the extent to which the design and execution of the study minimised the potential sources of bias. Results of the data extraction and quality assessment for each study were presented in structured tables and as a narrative summary. Where possible, effect sizes were presented for individual studies, but heterogeneity across the included studies precluded meta-analysis.

### Review of effectiveness

A total of two systematic reviews and meta-analyses, and 73 primary studies were included in the review of effectiveness. A broad range of programme approaches were identified including 14 studies which examined alcohol education approaches and nine studies of SRE approaches. Of the remaining studies, 33 studies examined drug education programmes that also focused on alcohol, three studies examined general health education programmes and 16 studies examined interventions which targeted developmental risk factors for later alcohol use and sexual behaviour.

### **Systematic reviews and meta-analyses**

Two reviews were identified that evaluated school-based interventions for primary school aged children. One review focused specifically on the prevention of alcohol use and the other focused on substance use prevention. Both reviews concluded that there was limited evidence to determine which programme approaches were most effective for primary school aged children. In addition, one review suggested that school-based interventions targeting young adolescents may be more effective. Intervention with younger children was identified as most effective when it took place across multiple domains, most typically combining school and family-based intervention.

**Evidence statement 1**

There is strong evidence from two systematic reviews, which focused on the prevention of alcohol use, to suggest that interventions targeting primary school aged children may be less effective than those that target young adolescents. Interventions targeting alcohol use in primary school aged children may be more effective if they take place in more than one domain, for example by combining school and family components.

**Alcohol education**

Thirteen studies were identified that examined alcohol education programmes; nine studies were classroom-based curriculums led by teachers or external contributors, and four studies examined one-off intervention sessions. The Protecting You/Protecting Me programme was shown to have significant effects on knowledge about the effects of alcohol on development and the brain, and vehicle safety in relation to the prevention of exposure to drink driving. The long term effects on alcohol use behaviours was examined for three programmes (Alcohol Misuse Prevention Study, Adolescent Alcohol Prevention Trial and Protecting You/Protecting Me) but none of these programme had consistent long term effects on alcohol use.

**Evidence statement 2**

2(a) There is moderate evidence from two RCTs, one NRCT and one CBA study of a classroom-based programme to suggest that an intervention focused on alcohol prevention and vehicle safety can improve knowledge of the effects of alcohol on development and the brain, and vehicle safety in relation to drink driving. This evidence may be only partially applicable to the UK because the programme's emphasis on the prevention of injury through drink driving is only partially relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.

2(b) There is insufficient and inconsistent evidence from three RCTs and one NRCT to determine the effects of alcohol education programmes on alcohol use in later years.

**Drug education (including alcohol)**

Thirty-two studies were identified that examined drug education programmes that included a focus on illegal drugs (and tobacco) in addition to alcohol. Twenty studies reported on 18 classroom-based programmes, led by teachers or external contributors. In addition, four studies reported on programmes that combined in-school approaches with parent education and eight studies reported on a range of other in-school approaches including theatre in

education and a programme based on a retreat format. There was a lack of evidence to determine the effects of drug education approaches on knowledge and attitudes in relation to alcohol use, and no consistent evidence for the effects of these programme on personal and social skills. There was evidence from one study of a culturally tailored programme for Native American students that the programme had long-term, positive effects on alcohol use.

**Evidence statement 3**

3(a) There is moderate evidence from one RCT to suggest that a culturally tailored skills training intervention for Native American students may have long-term effects on alcohol use. However, this evidence is not applicable to the UK given the cultural specificity of this programme. There is insufficient and inconsistent evidence from four RCTs, four CBA studies and one UBA study to determine the effects of other drug education approaches on alcohol use in later years.

***Sex and relationships education***

Nine studies were identified that examined seven programmes focusing on different approaches to sex and relationships education. Young people aged 10-12 years who participated in the Sex Can Wait programme reported long-term (>12 months) improvements in knowledge relating to the abstinence-based curriculum. The curriculum addressed self-esteem, reproductive anatomy and physiology, changes associated with puberty, values and decision-making skills. In addition, at the 18 month follow-up, participants in the Sex Can Wait programme were less likely to report that they had been involved in sexual activity in the past 30 days compared to a control group. Two programmes, an abstinence-orientated empowerment programme (FAME) and an HIV/AIDS prevention programme designed to promote communication, were shown to have effects on communication with parents. Participants in the FAME programme reported short term (<6 months) improvements in their communication with their parents, and the effects of the HIV/AIDS prevention programme resulted in medium term (up to 12 months) increases in communication with parents. There was no consistent evidence for the effects of sex and relationships education approaches on attitudes and values relating to sexual health.

**Evidence statement 4**

- 4(a) There is weak evidence from two NRCTs to suggest that an abstinence education programme that targeted children aged 10-12 years can improve sexual health knowledge, but the long term impact on sexual behaviours is less clear. This evidence may be directly applicable to the UK because the curriculum topic and content of this programme is relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.
- 4(b) There is moderate evidence from one RCT to suggest that SRE programmes targeting communication, such as I Want to, I Can...Prevent HIV/AIDS, can improve parent and child communication about sexual health. This evidence may be directly applicable to the UK because the curriculum topic and content of these programmes are relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.
- 4(c) There is inconsistent and insufficient evidence from two NRCTs, one CBA study and two UBA studies to determine the effectiveness of SRE programmes on attitudes and values relating to sexual health.

**General health education**

Three studies examined general health education programmes that included modules or curriculum topics related to alcohol education or SRE. All three studies were rated poorly in terms of their design and conduct and there was insufficient evidence to determine the effects of these programmes on outcomes relating to alcohol use and sexual health.

**Evidence statement 5**

- 5(a) There is insufficient and inconsistent evidence from two CBA studies and one UBA study to determine the effects of general health education programmes that targeted primary school age children on outcomes related to alcohol use and sexual health.

**Social development**

Sixteen studies were identified that examined seven programmes focused on social development interventions designed to positively influence behaviour in later life including alcohol use and sexual health behaviour. The majority of these programmes combined school- and family-based intervention components and were shown to have long term (>12 months) positive impacts on attachment to school, academic performance and problem behaviour, and improve social skills. At age 18, participants who received the Seattle Social Development Programme in grades 1-6 reported drinking on fewer occasions than control students and were less likely to have had sex, sex with multiple partners, or to have been pregnant. At age 21 although there was no effect of the intervention on alcohol use,

compared to control students, participants reported an older age of first sexual experience, fewer lifetime sexual partners, were less likely to have been pregnant and were more likely to use condoms. A Dutch study of the Good Behavior Game, which targeted in classroom behaviours, found that although participation did not have a significant effect on past year or past month alcohol use among 10-13 year olds, there was a reduced rate in the growth of alcohol use between these ages for students who participated in the programme. Follow up of students who participated in the Baltimore-based study of the programme as young adults, showed that participation in the Good Behavior Game was associated with lower rates of lifetime alcohol use and dependence.

#### **Evidence statement 6**

- 6(a) There is moderate evidence from one RCT, three NRCTs and one CSS study to suggest that programmes, which target social development and combine school and family-based components, may positively impact on attachment to school and academic performance. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisable beyond the populations studied.
- 6(b) There is moderate evidence from three RCTs, one NRCT and one CSS study to suggest that programmes, which target social development and combine school and family-based components, may have a positive impact on problem behaviours and social skills. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisable beyond the populations studied.
- 6(c) There is moderate evidence from two NRCTs to suggest that a social development programme, which combined school and family-based components, may have long term impacts on alcohol use and sexual behaviour in young adulthood. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisable beyond the populations studied.
- 6(d) There is strong evidence from three RCTs to suggest that the Good Behavior Game, which targeted behaviours in the classroom, may impact on alcohol abuse and dependence in adulthood and slow the rate of alcohol use in adolescence. This evidence may be directly applicable to the UK because although the programme was developed and evaluated in the USA, it has been replicated in populations outside of the USA.

**Review of published economic evaluations**

No published economic evaluation studies were identified for inclusion in the review.

**Discussion and conclusions**

Overall, this review of the effectiveness and cost-effectiveness of PSHE in primary schools focusing on SRE and alcohol education has highlighted a number of weaknesses in the evidence base. There is evidence that social development programmes, which combine school- and family-based components, may have long term impacts on school attachment, social skills, alcohol use and sexual health. However, the applicability of these programmes warrants further study in a UK context before widespread implementation can be supported. There is a lack of clear, long-term evidence for the effectiveness and cost-effectiveness of other approaches to SRE and alcohol education, and further good quality, UK-based research is needed.

# 1 Introduction

## 1.1 Aims and objectives

This review was undertaken to support the development of guidance by the National Institute for Health and Clinical Excellence (NICE) aimed at promoting school, college and community-based personal, social and health education (PSHE),<sup>1,2</sup> with particular reference to sexual health behaviour and alcohol. As such, the review sought to identify effective and cost-effective interventions and programmes that focus on health literacy and personal skills in relation to alcohol use and sexual health.

## 1.2 Research question

The following four research questions were addressed:

- 1 What services, interventions, programmes, policies or strategies for children aged 5-11 years old are effective and cost-effective in contributing to the achievement of the “Every child matters” outcomes for PSHE, related to sexual health and alcohol?
- 2 What elements/components of those services, interventions, programmes, policies or strategies for children aged 5-11 years old are effective and cost-effective in contributing to the achievement of the “Every child matters” outcomes for PSHE, related to sexual health and alcohol?
- 3 How can schools, governors, parents and carers, families and communities contribute to the effective and cost-effective delivery of PSHE – in particular, sex and relationship and alcohol education – to achieve health-related “Every child matters” outcomes in children aged 5-11 years old?
- 4 In what ways can professionals, practitioners, peers, volunteers and services in education and health settings provide effective and cost-effective support for the delivery of PSHE – in particular sex and relationship and alcohol education – in schools and communities?

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<sup>1</sup> The term personal, social and health education is used in its broadest sense to refer to schools-based programmes and curriculum approaches that are intended to promote personal development and wellbeing.

<sup>2</sup> Since September 2008, PSHE has been referred to as Personal, Social, Health and Economic education (MacDonald, 2009) and this subject is covered under the umbrella term PSHE.

## 2 Background

Early onset sexual activity has been related to sexual risk-taking behaviour. The second National Attitudes and Lifestyles Survey (NATSAL, 2000) found that 30% of men and 26% of women in Britain reported having sex before the age of 16 (Wellings et al., 2001). Furthermore, Tripp and Viner (2005) found that 18% of boys and 15% of girls had experienced full sexual intercourse before age 15 years, with similar proportions having engaged in oral sex (Tripp & Viner, 2005). Unprotected sex at first intercourse is a risk factor for poor sexual health outcomes, for example teenage pregnancy, and data suggest that the use of contraception at first sex is declining (Wellings et al., 2001). Having unsafe sex at first intercourse is, in part through lack of knowledge, lack of access to contraception, lack of skills and self efficacy to negotiate contraception, having sex whilst under the influence of drugs or alcohol, or inadequate self efficacy to resist pressure. Around 10% of boys in the United Kingdom report that they were under the influence of drugs or alcohol when they first had sex, and 11% of girls report being pressurised by their partner when they first had sex. Of those under 16 years who have ever had sex, about a third to a half of both sexes report ever having had unsafe sex (Tripp & Viner, 2005). The result of this can be seen through the 19% increase in diagnoses of the top five sexually transmitted infections (STIs) for young people under age 16 years (Chlamydia, gonorrhoea, syphilis, warts, herpes) (Health Protection Agency, 2008).

Furthermore, the rate of teenage pregnancy in the UK has been one of the highest in Western Europe for the past ten years (Unicef, 2001), with 7.1% of all live births in 2008 attributed to mothers aged under 20 years (Department of Health, 2009). Although there are examples of progress in local areas (Department for Education and Skills, 2006), nationally initiatives to reduce the UK's under-18 teenage pregnancy rate by 50% in line with the 2010 targets (Social Exclusion Unit, 1999) have been largely unsuccessful. With current under 18 conception rates for England at 41.7 per 1000 young women aged 15-17 years, compared to 43.6 in 2000 (Office for National Statistics and Teenage Pregnancy Unit, 2009). The impact of teenage pregnancy on the mother can be lower educational achievement, a greater likelihood of raising a child as a single parent and fewer opportunities to gain good employment resulting in a low socio-economic status. Further, the child of a teenage parent is more likely to experience poor health, be a low academic achiever, be involved in crime, misuse drugs and alcohol and be more likely to become a teenage parent themselves, thereby perpetuating the cycle (Department of Health, 2009; Unicef, 2001). Wellings and colleagues (2001) showed that young people who leave school later after gaining qualifications are more likely to be sexually competent; more likely to use contraception at

first sexual intercourse and are less likely to experience pregnancy. Long Acting Reversible Contraception (LARC) and Emergency Hormonal Contraceptives (EHC) may be useful methods to prevent pregnancy yet there is a greater need for effective prevention interventions to address this issue. NATSAL participants aged 16-19 years reported that lessons at school were their most common source of sexual health information (Wellings et al., 2001), which highlights the impact of school-based prevention interventions.

The relationship between sexual risk-taking, substance misuse and anti-social behaviour has been previously highlighted (Independent Advisory Group on Sexual Health and HIV, 2007). A quarter of young people who binge drink become involved in anti-social behaviour and young people are most likely to begin drinking alcohol between age 11 to 15 years (Clemens et al., 2008). Over 30% of young people (aged  $\leq 15$  years) in the UK report ever being drunk two or more times compared to an average of 15% across other OECD (Organisation for Economic Cooperation and Development) nations (UNICEF, 2007). In England in 2007, 20% of 11 year olds reported that they had ever drunk alcohol, with this figure increasing to 54% of 11-15 year olds reported ever drinking alcohol. Furthermore, the quantity of alcohol consumed weekly by 11 to 13 year old boys has increased by 6.4 units per week to 11.9 in 2006 compared to the 2001 figure. Girls consumed 8.4 units, up from 2.7 in 2001 (Department of Health, 2007). These data support the view that children who begin drinking young (typically below the age of 13) drink more often and in greater quantities and are more likely to drink to intoxication than those who delay drinking.

As with alcohol dependence and abuse; vulnerability to alcohol misuse in later adolescence appears greatest among those who begin drinking prior to age 13 (CMO, 2009). Alcohol dependence has also been associated with other psychopathological diagnoses such as nicotine dependence, drug dependence, and anti-social personality disorder (McGue & Iacono, 2008). Evidence suggests that early aggressive behaviours, including direct aggression, fighting, and hitting and those defined as conduct disorders have consistently are related to early initiation of underage drinking (Spath et al., 2008). A further study by Malone and colleagues (2004) revealed a relationship between symptoms of alcohol dependence at age 17 and antisocial behaviour by age 20 in males, concluding that alcohol use may be the reason for antisocial behaviour persisting into adulthood. Regular alcohol use behaviour is already established in a minority of school children aged 11 to 12 years (around 1%) and this increases with age (Clemens et al., 2008). This highlights the fact that prior to beginning secondary school some young people will have already experienced a situation requiring self-efficacy, negotiation skills and knowledge of the negative aspects associated with risk activities, which could be influential in their decision not to participate (or to defer participation) in such activities until they are older. Recent draft guidance on alcohol

consumption for young people from the Chief Medical Officers recognises that there are no safe drinking limits for young people and recommends that those under the age of 15 years should not consume any alcohol (CMO, 2009).

## 2.1 Factors influencing alcohol use and sexual health behaviours

Socio-economic status and in particular high levels of deprivation are associated with increased alcohol use and poor sexual health outcomes (Bellis et al., 2009). In addition, evidence supports the view that early risk-taking behaviour such as sexual behaviour and alcohol misuse may be influenced by early onset puberty which can influence social decision-making (Bellis et al., 2006; Costello et al., 2007; Goodson et al., 1997). Furthermore, young people who mature earlier are more likely to socialise with older peers and subsequently participate in high-risk behaviours (Zimmer-Gembeck et al., 2008). Young people's sexual and drinking behaviour can also be a result of young people attempting to demonstrate their developing maturity, as a means of experimenting with new found curiosities and in an attempt to mimic perceived adult behaviours (see Table 2.1). Young people's drinking behaviour can also be strongly influenced by parental drinking patterns, for example, children of problem drinkers are more likely to develop drinking problems (van Der Vost et al., 2009). Positive social norms regarding drinking, either through family, peers or the media can influence young people's attitudes and behaviours. This can be the case, particularly if parents do not discourage their child's alcohol use.

**Table 2.1. Risk and protective factors for adolescent sexual behaviour, use of contraception, pregnancy and childbearing**

<b>Community</b>	<b>Community disadvantage and disorganisation</b>
	+ High level of education
	- High unemployment rate
	+ High income level
	- High crime rate
<b>Family</b>	<b>Structure and economic advantage</b>
	+ Two (vs. one) parent families
	- Changes in marital status
	+ High level of parent's education
	+ High parental income

	<b>Positive family dynamics and attachment</b>
	+ Parental support and family connectedness
	+ Sufficient parental supervision and monitoring
	<b>Family attitudes about and modelling of sexual risk taking and early childbearing</b>
	- Mother's early age at first sex and first birth
	- Single mother's dating and cohabitation behaviours
	+ Conservative parental attitudes about premarital or teen sex
	+ Positive parental attitudes about contraception
	- Older sibling's early sexual behaviour and age of first birth
<b>Peer</b>	<b>Peer attitudes and behaviours</b>
	+ High grades amongst friends
	- Peer's substance use and delinquent and non-normative behaviour
	- Sexually active peers (or perception thereof)
	+ Positive peer norms or support for condom or contraceptive use
<b>Partner</b>	<b>Partner attitudes</b>
	+ Partner support for contraception
<b>Teen</b>	<b>Biological antecedents</b>
	- Older age and greater physical maturity
	- Higher hormone levels
	<b>Ethnicity</b>
	+ Being White (vs. Black or Hispanic)
	<b>Attachment to and success in school</b>
	+ Good school performance
	+ Educational aspirations and plans for the future
	<b>Attachment to religious institutions</b>
	+ Frequent religious attendance

	<b>Problem or risk-taking behaviours</b>
	- Tobacco, alcohol or drug use
	- Problems behaviours or delinquency
	- Other risk behaviours
	<b>Emotional distress</b>
	- Higher level of stress
	- Depression
	- Suicide ideation
	<b>Characteristics of relationship with partners</b>
	- Early and frequent dating
	- Going steady, having a close relationship
	- Greater number of romantic partners
	- Having a partner 3 or more years older
	<b>Sexual abuse</b>
	- History of prior sexual coercion or abuse
	<b>Sexual beliefs, attitudes and skills</b>
	+ Conservative attitudes towards premarital sex
	+ Greater perceived susceptibility to pregnancy, STDs/HIV
	+ Importance of avoiding pregnancy, childbearing and STDs
	+ Greater knowledge about contraception
	+ More positive attitudes about contraception
	+ Greater perceived self-efficacy in using condoms or contraception
Key: + protective factor; - risk factor	

Source: Kirby D (2001) *Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy*. Washington: National Campaign to Prevent Teenage Pregnancy

## 2.2 Personal, social and health education

From 2011, PSHE education is expected to become a statutory requirement for both primary and secondary schools; however, currently PSHE education consists of a non-statutory framework (with citizenship). At Key Stages 1 and 2 there are four broad themes to the curriculum:

- Developing confidence and responsibility and making the most of pupils' abilities;
- Preparing to play an active role as citizens;
- Developing a healthier, safer lifestyle; and
- Developing good relationships and respecting differences between people.

Sex and relationships education curriculum and standards guidance (Department for Education and Employment, 2000) states that at primary school level, sex and relationship education (SRE) should contribute to PSHE education by ensuring that all children:

- Develop confidence in talking, listening, and thinking about feelings and relationships;
- Are able to name parts of the body and describe how their bodies work;
- Can protect themselves and ask for help and support;
- Are prepared for puberty

Alcohol education is also located within wider provision for PSHE, and according to curriculum guidance (Qualifications and Curriculum Authority, 2003) should enable pupils to increase knowledge and understanding, explore attitudes, and develop skills for making healthy, informed choices, including choices about drugs, alcohol and tobacco. The non-statutory framework for PSHE is presented in Appendix 1.

## 2.3 Government policy

The public health White paper *Choosing Health: making healthy choices easier* (2004) acknowledges and supports the need for comprehensive PSHE. The White paper promotes the *healthy schools programme* which encourages a whole school approach to health that includes comprehensive PSHE that incorporates sex, relationships and alcohol education (Department of Health, 2005). Furthermore, schools must comply with this element if they are to achieve their Healthy School status (Department of Health, 2004). Additional guidance for schools recommends that all young people, starting from early key stages, receive age and ability appropriate drug (including alcohol) education that helps to develop their knowledge, skills, attitudes and understanding of drugs in order to build an appreciation of healthy lifestyles (Department for Education and Skills, 2004a). Currently, compulsory

education on sex and alcohol is via the national science curriculum and addresses the effects of alcohol on mental and physical health of a person. Additionally, this curriculum addresses the human reproductive cycle, including conception, adolescence and sexually transmitted infections. This level of education is reserved for key stage three curricula designed for secondary school pupils (Qualifications and Curriculum Authority, 2007). However, at key stage 2 pupils are introduced to the topic of alcohol and its effects on health and human growth is addressed from key stage 1 (Qualifications and Curriculum Authority, 1999). Sex and relationship and alcohol education in schools, delivered through PSHE, supports the healthy living blueprint for schools and the extended schools guidance to improve access to general health as well as sexual health advice and services (Department for Education and Skills, 2004b; 2006a; 2007). A curriculum that adopts a prevention approach to sex and substance use also supports the accelerated teenage pregnancy strategy which recognises that those local authorities (LA) and primary care trusts that are expected to reach the 2010 teenage pregnancy targets have given PSHE a high priority within schools and have received LA support to develop comprehensive SRE in all schools. Furthermore, LAs successfully reducing the rates of teenage pregnancy were those that provided SRE training packages that were taken up by teachers (Department for Education and Skills, 2006b). The focus on school and parental responsibility remains a key issue in the education of young people. Work has been carried out as part of the Extended Schools Programme to support parents and aims to tackle early emotional and behavioural problems. Evidence shows that parenting programmes are effective at tackling conduct disorders and improving parenting (Lindsay et al., 2008). The Parenting Early Intervention Programme (PEIP) targets parents of children age 8 to 13 years at risk of negative outcomes and will be rolled out across all local authorities from April 2009 (Lindsay et al., 2008).

The latest review of the National Strategy for Sexual Health and HIV (Christophers et al., 2008) also supports statutory and comprehensive SRE and furthermore it calls for the introduction of SRE for young people not in education. In addressing the wider remit for sexual health the aims of the strategy are to:

- Reduce transmission of HIV and STIs
- Reduce prevalence of undiagnosed HIV and STIs
- Reduce unintended pregnancy
- Improve health and social care for people living with HIV
- Reduce the stigma associated with HIV and STIs

Following on from this strategy the review aims to focus on those issues related to the strategy that are likely to accelerate its implementation with five key strategic areas aiming to:

- Prioritise sexual health as a key public health issue and sustain high-level leadership at local, regional and national levels
- Build strategic partnerships
- Commission for improved sexual health
- Investing more in prevention, and
- Deliver modern sexual health services

The Alcohol Harm Reduction Strategy for England was published in 2004. Its four key aims were to:

- Improve the information available to individuals and to start the process of change in the culture of drinking to get drunk
- To better identify and treat alcohol misuse
- To prevent and tackle alcohol-related crime and disorder and deliver improved services to victims and witnesses
- To work with the alcohol industry to tackle the harms caused by alcohol.

Subsequently the next steps in the national alcohol strategy (Department of Health, 2007) aim to further reduce the harm associated with alcohol misuse by working to:

- Ensure that laws and licensing powers protect young people and successfully address the issues relating to irresponsibly managed premises.
- Focus on the minority of drinkers who cause or experience the most harm, such as: young people under age 18 years who drink; those 20-24 years who binge drink; and harmful drinkers.
- Shape the environment so that it encourages sensible drinking.

Following from this guidance reducing alcohol-related hospital admissions is now a measure of performance. The alcohol Improvement Programme is supporting Primary Care Trusts (PCTs) to address the needs of patients who consume harmful or hazardous levels of alcohol. Improve the health messages, and in particular alcohol unit information, on labels and work with the alcohol industry to encourage responsible promotions. Further work is currently being carried out in order to address alcohol-related influences on young people. The Home Office is in the process of consulting on the forthcoming mandatory licensing

code of practice which aims to tackle irresponsible sales of alcohol and associated crime. This incorporates a commitment to examine the impact of alcohol advertising and the influence of displaying alcohol (Home Office, 2009).

The Department for Children, Schools and Families (formerly the Department for Education and Skills) recommends a joint approach between Every Child Matters and the drug strategy in order to prevent drug harm (including alcohol). They propose three main objectives, which are to:

- Reform delivery and reforming delivery through closer links between the Updated National Drug Strategy and the Every Child Matters: Change for Children locally, regionally and nationally
- Ensuring provision is built around the needs of vulnerable children and young people. Including more focus on prevention and early intervention with those most at risk, with drug misuse considered as part of assessments, care planning and intervention by all agencies providing services for children, including schools
- Building services and workforce capacity. Developing a range of universal, targeted and specialist provision to meet local needs and ensure delivery of workforce training to support it.

### 3 Methodology

#### 3.1 Search strategy

Systematic searches of electronic databases and websites were undertaken to identify studies that examined the effectiveness and/or cost-effectiveness of alcohol education and/or SRE delivered in isolation or as part of a wider programme of study such as PSHE or its equivalents. Searches were conducted across a range of health, education and social care databases as shown in Box 3.1.

##### Box 3.1. Health, education and social care databases

- ASSIA (Applied Social Science Index and Abstracts)
- CINAHL (Cumulative Index of Nursing and Allied Health Literature)
- Database of Abstracts of Reviews of Effectiveness (DARE)
- The Cochrane Library
- EMBASE
- ERIC
- British Education Index
- Australian Education Index
- HMIC (or Kings Fund catalogue and DH data)
- MEDLINE
- PsycINFO
- Sociological Abstracts
- Social Science Citation Index
- EPPI Centre databases
- The Campbell Collaboration
- C2-SPECTR & C2-PROT Campbell Collaboration

Economic evaluation studies were identified by searching the following major health economics databases:

- NHS Economic Evaluations Database (NHS EED),
- EconLit

## **3.2 Inclusion and exclusion criteria**

### **3.2.1 Population**

Studies were eligible for inclusion if they included children aged 5 to 11 years old in full time education. This included children in primary schools and those receiving education outside of a mainstream school setting including:

- children receiving home education,
- children receiving education in pupil referral units.

### **3.2.2 Interventions**

Studies were eligible for inclusion if they examined interventions that focused on SRE and/or alcohol education. Relevant intervention approaches included:

- Interventions and programmes agreed, planned or delivered by teachers or other professionals.
- Interventions and programmes planned and/or delivered by external agencies and individuals.
- Intervention involving the 'informal' and extended school curriculum.
- Peer led education

### **3.2.3 Comparator(s)**

Studies were eligible for inclusion if they compared the intervention of interest against a no intervention control or against another intervention approach. Studies that did not include a control group for comparison were also eligible for inclusion.

### **3.2.4 Outcomes**

Studies were eligible for inclusion if they examined the following key outcomes in relation to alcohol education and sex and relationships education:

- Knowledge and understanding,
- Personal and social skills,
- Attitudes and values,
- Health and social outcomes related to alcohol use and sexual health.

### 3.2.5 Study design

Systematic reviews, randomised controlled trials, controlled non-randomised studies and, controlled and uncontrolled before and after studies that compared a school-based intervention against no intervention or another type of intervention were eligible for inclusion in the assessment of effectiveness.

Studies were eligible for inclusion in the assessment of cost-effectiveness if they were economic evaluations conducted alongside trials, modelling studies and analyses of administrative databases. Only full economic evaluations that compared two or more options and considered both costs and consequences (including cost-effectiveness, cost-utility and cost-benefit analyses) were included.

### 3.3 Study selection and data extraction strategy

All titles and abstracts retrieved were screened independently by two reviewers (LJ, GB, JD, HS) according to the inclusion/exclusion criteria described above. Disagreements were resolved through consensus and where necessary a third reviewer was consulted. Relevant articles were retrieved in full and full text screening was undertaken independently by two reviewers (LJ, GB, JD, CS).

One reviewer (LJ, GB, JD) independently extracted and assessed the quality of the individual studies into an Access database. All data extraction and quality assessment were independently checked for accuracy by a second reviewer. The results of the data extraction are presented in an addendum to this report.

### 3.4 Quality assessment strategy

The quality of the studies was assessed according to criteria set out in the NICE Centre for Public Health Excellence Methods Manual (2009). Each of the effectiveness and cost-effectiveness studies was graded using a code, ++, + or – based on the extent to which the potential sources of bias had been minimised:

- ++ All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions are thought very unlikely to alter.
- + Some of the criteria have been fulfilled. These criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.
- Few or no criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter.

### **3.5 Methods of analysis/synthesis**

#### **3.5.1 Effectiveness studies**

The results of the data extraction and quality assessment for each study of effectiveness are presented in structured tables and as a narrative summary. The possible effects of study quality on the effectiveness data and review findings are also discussed within the text of the review.

Studies are grouped according to intervention approach (e.g. teacher or external contributor, curriculum or whole school approach) and the outcomes examined. Where sufficient data were available, intervention effect sizes have been calculated and presented as risk ratios (RR) for dichotomous data and as mean differences for continuous data. Where study authors reported intervention effect sizes, these have been extracted directly as RRs or odds ratios (OR) as reported in the original publication. Forest plots were generated for single studies using RevMan (version 5) and are presented in an addendum to this report.

Heterogeneity between the included studies was assessed by considering differences in (a) the study population, (b) intervention approach, (c) outcome measures, and (d) study quality. However, given the anticipated heterogeneity between the included studies it was judged to be unlikely that pooling would be appropriate or feasible.

#### **3.5.2 Published economic evaluations**

No published economic evaluations were identified.

### **3.6 Deriving evidence statements and assessing applicability**

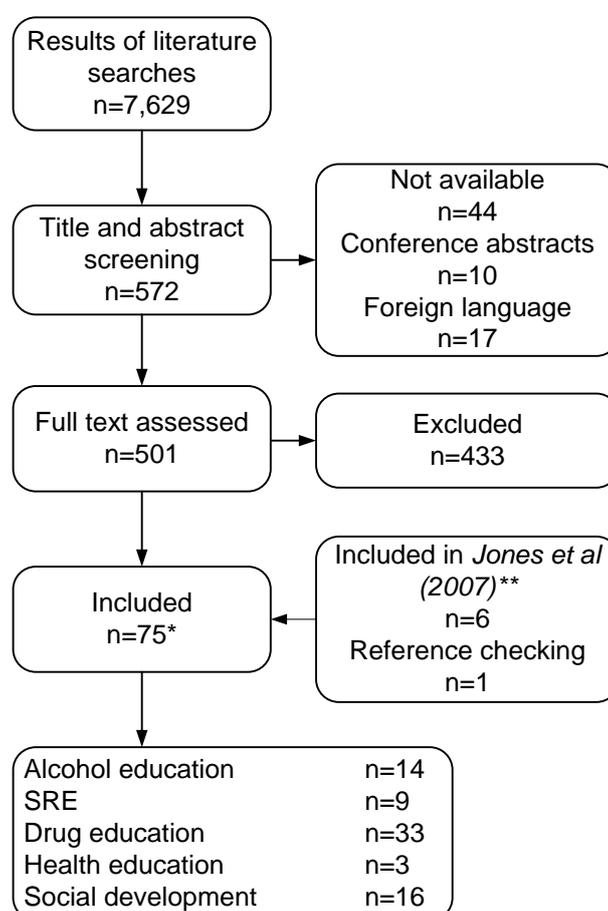
Evidence statements were derived based on the strength of the evidence in relation to intervention approach and the outcomes examined. The strength of evidence was determined by considering the quality, quantity and consistency of the evidence presented in the included studies.

Each evidence statement was assessed to judge applicability based on the similarity of the population, setting, intervention and outcomes of the included studies to the criteria outlined in the review question.

## 4 Summary of study identification

### 4.1 Review of effectiveness and cost-effectiveness

A total of 7,629 references were identified from the literature searches. Following screening of titles and abstracts, 572 studies were identified as potentially relevant. Of these, 17 references were for foreign language articles, 10 were for conference abstracts and 44 were not available in time for assessment. References for these articles are presented in Appendix 4. A total of 501 full text articles were screened for inclusion. The process of study identification is summarised in Figure 4.1.



\*Includes a further 14 studies included in *Jones et al (2007)*

\*\*Not identified in the literature searches conducted for this review

**Figure 4.1. Summary of study identification**

#### 4.1.1 Included studies

A total of 68 articles met the criteria for inclusion in the review of effectiveness, including 14 articles that were included in a systematic review of the effectiveness and cost-effectiveness of interventions in primary and secondary schools to prevent and/or reduce alcohol use, previously conducted by the lead author and colleagues (Jones et al., 2007). In addition, six articles included in the previous review but not identified in the searches for this review met the criteria for inclusion and one article was identified through reference checking. Therefore, a total of 75 articles were included in the review of the effectiveness. No articles met the criteria for inclusion in the review of cost-effectiveness.

Studies were initially grouped according to whether they focused on SRE or alcohol education. However, an additional group of studies (n=16) examined interventions which targeted developmental risk factors for later alcohol use and sexual behaviour and these were grouped together as social development programmes. Initially the majority of the articles identified were grouped together as alcohol education (n=50), however these articles were further subdivided into those programmes which focused specifically on alcohol (n=14), substance use including alcohol (n=33), or general health education (n=3).

Of the 75 articles identified for inclusion, two articles were systematic reviews/meta-analyses, 33 articles reported on randomised controlled trials (RCTs) and 15 articles reported on non-randomised controlled trials (NRCTs). In addition, 25 articles reported on observational studies, 11 of which did not include a control group. The range of study designs identified for inclusion in the review is presented in Table 4.1.

**Table 4.1. Summary of study designs identified for inclusion**

Section	Total	Study design				
		SR/MA	RCT	NRCT	CBA	UBA
Alcohol education	14	1	10	1	1	1
SRE	9	0	2	3	1	3
Drug education	33	1	12	5	9	6
Health education	3	0	0	0	2	1
Social development	16	0	9	6	1	0
<b>Total</b>	<b>75</b>	<b>2</b>	<b>33</b>	<b>15</b>	<b>14</b>	<b>11</b>
SR/MA – systematic review or meta-analyses; RCT – randomised controlled trial; NRCT – nonrandomised controlled trial; CBA – controlled before and after study; UBA – uncontrolled before and after study						

Over 80% of the articles identified reported on studies conducted in the USA (n=59). Six articles reported on studies conducted in the UK, and the remaining eight articles reported

on studies conducted in Canada (n=3), Australia (n=2), Germany, Mexico, and The Netherlands (all n=1).

#### **4.1.2 Excluded studies**

A total of 433 studies did not meet the criteria for inclusion in the review. References for the excluded studies are presented in Appendix 3. Excluded studies were grouped according to the reason for exclusion, studies were excluded because: (1) the intervention examined did not focus on SRE or alcohol education (n=184); (2) the intervention targeted groups of at-risk or high-risk young people (n=49); (3) the study did not meet the design criteria for inclusion (n=137); (4) the intervention was not school-based (n=13); or (5) the population targeted was not relevant to the review question (n=50).

## 5 Review of effectiveness

### 5.1 Systematic reviews and meta-analyses

#### 5.1.1 Overview of evidence identified

Two reviews were identified that evaluated school-based interventions for primary school aged children (Spoth et al., 2008; Gottfredson & Wilson, 2003). Spoth and colleagues (2008) specified interventions that addressed alcohol use and Gottfredson and Wilson (2003) reviewed studies aiming to prevent substance use, including alcohol.

#### **Quality Assessment**

Both reviews (Gottfredson and Wilson 2003; Spoth et al., 2008) were coded 'SR ++' for quality. Both were well conducted reviews, which stated an appropriate research question, fully described the literature search process and methodologies applied and assessed the quality of included studies.

#### **Findings**

Gottfredson and Wilson (2003; SR ++) reviewed 94 studies of interventions to reduce problem behaviours in children with the long-term aim of reducing substance abuse. They reported that interventions in primary-school aged children were less effective than programmes delivered to adolescents and that only programmes targeted at middle-school aged children produced evidence clearly indicating reductions in alcohol or any other drug use. A key focus of the review was on high risk students and interventions were reported to be more effective when delivered to higher risk children. However, this finding was based on the results of only five studies and the difference in the effect sizes calculated was not significant. Briefer programmes of 4.5 months or less were found to be generally as effective as longer term interventions and peer only delivered interventions were the most effective form of intervention.

Likewise, Spoth and colleagues (2008; SR ++) concluded that there was only limited research evidence on interventions that targeted emerging alcohol use amongst primary school-aged children. Programme effects on risk behaviours for alcohol use, such as aggressive or problem behaviour, rather than alcohol use *per se* were reported in studies targeting younger children and students were rarely followed up into middle or high school. The authors reported that interventions in primary school-aged children were more effective if they took place in more than one domain, and studies typically included school and family based components.

### 5.1.2 Summary and evidence statements

Two systematic reviews were identified for inclusion. The review by Spoth and colleagues (2008; SR ++) focused specifically on the prevention of alcohol use, whereas Gottfredson and Wilson (2003; SR ++) focused on substance use prevention.

Both reviews concluded that there was limited evidence to determine which programme approaches were most effective for primary school aged children, and Gottfredson and Wilson (2003; SR ++) suggested that school-based interventions targeting young adolescents may be more effective. Spoth and colleagues (2008; SR ++) suggest that intervention with younger children may be most effective when it takes place across multiple domains, most typically combining school and family-based intervention.

#### **Evidence statement 1**

There is strong evidence from two systematic reviews<sup>1</sup>, which focused on the prevention of alcohol use, to suggest that interventions targeting primary school aged children may be less effective than those that target young adolescents. Interventions targeting alcohol use in primary school aged children may be more effective if they take place in more than one domain, for example by combining school and family components.

<sup>1</sup> Gottfredson & Wilson, 2003 (SR ++); Spoth et al., 2008 (SR ++)

**Table 5.1. Summary table for systematic reviews and meta-analyses**

<b>Author (Year)</b>	<b>Design</b>	<b>Inclusion/Exclusion</b>	<b>Number of studies</b>	<b>Findings</b>
Gottfredson & Wilson, 2003	SR ++	Interventions to reduce problem behaviours among children/youth that measured alcohol or other drug use	94 studies included	Cognitive-behaviourally based prevention programmes were more effective at reducing substance use when delivered to high-risk than general school population studies, but this was based on just 5 studies and the difference was non-significant. Peer alone delivered interventions were most effective.
Spoth et al., 2008	SR ++	Intervention studies that reduce problem behaviours in children and include outcomes related to substance use	41 studies included	Few elementary school interventions were followed up long enough to test their effect on alcohol use. A number of interventions showed significant reductions in aggression and disruption.

## 5.2 Alcohol education

### 5.2.1 Overview of evidence identified

A total of 13 primary studies were identified that examined alcohol education programmes targeting children aged 11 years and under. Nine studies were classroom-based curriculums led by teachers or external contributors, and four studies examined one-off intervention sessions.

### 5.2.2 Classroom-based programmes led by teachers or external contributors

Nine studies were identified that examined four classroom-based alcohol education programmes. Shope and colleagues (1992) reported on the Alcohol Misuse Prevention Study (AMPS) which examined a social pressures resistance-training curriculum for children in fifth and sixth grade. Gamble and Burgess (1994) reported on an alcohol awareness programme for fifth grade students that emphasised the negative effects of alcohol and Donaldson and colleagues (1995; 2000) reported on the Adolescent Alcohol Prevention Trial (AAPT), a social influence-based programme for students in fifth or seventh grade. Five studies (Bell et al., 2005a, 2005b, 2007; Bohman et al., 2004; Padget et al., 2006) reported on the Protecting You/Protecting Me (PY/PM) programme which taught children in the first to fifth grade about alcohol and vehicle safety. A summary of the content for each of these programmes is presented in Table 5.2.

**Table 5.2. Summary of programme content: Alcohol education programmes led by teachers or external contributors**

Programme	Reference(s)	Programme components
AMPS	Shope et al., 1992	<ul style="list-style-type: none"> <li>Teacher-led social pressures resistance training curriculum</li> <li>4 sessions delivered over 4 weeks in first year (5<sup>th</sup> and 6<sup>th</sup> grade classes)</li> <li>3 booster sessions in second year (5<sup>th</sup> grade classes only)</li> </ul>
Alcohol awareness programme	Gamble & Burgess, 1994	<ul style="list-style-type: none"> <li>8 lessons delivered over 10 weeks</li> <li>Lessons covered the effects of alcohol on mind and body, decision making skills, media influence and problems associated with alcohol</li> <li>Delivered by classroom teachers</li> </ul>
AAPT	Donaldson et al., 1995; 2000	<ul style="list-style-type: none"> <li>Delivered by trained project staff</li> </ul> <p>Four conditions</p> <ul style="list-style-type: none"> <li>8 lessons of resistance skills training</li> <li>8 lessons of normative education</li> <li>10 lessons of combined resistance skills training and normative education</li> <li>4 lessons information only control</li> </ul>
Protecting You/Protecting Me	Bell et al., 2005a; 2005b; 2007; Bohman et al., 2004; Padget et al., 2006	<ul style="list-style-type: none"> <li>Teacher or peer led (high school students) alcohol prevention and vehicle safety programme</li> <li>Programme taught in grades 1-5</li> <li>8 lessons per grade; 1 hour per lesson</li> </ul>

### 5.2.2.1 Alcohol Misuse Prevention Study (AMPS)

The AMPS curriculum was designed as a social pressures resistance-training curriculum with the aim of teaching students about alcohol use and misuse. Shope and colleagues (1992) examined a version of the curriculum delivered over two years with four sessions delivered over four weeks in the first year and three additional “booster” sessions delivered one week apart in the second year. Schools (fifth and sixth grade classes) were assigned to receive the curriculum plus booster (fifth grade classes only), curriculum only or control.

#### Quality assessment

Shope and colleagues (1992) randomly assigned 49 schools to a pretest or no pretest condition, and then to intervention or control conditions. It was difficult to judge whether the study had been well conducted because few details were reported about the study methodology. In addition, the authors reported little information on the pretest equivalence of the sample and attrition was relatively large over the two and half year duration of the study (28% were lost to follow-up). The study was therefore rated ‘RCT -’.

#### Findings

Shope and colleagues (1992; RCT -) found that there were no significant differences in levels of alcohol use or misuse<sup>3</sup> between fifth and sixth grade students who received the AMPS curriculum (with or without booster sessions) and students in the control group at any follow-up. Shope and colleagues (1992; RCT -) also measured understanding of the AMPS curriculum material using a curriculum index score. Intervention students scored significantly higher on the curriculum index than comparison students at all three post-test assessments ( $p < 0.001$ ). Effect sizes were calculated for the follow-up when students were in the seventh and eighth grade and are shown in Table 5.3, Table 5.4 and Table 5.5.

**Table 5.3. AMPS: Alcohol use in 7/8<sup>th</sup> grade (Shope et al., 1992; RCT -)**

Comparison	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Fifth grade							
Curriculum + booster vs. control	0.62	1.04	406	0.68	1.25	458	-0.05 (-0.19, 0.08)
Curriculum vs. control	0.59	1.03	541	0.68	1.25	458	-0.08 (-0.20, 0.05)
Sixth grade							
Curriculum vs. control	0.89	1.28	922	0.94	1.45	421	-0.04 (-0.15, 0.08)

<sup>3</sup> Alcohol misuse was measured by 10 items reflecting overindulgence, trouble with peers and trouble with adults experienced as a result of alcohol use.

**Table 5.4. AMPS: Alcohol misuse in 7/8<sup>th</sup> grade (Shope et al., 1992; RCT -)**

Comparison	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Fifth grade							
Curriculum + booster vs. control	0.85	1.5	416	0.8	1.52	462	0.03 (-0.10, 0.17)
Curriculum vs. control	0.79	1.47	564	0.8	1.52	462	-0.01 (-0.13, 0.12)
Sixth grade							
Curriculum vs. control	1.17	1.71	974	1.27	1.87	449	-0.06 (-0.17, 0.06)

**Table 5.5. AMPS: Curriculum index scores in 7/8<sup>th</sup> grade (Shope et al., 1992; RCT -)**

Comparison	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Fifth grade							
Curriculum + booster vs. control	10.31	3.26	429	8.55	2.9	484	0.57 (0.44, 0.70)
Curriculum vs. control	9.62	2.98	590	8.55	2.9	484	0.36 (0.24, 0.48)
Sixth grade							
Curriculum vs. control	10.48	3.01	1009	9.68	2.83	462	0.27 (0.16, 0.38)

### 5.2.2.2 Alcohol awareness programme

Gamble and Burgess (1994) developed an awareness programme for fifth grade elementary school students (mean age 10.9 years), which emphasised the negative effects that alcohol could have both on their lives and the lives of others. The programme consisted of eight lessons that covered the effects of alcohol on the mind and body, decision making skills, media influence and problems associated with alcohol. The programme was implemented by a student teacher at a local college.

#### Quality assessment

The curriculum was examined using an uncontrolled before and after design. Sixty-five children participated in the study and follow-up was based on immediate post-test. Overall due to the weak study design utilised the study was rated '-'.

#### Findings

Gamble and Burgess (1994; UBA -) examined the effects of the alcohol awareness curriculum on knowledge. Several of the items tested indicated that there had been no change in knowledge between pre and post-test scores. However, students showed improvements of 50% or more on four items: the concept that alcohol is a drug, all alcoholic beverages have equivalent amounts of alcohol, the effects of alcohol on the body and that

alcoholics can be anyone. The authors noted that girls showed more of an overall improvement in knowledge than boys.

### **5.2.2.3 Adolescent Alcohol Prevention Trial (AAPT)**

The AAPT curriculum, taught entirely by trained project staff, was based on social influence theory and aimed at the prevention of alcohol misuse (Donaldson et al., 1995; 2000). Four different intervention approaches were examined: resistance skills training; normative education; a combination of resistance skills training and normative education; and information provision only. Students either received the main programme in fifth grade and a booster programme in seventh grade, or received the main programme in seventh grade only.

#### **Quality assessment**

The AAPT was based on an RCT design with schools as the unit of assignment (RCT -). Few methodological details were reported regarding the method of randomisation and details were not reported on the baseline comparability of participants. Donaldson and colleagues (1995) did not clearly report how many participants or clusters were randomised to each condition, and details on attrition were also lacking.

#### **Findings**

Donaldson and colleagues (1995; RCT -) found that among students who believed it was not acceptable to drink alcohol there was a significant positive relationship between seventh grade refusal skills and eighth grade alcohol use (fifth grade students:  $p < 0.05$ ; seventh grade students:  $p < 0.01$ ). The same analysis for adolescents who believed that it was acceptable to drink revealed a positive, but non-significant relationship between seventh grade refusal skills and eighth grade alcohol use. Donaldson and colleagues (2000; RCT -) analysed additional data from AAPT students using both self-report and reciprocal best friend reports of alcohol (and other substance) use. Results were separately analysed for students attending public and private schools. For the sample of students attending public schools, those who received normative education reported significantly lower scores on the alcohol index measure and significantly lower rates of lifetime alcohol use in the eighth ( $p < 0.01$ ), ninth ( $p < 0.01$ ) and tenth grades ( $p < 0.05$ ; 1-, 2- and 3-year follow-ups, respectively) compared to students receiving comparison interventions. In addition, students who received normative education reported lower rates of 30-day alcohol use at the 1- and 3-year follow-ups ( $p < 0.001$  and  $p < 0.05$ , respectively) and drunkenness at the 1- and 2-year follow-ups (both  $p < 0.01$ ). For the majority of outcomes, students who received resistance skills training reported using alcohol significantly more often than students who had not received resistance skills training. For the sample of students in private schools, there were no effects

of normative education on alcohol use behaviours at any follow-up. However, private school students who received resistance skills training reported significantly lower rates of 30-day alcohol use at the 1- and 3-year follow-ups (both  $p < 0.01$ ) and a lower prevalence of drunkenness at the 3-year follow-up ( $p < 0.05$ ).

#### **5.2.2.4 Protecting You/Protecting Me (PY/PM)**

Five studies (Bohman et al., 2004; Bell et al., 2005a; 2005b; 2007; Padget et al., 2006) reported on evaluations of the PY/PM programme. The programme was delivered over 5 years from the first to fifth grade and consisted of 8 lessons a year (40 lessons in total), which focused on teaching students about the adverse effects of alcohol on the brain and vehicle safety skills. The programme was taught either by elementary school teachers or high school students enrolled in a peer-helping course. Two studies (Bohman et al., 2004; Bell et al., 2005a) examined the effects of the peer led programme for third to fifth grade students and one study examined effects on first and second grade students (Bell et al., 2007). Bell and colleagues (2005b) examined the effects of a teacher led version of the programme on fourth and fifth grade students who had received the programme in previous school years and Padget and colleagues (2006) examined the effects among fifth grade students who had received consecutive years of PY/PM programming (peer or teacher led).

#### **Quality assessment**

Three evaluations of the PY/PM programme were based on RCT cluster designs. All three RCTs generally followed the same methodology with elementary schools at each intervention site (based on proximity to a high school with students enrolled in a peer-helping course) randomised to either the intervention or control condition. Study methodology was fairly well reported across the three RCTs, with the exception of Bell and colleagues (2005a), which did not report adequate information on participants lost to follow up and outcomes were reported at post-test only. The study of the teacher led version of PY/PM was reported to be based on a 'quasi-experimental design' (Bell et al., 2005b), however as the authors did not describe how participants were allocated to the intervention and control groups, it was labelled a CBA. Other aspects of the methodology were adequately reported and the study was rated '+' for internal consistency. Padget and colleagues (2006) also used a quasi-experimental design (NRCT) to examine the effects of PY/PM. The intervention group consisted of fifth grade classrooms from five schools that had begun implementing the PY/PM programme five years previously. Intervention and comparison schools were matched on size, racial/ethnic composition, and percentage of students eligible for free lunches. However, intervention and control schools did not appear to be well matched in terms of size or 'economic disadvantage'. On the whole the study appeared to have been

adequately conducted and attrition across the study was relatively low. This study was therefore coded 'NRCT +'.

## **Findings**

### **a) First and second grade students**

Bell and colleagues (2007; RCT +) reported that there were significant programme effects for one measure of knowledge about the brain ( $p < 0.05$ ), but not on a second that examined knowledge of brain importance. There were also significant programme effects for three out of four measures relating to vehicle safety (all  $p < 0.05$ ), for one out of two media awareness questions ( $p < 0.001$ ), and on attitudes towards the harm of teenage drinking ( $p < 0.05$ ). The programme did not have any effect on decision making or use of rules in first and second grade students.

### **b) Third to fifth grade students**

The first year evaluation of the programme with third, fourth and fifth grade students (Bohman et al., 2004; RCT +) found that the programme had significant effects on media literacy ( $p < 0.05$ ) and knowledge of brain development ( $p < 0.001$ ) at post-test and follow up. Significant gains were also made in the intervention group in terms of vehicle safety skills; intervention students reported a greater increase in vehicle safety skills and fewer intentions to ride with an alcohol impaired driver relative to the control group at post-test and follow up ( $p < 0.05$ ). There was no significant effect of the programme on the following measures: knowledge of brain importance, attitudes to drinking and driving, underage drinking, rules, stress management, social skills and decision making.

In the second year evaluation of the programme (Bell et al., 2005a; RCT +), significant gains were made in media literacy and vehicle safety skills in the intervention group compared to the control group at post-test ( $p < 0.05$  and  $p < 0.01$ , respectively), but there were no other significant changes in mean knowledge scores in the tested areas. There were no significant changes at post-test in mean skill scores on the measures of decision making, stress management or social skills or in attitudes to drinking.

### **c) Students with consecutive years of programming**

Bell and colleagues (2005b; CBA +) examined the effects of a teacher led version of the programme on fourth and fifth grade students, who had been taught the PY/PM programme in previous school years. The authors reported that a significant impact of PY/PM was found for six out of eight outcome measures. Students in the intervention group gained stress management and decision-making skills ( $p < 0.05$ ), and vehicle safety skills ( $p < 0.001$ ), increased their knowledge of development and reported positive changes in terms of the

perceived harm of alcohol ( $p < 0.001$ ) and attitudes to underage drinking ( $p < 0.05$ ). The PY/PM programme did not have an impact on media literacy or on drinking and safety intentions. On the measures for which the programme demonstrated an impact, student's scores improved with increased exposure to the programme.

Padget and colleagues (2006; NRCT +) reported that the PY/PM programme had a small, but non-significant effect on drinking in the past 30 days at immediate post-test (mean difference -0.06; 95% CI -0.13, 0.01). The PY/PM intervention had significant positive effects on knowledge about the brain and alcohol ( $p < 0.01$ ); the perceived harm of and attitudes towards underage alcohol use (both  $p < 0.05$ ), and alcohol use intentions ( $p < 0.01$ ). In addition, the programme had significant effects on increasing vehicle safety skills ( $p < 0.01$ ) and reducing riding with a drinking driver ( $p < 0.05$ ). Effect sizes were calculated for these outcomes and are presented in Table 5.6.

**Table 5.6. PY/PM: intervention effects (Padget et al., 2006; NRCT +)**

Outcome	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Knowledge about brain and alcohol	3.74	0.35	283	3.38	0.55	151	0.84 (0.63, 1.04)
Perceived harm of underage alcohol use	3.00	0.77	283	2.72	0.75	151	0.37 (0.17, 0.57)
Alcohol intentions	2.40	0.58	283	2.35	0.58	151	0.09 (-0.11, 0.28)
Media literacy	3.44	0.50	283	3.22	0.54	151	0.43 (0.23, 0.63)
Vehicle safety skills	3.62	0.56	283	3.07	0.72	151	0.89 (0.68, 1.09)
Attitudes towards underage drinking	3.80	0.54	283	3.61	0.82	151	0.29 (0.09, 0.49)
Drank past 30 days	0.09	0.28	283	0.15	0.36	151	-0.19 (-0.39, 0.00)
Riding with a drinking driver	0.13	0.34	283	0.23	0.42	151	-0.27 (-0.47, -0.07)

### 5.2.3 Single session interventions

Four studies were identified that examined single session alcohol education interventions. Three studies examined videotaped presentations which focused on media literacy training (Austin & Johnson, 1995), normative education (Godbold, 1999) and expectancy modification (Kraus et al., 1994). Cruz and Dunn (2003) also examined an expectancy modification intervention but the session was based around a presentation, quiz and discussion. A summary of content for these single session interventions is presented in Table 5.7.

**Table 5.7. Summary of programme content: Single session alcohol education interventions**

Programme	Reference(s)	Programme components
Media literacy training	Austin & Johnson, 1995	<ul style="list-style-type: none"> <li>• Media literacy training</li> <li>• One session of video, adverts, handouts and discussion</li> <li>• Session led by researcher</li> </ul>
Normative education	Godbold, 1999	<ul style="list-style-type: none"> <li>• Session delivered by teachers</li> <li>• Normative vs. information video</li> <li>• Immediate or delayed attack video</li> </ul>
Expectancy modification	Cruz & Dunn, 2003	<ul style="list-style-type: none"> <li>• Taught by researchers who developed the intervention</li> <li>• One-off session</li> </ul>
	Kraus et al., 1994	<ul style="list-style-type: none"> <li>• Two video interventions (expectancy based)</li> <li>• Control video intervention presenting facts concerning alcohol's harmful effects</li> </ul>

### 5.2.3.1 Media literacy training

Austin and Johnson (1995) evaluated the effectiveness of a media literacy lesson for third grade students. The intervention was a one off session and aimed to enhance resistance skills towards media portrayals of alcohol. The session included a video that discussed techniques used by advertisers to sell products, a critique of alcohol advertising and discussion, and a handout.

#### Quality assessment

Evaluation of the media literacy lesson was based on an RCT Solomon group four design. A convenience sample of third grade students were randomised to the intervention or control condition and pre-test or no pre-test condition. The study methodology was not well reported and it was unclear how many students had been assigned to each condition and also if the groups were comparable at baseline. In addition only 44% of the original sample completed the follow-up three months later. The study was therefore rated ‘-’ for internal consistency.

#### Findings

The media literacy lesson was evaluated in terms of its effects on children’s perception of alcohol norms, alcohol portrayals in advertising, and alcohol-related behaviour (Austin & Johnson, 1995; RCT -). At immediate post-test, there were significant differences between treatment and non-treatment groups in understanding of persuasive intent ( $p < 0.001$ ), perceptions of realism ( $p < 0.001$ ), and perceptions of social norms for alcohol use ( $p < 0.01$ ), however at the three month follow-up, only perceptions of realism remained significant ( $p < 0.01$ ). Children who received the lesson were also less likely than control students to choose an alcohol-related toy<sup>4</sup>, when offered the choice ( $p < 0.001$ ).

<sup>4</sup> Children were asked to view two toys that looked either like a can of fizzy drink or like a can of beer.

### **5.2.3.2 Normative education**

Godbold (1999) conducted a test of inoculation theory applied to the context of adolescent alcohol use. Two groups of sixth grade students viewed a video which focused on the normative components of alcohol use and two groups viewed a video focusing on information related to alcohol use. Students also viewed an additional video based around two adverts for beer either at the time of the first video, or two weeks later, which were used to represent peer pressure to drink alcohol ('attack video').

#### **Quality assessment**

The evaluation was based on an RCT design with individual students randomised to one of six groups following pretesting. Further details of the methodology were not well reported, for example it was not clear how many students were allocated to each condition and therefore whether groups were comparable at baseline. The study was rated '-' for internal consistency.

#### **Findings**

At the first post-test, when all students had viewed the video but only half had viewed the additional 'attack' video, there was a significant difference between the normative (intervention) group and the information and control group ( $p < 0.05$ ) on the measure of peer acceptance of alcohol use (Godbold, 1999; RCT -). Students who viewed the normative messages had the lowest estimations of peer acceptance of alcohol use. At a second post-test, when all groups had viewed the 'attack' video there was no effect by message type on peer acceptance. In addition, there was no effect of message type on attitudes/behavioural intentions at either post-test.

### **5.2.3.3 Expectancy modification**

Two studies examined expectancy modification interventions for fourth grade students (Cruz & Dunn, 2003; Kraus et al., 1994). Cruz and Dunn (2003) examined the impact of an expectancy challenge compared to traditional alcohol information. The expectancy modification intervention examined involved a presentation by one of the researchers, which examined students' beliefs about the effects of alcohol and why they thought people drank, and discussion regarding the pharmacological effects of excessive alcohol consumption. Students also participated in a quiz. Classrooms assigned to receive the traditional alcohol information intervention were given a presentation that emphasised the negative and harmful effects of alcohol consumption. The expectancy modification intervention examined by Kraus and colleagues (1994) was based on a 10-minute video presentation. One group viewed a tape based on an adult-model of expectancies and a second group viewed a tape featuring puppets (puppet-model expectancies). The control group received a facts only model.

### **Quality assessment**

Both studies (Cruz & Dunn 2003; Kraus et al., 1994) used an RCT cluster design to examine the effects of the expectancy modification interventions. Cruz and Dunn (2003) did not report full details of the method of randomisation and the analyses only included participants who had completed both pre- and post-test measures. Follow-up measures were taken one week after intervention. Overall the internal consistency of the study was rated '-'. The study by Kraus and colleagues (1994) was adequately reported in terms of methodology, but it was not clear how many students were assigned to each group and therefore the study was rated '-' for internal consistency.

### **Findings**

Cruz and Dunn (2003; RCT -) reported that the expectancy modification group exhibited the greatest amount of change in alcohol expectancies. Children participating in the expectancy modification intervention were less likely than the information only or control students to express positive or arousing expectancies at post-test (statistical significance not reported). Children who received the traditional alcohol information intervention were also less likely to express positive expectancies but this represented a smaller amount of change than occurred in the expectancy challenge group. Kraus and colleagues (1994; RCT -) found that children's alcohol expectancies were influenced by the intervention ( $p < 0.001$ ). The puppet-model video reduced expectancy endorsement but the adult-model video had the opposite effect and increased expectancy endorsement.

#### **5.2.4 Summary and evidence statements**

Thirteen primary studies were identified that examined alcohol education programmes, of which nine studies were evaluations of classroom-based curriculums and four studies were evaluations of single session interventions.

##### **5.2.4.1 Knowledge and understanding**

Impact on knowledge was examined for two programmes. The PY/PM programme was shown to have significant effects on knowledge about the effects of alcohol on development and the brain, vehicle safety and media literacy. This effect was demonstrated with third, fourth and fifth grade students (Bohman et al., 2004; RCT +; Bell et al., 2005a; RCT +, 2005b; CBA +) and students in first and second grade (Bell et al., 2007; RCT +). An alcohol awareness programme (Gamble & Burgess, 1994; UBA -) found some short term effects on knowledge related to alcohol awareness including the effects of alcohol on the body.

### 5.2.4.2 Attitudes and values

Impact on attitudes was examined for four single session interventions. Two studies that examined expectancy modification interventions (Cruz & Dunn, 2003; Kraus et al., 1994; both RCT -), one presentation-based the other video-based, both found that the interventions examined modified expectancies in the short term. A normative education approach delivered via video had positive effects on attitudes to alcohol at immediate post-test, but this finding was not maintained at follow up two weeks later. Media literacy training (Austin & Johnson, 1995; RCT -) had only very short term effects on children's perceptions of alcohol portrayals in advertising, children's perceptions of social norms or alcohol-related behaviours.

### 5.2.4.3 Personal and social skills

One study (Bell et al., 2000b; CBA +) reported that the PY/PM programme had significant effects on stress management and decision making for fourth and fifth grade students, but this finding was not replicated in other PY/PM studies of this, or younger, age groups.

### 5.2.4.4 Alcohol use and/or sexual health

The long term effects on alcohol use behaviours was examined for three programmes, AMPS (Shope et al., 1992; RCT -), AAPT (Donaldson et al., 1995; 2000; both RCT -) and PY/PM (Padget et al., 2006; NRCT +). None of these programme had consistent long term effects on alcohol use.

## Evidence statement 2

2(a) There is moderate evidence from two RCTs, one NRCT and one CBA study<sup>1</sup> of a classroom-based programme to suggest that an intervention focused on alcohol prevention and vehicle safety can improve knowledge of the effects of alcohol on development and the brain, and vehicle safety in relation to drink driving. This evidence may only partially applicable to the UK because the programme's emphasis on the prevention of injury through drink driving is only partially relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.

2(b) There is insufficient and inconsistent evidence from three RCTs and one NRCT<sup>2</sup> to determine the effects of alcohol education programmes on alcohol use in later years.

<sup>1</sup> Bohman et al., 2004 (RCT +); Bell et al., 2005b (CBA +); Padget et al., 2006 (NRCT +); Bell et al., 2007 (RCT +)

<sup>2</sup> Shope et al., 1992 (RCT -); Donaldson et al., 1995, 2000 (both RCT -); Padget et al., 2006 (NRCT +)

**Table 5.8. Alcohol education: classroom-based programmes**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Gamble & Burgess, 1994 Alcohol awareness programme	UBA -	USA Mean 10.9 years N=65	PT	NR	No change in knowledge for some items; improvements of 50% or more on four items: the concept that alcohol is a drug, all alcoholic beverages have equivalent amounts of alcohol, the effects of alcohol on the body and that alcoholics can be anyone.
Shope et al., 1992 Alcohol Misuse Prevention Study (AMPS)	RCT -	USA 5 <sup>th</sup> to 6 <sup>th</sup> grade n= 5,356	26 months	72% followed up	Partial effectiveness demonstrated in subgroup of students with prior drinking experience. Intervention students scored higher on curriculum index.
<b>Adolescent Alcohol Prevention Trial (AAPT)</b>					
Donaldson et al., 1995	RCT -	USA 5 <sup>th</sup> and 7 <sup>th</sup> grade N= 11,995	PT at 1 year	80% completed the PT questionnaire	Resistance training delayed the onset of alcohol use, but only when adolescents believed it is not acceptable to drink
Donaldson et al., 2000	RCT -	USA 5 <sup>th</sup> and 7 <sup>th</sup> grade N= 11,995	8th, 9th and 10th grades	NR	Significant effect on alcohol use of normative education in public school students. Negative effects of resistance skills training. No effects seen in private school students.
<b>Protecting You/Protecting Me</b>					
Bohman et al., 2004	RCT +	USA 3 <sup>rd</sup> - 5 <sup>th</sup> grade N=321	PT, 5 weeks (intervention only)	81% at PT	Significant effect of the programme on media literacy, knowledge of brain development and vehicle safety. Also lower intentions to ride with an alcohol impaired driver. No effects on knowledge of brain importance, stress management, social skills or decision making.
Bell et al., 2005a	RCT +	USA 3 <sup>rd</sup> - 5 <sup>th</sup> grade N=717	PT, 6 weeks (intervention only)	85% completed study	Significant gains in media literacy and vehicle safety skills. No other significant changes in knowledge or attitudes to drinking.
Bell et al., 2005b (Teacher led)	CBA +	USA 4 <sup>th</sup> - 5 <sup>th</sup> grade N=848	PT, 12 months	85% completed the study	Significant impact on stress-management skills, decision-making skills, vehicle safety skills, perceived harm of alcohol, development and underage drinking attitudes. No effect on drinking and safety intentions or media literacy.
Padget et al., 2006 (Teacher or peer)	NRCT +	USA 5 <sup>th</sup> grade N=493	PT	88% completed study	Small, but non-significant effect on past 30-day drinking. Significant positive effects on knowledge about the brain and alcohol; the perceived harm of and attitudes towards underage alcohol use, and alcohol use intentions. Also significant effects on increasing vehicle safety skills and reducing riding with a drinking driver.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Bell et al., (2007)	RCT +	USA 1 <sup>st</sup> – 2 <sup>nd</sup> grade N=858	PT	87% completed study	Significant programme effects for one measure of knowledge about the brain, but not a second. Also for measures relating to vehicle safety, and media awareness, attitudes towards the harm of teenage drinking. No effect on attitudes towards drinking in non-driving teenagers, rules or decision making.

**Table 5.9. Alcohol education: single session interventions**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Austin & Johnson, 1995 Media literacy training	RCT -	USA 3 <sup>rd</sup> grade N=246	Immediate post-test; 3 months	44% completed 3 month follow up	Significant effect on persuasive intent, perceptions of realism, perceptions of social norms for alcohol use and predrinking behaviour at immediate post-test. However, at 3 months follow-up, only perceptions of realism remained significant.
Cruz & Dunn (2003) Expectancy modification intervention	RCT -	USA 4 <sup>th</sup> grade N=216	1 week	87% completed the study	Intervention group exhibited the greatest amount of change in alcohol expectancies; less likely to express positive or arousing expectancies.
Godbold (1999) Normative education	RCT -	USA 11 years N=417	PT, 2 weeks	NR	Students who received the additional advert immediately after the initial advert showed significantly less favourable attitudes/behavioural intentions towards alcohol use at PT but only approaching significance at the 2 week follow-up.
Kraus et al., (1994) Expectancy modification intervention	RCT -	USA 2 <sup>nd</sup> -4 <sup>th</sup> grade N=292	PT, 4 weeks	92% completed study	Children's alcohol expectancies were influenced by the intervention; puppet-model video reduced expectancy endorsement but adult-model videos increased expectancy endorsement.

### 5.3 Drug education (including alcohol) programmes

#### 5.3.1 Overview of evidence identified

A total of 32 primary studies were identified that examined drug education programmes that included a focus on illegal drugs (and tobacco) in addition to alcohol. A total of 20 studies reported on 18 classroom-based programmes, led by teachers (n=11 studies) or external contributors (n=9 studies). Four studies reported on programmes which combined in-school approaches with parent education and eight studies reported on a range of other in-school approaches including theatre in education and a programme based on a retreat format.

#### 5.3.2 Classroom-based programmes led by teachers

Eleven studies examined nine drug education programmes led by teachers. Programme approaches examined included those based on life skills training (LST) in five studies (Botvin et al., 2003; Kreutter & Gewirtz, 1991; Bühler et al., 2008; Hurry & McGurk, 1997; Hurry et al., 2000) and science-based drug education in two studies (Holtz & Twombly, 2007; Sigelman et al., 2004). A summary of programme content is presented in Table 5.10.

**Table 5.10. Programme content: Drug education programmes led by teachers**

Programme	Reference(s)	Programme components
Tuning In To Health: Alcohol and Other Drug Decisions	Ambtman et al., 1990	<ul style="list-style-type: none"> <li>Curriculum covered drug effects, decision-making, alternatives to drug use, healthy lifestyle promotion</li> <li>Length/intensity varied between schools</li> </ul>
Life Skills Training	Botvin et al., 2003	<ul style="list-style-type: none"> <li>Main purpose of developing personal and social skills</li> <li>24 classes taught to elementary school children in grades 3 to 6.</li> </ul>
	Kreutter & Gewirtz, 1991	<ul style="list-style-type: none"> <li>Botvin's life skills training</li> <li>18 sessions for grade 6</li> <li>Taught by external trainer</li> </ul>
Allgemeine Lebenskompetenzen und Fertigkeiten	Bühler et al., 2008	<ul style="list-style-type: none"> <li>General life skills training</li> <li>12 lessons taught to fifth grade students</li> </ul>
keepin' it REAL	Hecht et al., 2008	<ul style="list-style-type: none"> <li>Culturally grounded programme adapted for elementary school students</li> <li>2 lessons per week over 8 weeks</li> <li>30-45 minutes each lesson</li> </ul>
Brain Power!	Holtz & Twombly, 2007	<ul style="list-style-type: none"> <li>Science-based drug education programme</li> <li>Tailored programme of education on legal and illegal drugs for each age group</li> <li>1 lesson per week for 6 weeks</li> </ul>
Project Charlie	Hurry & McGurk, 1997; Hurry et al., 2000	<ul style="list-style-type: none"> <li>Life skills curriculum</li> <li>Weekly 30 minute lessons over 1 year</li> </ul>
Million Dollar Machine	Schinke & Tepavac, 1995	<ul style="list-style-type: none"> <li>Knowledge and resistance skills training</li> <li>8 week programme</li> <li>Assembly and classroom lessons</li> </ul>
Drug and alcohol curriculum	Sigelman et al., 2004	<ul style="list-style-type: none"> <li>Science-based alcohol and drug curriculum</li> <li>Audiotape curriculum delivery</li> <li>1 hour sessions on 3 consecutive days</li> </ul>
Here's Looking at You 2000	Stevens et al., 1996	<ul style="list-style-type: none"> <li>No details reported</li> </ul>

### **5.3.2.1 Tuning into Health**

Ambtman and colleagues (1990) examined the Tuning into Health (TITH) programme, which targeted students in second to sixth grade and was aimed at reducing the future incidence of problems associated with drugs including alcohol. The programme focused on helping students to understand what drugs are, their effects on the body, the factors that influence people to use or not use drugs, alternatives to drug use and on using decision making as a way to deflect influences that promote drug use. The duration of the programme was not reported and the length and intensity of the units taught varied between schools.

#### **Quality assessment**

Evaluation of TITH was based on an NRCT design. Participation in the programme or control group was decided by the schools themselves, and within the pool of schools a random sample of classrooms were drawn for assessment. This resulted in a large number of participating students (n=2,406) and at post-test, 87% of the sample was retained. Overall the study was rated '+' for internal consistency.

#### **Findings**

Ambtman and colleagues (1990; NRCT +) examined the impact of the TITH programme on knowledge gains. Intervention schools improved more than control schools on knowledge of the essential elements of the programme, and there were significant differences between the intervention and control groups in urban schools in all grades ( $p < 0.01$  or better). In rural schools only grades 3,4 and 5 showed significant differences in effect of the programme on knowledge scores between the intervention and control groups ( $p < 0.01$  or better).

### **5.3.2.2 Life Skills Training (LST)**

Three studies (Botvin et al., 2003; Bühler et al., 2008; Kreutter & Gewirtz, 1991) examined the effects of LST. Botvin's LST programme was originally designed to be delivered to students in the seventh grade with the main purpose of developing personal and social skills. Botvin and colleagues (2003) examined the effectiveness of LST with elementary school children in third to sixth grade. The intervention consisted of 24 classes taught over three years. The "Allgemeine Lebenskompetenzen und Fertigkeiten" (ALF) programme examined by Bühler and colleagues (2008) was based around general LST. The programme targeted fifth grade students and consisted of eight sessions on LST and four sessions on substance-related issues. Kreutter & Gewirtz (1991) examined the effects of Botvin's LST with a sample of sixth grade students.

#### **Quality assessment**

Botvin and colleagues (2003) used an RCT design to examine the effects of LST with elementary school students. The RCT was coded '-' because although the study appeared to

have been adequately conducted, 44% of participants were lost to follow-up at the post-test 3 months from baseline. The evaluation of the programme by Bühler and colleagues (2008) was based on an RCT design. Classrooms in participating schools were randomly assigned to intervention or control condition and to a pre-test or no pre-test condition (Solomon-four group design). Although the study methodology was well reported the follow-up evaluation was conducted at the end of the school year only (i.e. immediate post-test) and 30% of students were lost to follow-up. The study was rated '+' for internal consistency. Kreutter & Gewirtz (1991) based their evaluation on a CBA design and the comparison group was selected from a population "thought to be roughly equivalent" to the intervention group. Overall the study methodology was only briefly reported and it was therefore difficult to judge the internal validity of the design and it was rated 'CBA -'.

### Findings

Following delivery of LST, results collected at post-test indicated that there were no differences between intervention and control students in terms of drinking frequency or the proportion drinking in the past year (Botvin et al., 2003; RCT -). However, analysis at the school level found that intervention schools had lower drinking prevalence compared to control schools, and this difference approached significance ( $p=0.054$ ). LST students reported significantly more anti-drinking attitudes ( $p<0.05$ ; also approached significance at the school level analyses,  $p=0.051$ ) and increased substance use knowledge ( $p<0.05$ ) relative to control students. Intervention students also reported lower normative expectations for peer alcohol use ( $p<0.001$ ) as well as marginally higher levels of self-esteem ( $p=0.06$ ; significant at the school level analyses,  $p<0.05$ ) than control students. No significant differences were observed on the other measures reported (advertising knowledge, social skills knowledge, refusal skills knowledge, teen or adult drinking norms, and risk-taking). Effect sizes were calculated and are presented in Table 5.11

**Table 5.11. LST: Intervention effects (Botvin et al., 2003; RCT -)**

Outcomes	Intervention schools			Control schools			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Drinking frequency	0.436	0.038	9	0.520	0.037	11	-0.47 [-1.37, 0.42]
Drink in past year	0.134	0.007	9	0.178	0.007	11	-0.75 [-1.66, 0.17]
Anti-drinking attitudes	2.792	0.022	9	2.762	0.018	11	0.77 [-0.15, 1.69]
Substance use knowledge	5.327	0.245	9	5.280	0.218	11	0.14 [-0.74, 1.02]
Peer drink norms	1.292	0.073	9	1.418	0.069	11	-0.63 [-1.54, 0.28]
Teen drink norms	0.550	0.042	9	0.586	0.039	11	-0.20 [-1.09, 0.68]
Adult drink norms	1.595	0.042	9	1.625	0.038	11	-0.29 [-1.18, 0.60]
Risk-taking	1.716	0.046	9	1.764	0.043	11	-0.44 [-1.33, 0.46]
Self-esteem	2.678	0.043	9	2.593	0.037	11	1.06 [0.10, 2.01]

The ALF programme did not have any effects on the measure of ‘alcohol abuse’, which the authors classified as students who “reported any use beyond trying” (Bühler et al., 2008; RCT +). At baseline 13.1% of intervention students reported alcohol abuse compared to 10.4% of control students. At post-test, 10.8% and 10.5% of intervention and control students respectively, reported alcohol abuse (RR 1.01; 95% CI 0.59, 1.75). There were significant programme effects on knowledge about skilled behaviour and life skill resources, and students in the intervention group reported greater gains than control students on these measures ( $p < 0.001$ ). However, there were no programme effects on knowledge about unskilled behaviour and life skills deficits. On the measure of alcohol affinity, students in the intervention group reported a more critical view against alcohol consumption than students in the control group ( $p < 0.001$ ).

**Table 5.12. ALF: Intervention effects (Bühler et al., 2008; RCT +)**

Outcomes	Intervention schools			Control schools			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Alcohol affinity	1.98	0.74	256	1.81	0.7	192	0.23 (0.05, 0.42)
Knowledge skilled behaviour	0.93	0.16	256	0.88	0.21	192	0.27 (0.08, 0.46)
Knowledge unskilled behaviour	0.59	0.3	256	0.59	0.28	192	0.00 (-0.19, 0.19)
Resources	37.7	12.8	256	34.9	11.6	192	0.23 (0.04, 0.41)
Deficits	15.5	5.4	256	16	5.2	192	-0.09 (-0.28, 0.09)

Kreutter and Gewirtz (1991; CBA -) found that compared to the comparison group, intervention students reported a significantly greater gain in scores in terms of knowledge ( $p < 0.001$ ), self-concept ( $p < 0.01$ ) and passivity ( $p < 0.01$ ). However, there was no difference between the intervention and comparison group on the measure of locus of control.

### 5.3.2.3 Project Charlie

Two UK-based studies (Hurry et al., 2000; Hurry and McGurk, 1997) examined the effectiveness of Project Charlie, a ‘life skills’ drug education programme developed in the USA for primary school aged children. Children aged 9-10 years received the programme over one school year and were followed up three years later at the age of 14.

#### Quality assessment

The evaluation of Project Charlie (Hurry and McGurk, 1997; Hurry et al., 2000) appeared to have been adequately conducted and was coded ‘RCT +’. However, there were few details reported about the method of randomisation and the number of students included in the evaluation was relatively small.

## Findings

Following delivery of Project Charlie, Hurry and McGurk (1997; RCT +) found that there was no difference in lifetime alcohol use between intervention and control students (RR 0.80; 95% CI 0.46, 1.40). Three years later when participants were aged 14, Hurry and colleagues (2000; RCT +) again found that there was no difference between intervention and control groups in terms of their alcohol use (RR 1.02; 95% CI 0.72, 1.45). At immediate post-test, Hurry and McGurk (1997; RCT +) reported that Project Charlie students had significantly higher decision-making skills than control students ( $p < 0.05$ ). However, there were no significant differences between groups in terms of self-esteem, intention to drink alcohol or peer pressure. Three years later at age 14 (Hurry et al., 2000; RCT +), there were no differences between intervention and control students in terms of decision-making skills, peer pressure resistance or drug knowledge. However, children who received the Project Charlie programme expressed more negative attitudes towards drugs than control children ( $p = 0.05$ ). Effect sizes were calculated and are presented in Table 5.13 and Table 5.14.

**Table 5.13. Project Charlie: Intervention effects – dichotomous (Hurry & McGurk, 1997; Hurry et al., 2000; RCT +)**

Outcome	Intervention		Control		RR (95% CI)
	Events	Total	Events	Total	
<b>Hurry &amp; McGurk, 1997</b>					
Lifetime alcohol use	17	65	18	55	0.80 (0.46, 1.40)
Intention to use alcohol	33	65	30	55	0.93 (0.66, 1.31)
<b>Hurry et al., 2000</b>					
Lifetime alcohol use	16	20	11	14	1.02 (0.72, 1.45)
Peer pressure resistance	15	20	7	14	1.50 (0.84, 2.68)

**Table 5.14. Project Charlie: Intervention effects - continuous (Hurry & McGurk, 1997; Hurry et al., 2000; RCT +)**

Outcomes	Intervention schools			Control schools			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
<b>Hurry &amp; McGurk, 1997</b>							
Knowledge of drugs	13.3	3.5	48	10.7	3.2	37	0.76 (0.32, 1.21)
Decision making skills	15.9	4.3	65	14.3	4.9	55	0.35 (-0.02, 0.71)
<b>Hurry et al., 2000</b>							
Knowledge of drugs	13.0	1.6	20	12.7	1.4	14	0.19 (-0.49, 0.88)
Attitudes towards drugs	3.8	0.4	20	3.5	0.4	14	0.76 (0.05, 1.47)
Decision making skills	18.7	4.0	20	21.1	3.5	14	-0.62 (-1.32, 0.08)

#### **5.3.2.4 *keepin it REAL***

Hecht and colleagues (2008) examined the fifth grade version of the keepin it REAL programme, which was originally designed for seventh and eighth grade students. The fifth grade version included 12 sessions and was based on the same basic curriculum content as the standard seventh grade multicultural version, which focused on enhancing anti-drug expectancies, normative beliefs, and refusal self-efficacy, and facilitating the development of decision making and resistance skills.

#### **Quality assessment**

Hecht and colleagues (2008) used an RCT design to examine the effectiveness of the programme. Twenty-three schools were randomly assigned to the intervention or control condition. Overall the study was well reported but details were lacking regarding the method of randomisation and a fairly large proportion of the sample were lost to follow-up (28%). The study was rated '+’.

#### **Findings**

At the 12 month follow-up assessment, there were no differences in lifetime or recent substance use between intervention and control students (Hecht et al., 2008; RCT +). In addition, there was no difference between intervention and control students in terms of refusal efficacy, use of active decision making or the likelihood of using hypothetical alcohol resistance strategies. However, compared to control students, students who received the intervention reported greater increases in the number of resistance strategies used ( $p < 0.001$ ). At the follow-up assessment, intervention students perceived that relatively more of his or her peers were using substances than control students ( $p < 0.001$ ). On the measures of student's substance use intentions, parents' and friends' anti-drug injunctive norms, personal antidrug norms and substance use expectancies there was no difference between intervention and control groups.

#### **5.3.2.5 *Million Dollar Machine***

One study (Schinke and Tepavac, 1995) examined the effectiveness of an 8-week substance abuse prevention curriculum, the Million Dollar Machine, which focused on knowledge and resistance skills training.

#### **Quality assessment**

The evaluation of the Million Dollar Machine (Schinke and Tepavac, 1995) used an NRCT design. The study methodology was not well reported and consequently the study was rated '-’. Although the authors reported that intervention and control students were well matched, they were not permitted to collect demographic details from study participants. It was

therefore not possible to judge whether participants were matched on factors such as age and sex.

### **Findings**

Fourth grade students who participated in the Million Dollar Machine substance abuse prevention programme (Schinke & Tepavac, 1995; NRCT -) reported significantly less actual and potential time drinking compared to fourth graders in the control group ( $p < 0.05$ ).

#### **5.3.2.6 Science-based drug education**

Two studies (Sigelman et al., 2004; Holtz & Twombly, 2007) examined science-based drug education curriculums. Sigelman and colleagues (2004) examined two versions of a drug and alcohol curriculum for elementary school children explaining how substances affect behaviour and health, consisting of a causally coherent version and a less coherent version, compared to a disease control curriculum. The 'coherent' curriculum was designed to teach the elements of a scientific, brain-mediated theory of drug effects in a causally coherent sequence. The 'less coherent' curriculum included the same content as the coherent curriculum, but was reordered so that the consequences of drug use on health and behaviour were discussed before the drug's effects on the body and brain. Holtz and Twombly (2007) evaluated the effects of a science education curriculum (Brain Power!) on drug knowledge and attitudes. The curriculum involved a tailored programme of education on legal and illegal drugs for each age group targeted (fourth and fifth grade). The programme lasted for six weeks with one lesson delivered each week.

#### **Quality assessment**

Sigelman and colleagues (2004) randomly assigned participants to intervention or control groups. The study appeared to have been adequately conducted but few details were reported regarding the methods of randomisation or baseline comparability and the study was coded 'RCT +'. Brain Power! was evaluated using an NRCT design (Holtz & Twombly 2007). Students from two schools were assigned by classroom to the intervention or control group. Allocation to the intervention and control groups resulted in an imbalance between the two groups in terms of the racial and grade composition of the groups, although these were adjusted for in subsequent analyses. In addition, follow-up was limited to immediate post-test only and details of participants lost to follow up were not reported. The study was rated '-' for internal consistency.

### **Findings**

Sigelman and colleagues (2004; RCT +) found that two drug and alcohol programmes explaining how substances affect behaviour and health had no significant effects on alcohol

use. There was no difference between intervention and control students in terms of alcohol use in the previous month at immediate post-test or 1-year follow-up. The programme also had no significant effects on attitudes to alcohol use or intentions to use alcohol. Holtz and Twombly (2007; NRCT -) examined the effects of the Brain Power! programme on knowledge. At post-test, the intervention group showed statistically significant greater improvements in knowledge about drugs compared to the control group ( $p < 0.01$ ). The authors did not examine the effects of the programme on other outcomes.

### **5.3.2.7 Here's Looking at You 2000**

Stevens and colleagues (1996) reported on the New Hampshire Substance Abuse Prevention Study. Two approaches were examined in the study, a school curriculum for grades 1 to 12 (Here's Looking at You 2000) and a parent communication course combined with a community task force. Further information about the programme components and duration were not reported.

#### **Quality assessment**

The study was examined using a CBA design and the two intervention approaches were compared to a delayed intervention control. The study methodology was poorly reported and the study was consequently rated '-'.

#### **Findings**

There was no effect of the curriculum on the initiation of or drinking for students in grades 4-6 (Stevens et al., 1996; CBA -).

### **5.3.3 Classroom-based programmes led by external contributors**

Nine studies examined seven drug education programmes led by external contributors. Three studies (Abbey et al., 1990; Witt & Witt, 1995; Hahn et al., 2007) examined the Beginning Alcohol and Addictions Basic Education Studies (BABES) programme which focused on psychosocial skills training for young children. The remaining six studies (Baker, 2004; Hall-Long & Dishop, 1999; Peterson & Woodward, 1993; Schinke et al., 2000; Welham, 2007; Wright, 2007) examined different approaches to drug education programmes delivered by a range of different types of external contributors. A summary of programme content is presented in Table 5.15.

**Table 5.15. Programme content: Drug education programmes led by external contributors**

Programme	Reference(s)	Programme components
BABES	Abbey et al., 1990; Witt & Witt, 1995	<ul style="list-style-type: none"> <li>• Psychosocial skills training for young children</li> <li>• 1 lesson per week over 7 weeks; 1 hour per lesson</li> <li>• Taught by trained presenter/facilitator</li> <li>• Key components included storytelling, group discussion and role play</li> </ul>
BABES Plus	Hahn et al., 2007	<ul style="list-style-type: none"> <li>• 7 lessons (40–50 minutes)</li> <li>• BABES Plus included a parent-child interaction component</li> <li>• Taught by school counsellor</li> </ul>
Preventing Alcohol and Drug Abuse Through Primary Education (PADAPE)	Baker, 2004	<ul style="list-style-type: none"> <li>• Incorporated lessons from two programmes (Here's Looking At You and Get Real About Tobacco)</li> <li>• Taught by trained instructors</li> <li>• 6 lessons in second grade</li> <li>• 8 lessons in third to fifth grade</li> </ul>
Drug education programme	Hall-Long & Dishop, 1999	<ul style="list-style-type: none"> <li>• First and third grade drug education programme</li> <li>• Senior nursing students delivered the intervention</li> <li>• Two lessons per week over 8 weeks</li> <li>• Each session lasted 30-45 minutes</li> </ul>
CHOICE programme	Peterson & Woodward, 1993	<ul style="list-style-type: none"> <li>• Designed to teach children specific things they can learn to feel good, without using drugs or alcohol</li> <li>• Delivered by counsellors trained in the CHOICE programme</li> <li>• 1 lesson per week for 45 minutes over one semester</li> </ul>
Curriculum for Native American students	Schinke et al., 2000	<ul style="list-style-type: none"> <li>• Based on LST</li> <li>• Sessions incorporated cultural content</li> <li>• Community involvement component based on community mobilisation</li> </ul>
Enrichment programme	Welham, 2007	<ul style="list-style-type: none"> <li>• Planned curriculum for preschool to year 6</li> <li>• Five themes: (1) knowledge of body and body functions ;(2) taking care of the body;(3) medicines and drugs;(4) identifying and dealing with danger; and (5) identifying and managing emotions.</li> <li>• Specialist 'visitors' delivered the programme</li> </ul>
Drug At Work (DAW)	Wright, 2007	<ul style="list-style-type: none"> <li>• Programme emphasised the indirect effects of drug use on non-users</li> <li>• 7 sessions in fifth grade</li> <li>• 1 follow up session in sixth grade</li> <li>• Taught by undergraduate students</li> </ul>

### 5.3.3.1 *Beginning Alcohol and Addictions Basic Education Studies (BABES)*

Three studies examined the BABES programme, a social competency programme designed to teach young children about the consequences of alcohol and drug use. Two studies (Abbey et al., 1990; Witt & Witt, 1995) examined the effects of the programme with second grade students and one study (Hahn et al., 2007) examined an expanded version of the programme which incorporated a home-based component (BABES Plus) selected from a

population of elementary schools in which more than 40% of the students received free or reduced lunch.

### **Quality assessment**

Abbey and colleagues (1990) evaluated the BABES programme using an RCT design. Three second grade classrooms from one school were randomly assigned to the intervention or control group. Overall the study was adequately reported and although the follow-up was only one month, a high proportion of the sample was followed up. The study was rated '+' for internal consistency. Witt & Witt (1995) evaluated the effect of the BABES programme on knowledge and attitudes using a UBA design. Due to the weak study design utilised and the poor reporting of methods the study was rated as 'UBA -'. Hahn and colleagues (2007) reported that a 'quasi-experimental design' was used to examine the effects of an expanded version of the BABES programme. Three schools, classified as high risk (>40% of students received a free or reduced price lunch), were selected and randomly assigned to one of three groups, BABES only, BABES Plus or control. Overall the study was well reported but because details were lacking regarding allocation concealment the study was rated 'NRCT +' for internal consistency.

### **Findings**

Abbey and colleagues (1990; RCT +) found that at follow-up (one month after receiving the programme) the intervention group scored significantly higher than the control group on the knowledge test based directly on BABES material ( $p < 0.01$ ). However, there was no significant difference between groups on the knowledge test which applied BABES material to different situations. The intervention group reported significantly more negative attitudes towards the effects of alcohol than the control group ( $p < 0.05$ ). Effect sizes were calculated for these measures and are presented in Table 5.16. Abbey and colleagues (1990; RCT +) also examined the effects of the BABES programme on measures of coping, decision making, help seeking, peer pressure resistance, responsibility taking or self esteem, but there were no significant differences at post-test between the intervention and control groups on any of these measures. However, at follow-up, control group members demonstrated more active coping skills on one of the three coping scenarios than intervention students ( $p < 0.05$ ).

**Table 5.16. BABES: Intervention effects (Abbey et al., 1990; RCT +)**

Outcomes	Intervention schools			Control schools			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Attitudes about alcohol	0.31	0.16	31	0.23	0.22	24	0.42 (-0.12, 0.96)
Self-esteem	0.8	0.18	31	0.7	0.17	24	0.56 (0.02, 1.10)

Application of course material	14.52	3.62	31	14.24	3.52	24	0.08 (-0.46, 0.61)
BABES picture test	18.87	3.09	31	15.84	3.96	24	0.85 (0.30, 1.41)

Based on a UBA study, Witt & Witt (1995; UBA –) found that after receiving the BABES programme, students consistently scored higher at post-test on the concepts set in each of the lessons, indicating significant gains in knowledge (with the exception of knowledge relating to the lesson on self-image and feelings) (statistical significance not reported).

Hahn and colleagues (2007; NRCT +) examined the effects of an enhanced version of the BABES programme on child adjustment. Following intervention, parents whose children had received the BABES Plus programme rated their children as having less anxiety/withdrawal than did parents who children received the BABES only programme ( $p < 0.05$ ). Parents whose children received BABES Plus also rated their children as more socially competent than did parents whose children were assigned to BABES only group ( $p < 0.05$ ) or the control group ( $p < 0.05$ ). There was no difference between any of the group on the anger/aggression scale. Effect sizes were calculated and are presented in Table 5.17.

**Table 5.17. BABES Plus: Intervention effects (Hahn et al., 2007; NRCT +)**

Outcome	Comparison	Standardised mean difference (95% CI)
Home environment	BABES Plus vs. control	0.01 (-0.49, 0.51)
	BABES vs. control	-0.12 (-0.64, 0.40)
Parent depressive symptoms	BABES Plus vs. control	-0.31 (-0.81, 0.20)
	BABES vs. control	0.05 (-0.47, 0.56)
Parent involvement	BABES Plus vs. control	-0.19 (-0.69, 0.32)
	BABES vs. control	0.03 (-0.49, 0.54)
Anxiety/Withdrawal	BABES Plus vs. control	0.20 (-0.30, 0.70)
	BABES vs. control	-0.13 (-0.65, 0.38)
Social confidence	BABES Plus vs. control	0.06 (-0.44, 0.57)
	BABES vs. control	0.17 (-0.34, 0.69)
Aggression	BABES Plus vs. control	0.06 (-0.44, 0.57)
	BABES vs. control	0.17 (-0.35, 0.69)

### 5.3.3.2 Preventing Alcohol and Drug Abuse through Primary Education (PADAPE)

Baker (2004) evaluated the PADAPE programme which incorporated lessons from two other drug education programmes, the drugs and alcohol component of the programme was adapted from Here's Looking At You (HLAY) and the components that addressed tobacco were adapted from Get Real About Tobacco (GRAT). The content of the programme focused on knowledge about drugs, skills for refusing drugs and social skills. The PADAPE

programme consisted of six lessons in second grade, and eight lessons each in the third, fourth and fifth grades. Lessons were taught by educators trained to teach HLAY and GRAT.

### **Quality assessment**

The study was conducted in two phases, phase one was based on a UBA design and phase two included a control group for comparison (CBA design). The study methodology was not well reported, it was not clear whether students who participated in the study were comparable and it was not clear how many students completed the study. Overall both phases of the study were rated ‘-’ for internal consistency.

### **Findings**

In the uncontrolled phase of the study the author noted that there were significant overall increases in performance from pre-test to post-test at all grades ( $p < 0.001$ ), and that these findings were maintained at follow up (Baker, 2004; CBA -). However, in second and fifth grade, the number of correct responses related to alcohol did not significantly improve. In the second phase of the study, which included a comparison group, students in second, third, and fourth grades who had not previously received the intervention programme performed better than students who had received the PADAPE programme, with the exception of one group. A comparison of fifth grade students revealed no significant differences between groups.

#### **5.3.3.3 Hall-Long and Dishop’s drug education programme**

Hall-Long and Dishop (1999) conducted a pilot study of a first and third grade drug education programme, which was designed to increase knowledge about medicines, alcohol, tobacco and illegal drugs. The programme was taught by senior nursing students and consisted of two, 30-45 minute lessons each week over eight weeks.

### **Quality assessment**

The study conducted by Hall-Long and Dishop (1999) was a pilot study, and the study methodology was based on an UBA design. In addition to lacking a control group for comparison, it was unclear how long students had been followed-up and the reliability of the outcomes measures used was not discussed. The study was rated ‘-’ for internal consistency.

### **Findings**

Hall-Long and Dishop (1999; UBA -) reported that there was an average increase in student’s knowledge test scores by 30% compared to pre-test scores and increases on every area of knowledge examined.

#### **5.3.3.4 CHOICE programme**

Peterson and Woodward (1993) evaluated the CHOICE drug education programme for sixth grade students. This programme was designed to teach children alternative ways to feel good without using drugs or alcohol. The programme incorporated a video and cooperative learning techniques. Sessions were conducted once a week for 45 minutes over one school year.

##### **Quality assessment**

The study design was quasi-experimental but it was not reported how schools were assigned to the intervention and control groups. Other aspects of the methodology were also poorly reported and the study was rated ‘-’ for internal consistency.

##### **Findings**

Peterson and Woodward (1993; NRCT -) examined the effects of the CHOICE programme on the self concept and locus of control. The authors reported that although a consistent trend in the direction of increased levels of self-concept and greater internal locus of control was found for the intervention school compared to the control school, the only marginally statistically significant difference was found on a self-concept semantic differential scale ( $p=0.05$ ). That is, compared to students in the control group, students who received the CHOICE programme had a significantly higher self-concept as measured by the semantic differential.

#### **5.3.3.5 Curriculum for Native American students**

Schinke and colleagues (2000) examined a culturally tailored school-based substance abuse prevention programme for third, fourth and fifth grade Native American students. The school-based prevention programme was based on life skills training and incorporated Native American values, legends and stories. Students in one intervention arm also participated in a community involvement component that involved community activities and media programming.

##### **Quality assessment**

On the whole the study methodology used to evaluate the programme for Native American students was adequately reported (Schinke et al., 2000). However, details were lacking regarding the methods used to randomly assign schools between the intervention and control arms. The study was coded ‘RCT +’.

##### **Findings**

Schinke and colleagues (2000; RCT +) found that significantly fewer Native American students who participated in the school curriculum only, and school curriculum plus

community groups reported alcohol consumption at 30- and 42-month follow-up compared to control ( $p < 0.01$ ). In addition, significantly fewer participants in the school curriculum only group reported alcohol use at 30- and 42- month follow-ups compared to both control and participants who received the school curriculum plus community components ( $p < 0.01$ ).

#### **5.3.3.6 Drug education enrichment programme**

Welham (2007) reported on a study of the efficacy of drugs education delivered to children aged 7 to 11 years (enrichment programme). The main component features of the programme were a comprehensive written curriculum and use of a mobile classroom. The programme was delivered by specialist external providers and the themes covered by the programme were: knowledge of body and body functions; taking care of the body; medicines and drugs; identifying and dealing with danger; and, identifying and managing emotions.

#### **Quality assessment**

Evaluation of the enrichment programme was based on an uncontrolled before and after study design and cross-sectional pre- and post-testing. Details of the study methodology were largely unreported and the study was therefore rated 'UBA –' for internal consistency.

#### **Findings**

Following delivery of the intervention, and with subsequent teacher support in-class, outcomes indicated that children's knowledge of how to stay healthy and the likely impact of drugs, alcohol and smoking on the maintenance of health and wellbeing had improved (statistical significance not reported). Welham (2007; UBA -) noted that pupils were overtly conscious of the likely future impact of older pupils on their ability to stay drug free on transferring to secondary school.

#### **5.3.3.7 Drugs at Work (DAW)**

Wright (2007) examined the effectiveness of a normative drug education programme, Drugs at Work, which emphasised the indirect impacts of drug use. Students participated in interactive, hands on activities, which included the DAW simulation exercise, media literacy training, and resistance skills training. The programme included seven sessions in fifth grade and one follow up session in sixth grade and was taught by undergraduate students.

#### **Quality assessment**

Evaluation of the DAW programme was based on a CBA design. However, the programme was implemented in comparison schools part way through the evaluation and both intervention and comparison schools also began implementing the DARE programme. The evaluation was therefore divided into three phases, for example in phase one, a quasi-experimental design was used to compare data from a baseline sample of sixth grade

students who did not receive the programme with students who received the programme in later years and their peers. Due to the complications in the study design the study was rated 'CBA -' for internal consistency.

### **Findings**

Compared to baseline data collected in 1990, participants (or their classmates) who received DAW (1991-1992) were significantly more likely to have negative attitudes to drinking alcohol ( $p < 0.01$ ) and smoking ( $p < 0.01$ ), but not towards illegal drug use (Wright, 2007; CBA -). DAW participants (or their classmates) were significantly less likely to smoke ( $p < 0.01$ ), have been drunk ( $p < 0.05$ ) or used illicit drugs ( $p < 0.05$ ), and were significantly more likely to report having friends who would stop them from getting drunk ( $p < 0.01$ ). In an analysis of all seven years of data collected, the author reported results which indicated that the programme had less consistent effects on the use of alcohol than it did on smoking or illegal drug use.

### **5.3.4 Multicomponent programmes**

Four studies (Rollin et al., 1992, 1995; Zavela et al., 1997, 2004) examined multicomponent programmes. Project KICK (Rollin et al., 1992; 1995) combined peer modelling for fifth grade students with a parent education component and Say Yes First (Zavela et al., 1997; 2004) included a curriculum combined with case management for high risk youth and a parent education programme. A summary of programme content is presented in Table 5.18.

**Table 5.18. Programme content: Multicomponent drug education programmes**

<b>Programme</b>	<b>Reference(s)</b>	<b>Programme components</b>
Project KICK	Rollin et al., 1992; 1995	<ul style="list-style-type: none"> <li>• Peer modelling and parent education</li> <li>• Seventh grade peer leaders served as a 'buddy' for two twenty minute sessions each week</li> <li>• Delivered over two school years</li> </ul>
Say Yes First	Zavela et al., 1997; 2004	<ul style="list-style-type: none"> <li>• Multicomponent programme; universal curriculum and case management of high-risk youth</li> <li>• 5 year programme</li> <li>• Included parent education component</li> </ul>

#### **5.3.4.1 Project KICK**

Two studies (Rollin et al., 1992; 1995) examined Project KICK which combined a peer modelling intervention with parent education. Seventh grade students from a middle school served as the positive peer models and taught drug awareness, drug refusal skills, and self-esteem building activities to groups of third grade students in two 20-minute sessions per week. Peer leaders were trained by KICK staff in two 20-minute sessions per week utilising role playing, lecture, discussion, video tape presentation, and small group activities. Parent sessions were held approximately once every two months, and included educational

seminars on behaviour management, stress management, parent/child communication, drug education and family management.

### **Quality assessment**

Project KICK was evaluated using an RCT design; two classes within the same school were randomly assigned to the intervention or control group. Further details regarding the method of randomisation were not reported and allocation resulted in imbalances in the intervention and control groups, although these were adjusted for in subsequent analyses. No details were reported on the number of students followed up and follow-up time was inadequate. The study was rated 'RCT -' for internal consistency.

### **Findings**

Rollin and colleagues (1992; 1995; RCT -) reported a significant effect of the intervention on scores on the Drug Knowledge Survey ( $p < 0.01$ ). Students who received the intervention had improved more than the control group on this measure by the second post-test (end of phase two). The intervention also had a significant effect on scores on the measures of life management, decision making and drug refusal skills, and self-concept (all  $p < 0.01$ ). Students in the intervention group had a greater improvement on these measures compared to the control group at the second post-test.

#### **5.3.4.2 Say Yes First**

Two studies (Zavela et al., 1997; 2004) examined the effectiveness of Say Yes First (SYF), which aimed to promote resiliency and protective factors in young people. The programme was implemented over five years, between grades four and eight. The intervention was educationally based but also employed case management techniques for high-risk youths and their families. The programme included parent education programmes, alternative youth and family activities, SYF councils and youth leadership training.

### **Quality assessment**

Both studies of SYF used CBA designs and were given a 'CBA -' rating. This was because of poor reporting of key elements, a lack of equivalence between conditions at baseline, and the use of historical control in the study reported on by Zavela and colleagues (1997).

### **Findings**

Zavela and colleagues (1997; CBA -) followed students who had participated in the SYF programme from the fourth to the eighth grade. They found that students who received the SYF programme reported lower prevalence of 'ever' use of alcohol than comparison students in the 1993-1994 and 1994-1995 cohorts ( $p < 0.05$ ). For past 30-day use of alcohol, students in the intervention cohort reported lower use than students in the 1994-1995

comparison cohort ( $p < 0.05$ ). Three year follow up data reported by Zavela and colleagues (2004) showed lower scores on measures of lifetime alcohol use, 30 day alcohol use and amount of alcohol use in SYF students compared to control students. However these differences were not significant.

### 5.3.5 Other in school approaches

Seven studies were identified that examined other in-school approaches to drug education. Two studies (Allison et al., 1990; Paxton et al., 1998) examined teachers training and support programmes. Five studies (Corbin et al., 1993; Hawthorne et al., 1995; Hawthorne, 1996; Tudor-Smith et al., 1995; Starkey & Orme, 2001) examined short term or single session interventions and one study (Raybuck & Hicks, 1994) examined an intervention delivered in a retreat format away from the classroom. A summary of programme content is presented in Table 5.19.

**Table 5.19. Programme content: Other in-school drug education approaches**

Programme	Reference(s)	Programme components
DAPPER	Allison et al., 1990	<ul style="list-style-type: none"> <li>Intensive staff development programme and in-service training</li> <li>5 sessions of 3 hours</li> </ul>
Drug education programme	Paxton et al., 1998	<ul style="list-style-type: none"> <li>Half day of teacher training and support in drug education delivery</li> <li>Programme delivered in 4 hourly periods, one per day over one week</li> </ul>
Refusal skills intervention	Corbin et al., 1993	<ul style="list-style-type: none"> <li>Refusal skills training and rehearsal</li> <li>Trained by Psychology Majors</li> <li>Delivered over 3 days</li> <li>Sessions lasted for 45 minutes per day</li> </ul>
Life Education Centres	Hawthorne et al., 1995; Hawthorne, 1996	<ul style="list-style-type: none"> <li>Mobile Life Education Centre presentation</li> <li>Preparatory and follow-up classroom work by classroom teachers</li> </ul>
	Tudor-Smith et al., 1995	<ul style="list-style-type: none"> <li>'Decisions' programme for 10-11 year olds</li> <li>Substance use prevention and peer pressure resistance training</li> <li>One-off lesson, lasting 30 mins-2 hours</li> <li>Taught by trained educator</li> </ul>
Theatre in Education	Starkey & Orme, 2001	<ul style="list-style-type: none"> <li>One day interactive drama production and workshop</li> <li>Facilitated by actors with teaching/workshop experience</li> </ul>
KIDS CARE	Raybuck & Hicks, 1994	<ul style="list-style-type: none"> <li>Retreat delivered away from classroom</li> <li>Once every school year; half day for kindergarten – 2<sup>nd</sup> grade, and a full day for 3<sup>th</sup> – 6<sup>th</sup> grade</li> <li>External facilitator</li> </ul>

#### 5.3.5.1 Teacher training and support

Two studies (Allison et al., 1990; Paxton et al., 1998) examined teachers training and support programmes. Allison and colleagues (1990) examined D.A.P.P.E.R., which was developed in the USA and largely based on knowledge and resistance skills training. The D.A.P.P.E.R. curriculum was developed from the Life Skills Training model and was

supported by provision of intensive staff development focusing on knowledge, attitudes and implementing skills and in-service training. The training schedule included five, three-hour sessions, and recipients were encouraged to hold one to two hour workshops in their school following training. One study examined this programme and compared students' drinking at the end of the school year in schools where teachers had received intensive D.A.P.P.E.R training compared to those that only received in-service training and those that received curriculum material but no staff development (Allison et al., 1990). Paxton and colleagues (1998) reported on a project conducted in Northumberland, UK that aimed to help teachers provide effective drug education through training and support. Eighteen schools participated in the project. Following assessment of the needs and concerns of year 5 pupils, their teachers and parents, a half day of teacher training was provided on methods of good practice. All teachers received training in first aid and theatre in education, in addition to choosing two other specific drug education topics (drug specific card game, alcohol module, photograph module, smoking, peer pressure, solvents, why use drugs, or cartoon modules). Teachers then delivered the programme in four hourly periods, one per day over one week and a parents evening was held.

### **Quality assessment**

Allison and colleagues (1990) did not match the unit of allocation (school) and analysis (individual), and groups were not matched on their intentions to use alcohol in the future. Furthermore, there was little detail on curriculum implementation; this study was therefore given a rating of RCT -. The study conducted by Paxton and colleagues (1998) was largely descriptive and mostly focused on process evaluation. Although data were collected before and after programme delivery a control group was not utilised and the internal consistency of the study was rated 'UBA -'.

### **Findings**

Allison and colleagues (1990; RCT -) reported that there were no differences between intervention students taught by teachers who were intensively trained or who received in-service training and control students, on any of the measures of alcohol use at post-test (lifetime use; drinking with parents; unsupervised drinking; intentions to drink), or on measures of alcohol related knowledge, problem solving, coping, and decision-making.

The only outcome of the programme examined by Paxton and colleagues (1998; UBA -) focused on seeking help or advice from appropriate individuals if they found or were offered a bag containing drugs. Following the drug education programme, more children said that they would take the drugs to the police ( $p < 0.001$ ) and more also said that they would take the drugs to their parents ( $p < 0.001$ ). Fewer children said they would throw them away

( $p < 0.001$ ) or say no and run away ( $p < 0.01$ ). There was no significant change in the number of children who reported that they would give them to their mother or to 'Other'. Fewer pupils reported that they would intend to talk to the police if offered or found drugs ( $p < 0.001$ ), and more would intend to talk to their family ( $p < 0.001$ ), teacher ( $p < 0.001$ ) or friends ( $p < 0.01$ ). There was no significant change in the number that would talk to their mother.

### **5.3.5.2 Refusal skills intervention**

Corbin and colleagues (1993) examined the impact of two intervention strategies on children's drug refusal skills and drug-related knowledge in third grade. Both intervention strategies (Rehearsal Plus [R+] and general information [GI]) taught children drug knowledge, assertiveness skills, decision making skills and specific drug refusal skills. However, students in the R+ group received an additional component that involved rehearsal of the behavioural training whilst students in the GI group were taught general knowledge. Training for both interventions was conducted over three days with 45 minutes per session per day.

#### **Quality assessment**

Effectiveness of the two treatment strategies was examined in an RCT. Children in one school were individually randomised to one of the two treatment strategies or a no intervention control. The sample size for the study was small, with a high rate of attrition (30%) and only students who completed the pre- and post-test were included in the analyses. The study was rated 'RCT –' for internal consistency.

#### **Findings**

Corbin and colleagues (1993; RCT –) examined the impact of the two intervention strategies on general knowledge scores. Participants' scores in the R+ group did not change between post-test and follow-up, but participant's scores in the GI group decreased ( $p < 0.05$ ). For drug knowledge, both the R+ and GI groups had higher means than the control group ( $p < 0.001$ ), but there was no difference between the two intervention groups. For the measure of rationale<sup>5</sup>, the R+ group had higher post-test mean than the GI and control groups ( $p < 0.001$ ), although there was no difference between the GI and control groups. There were no differences between the intervention and control groups on the measure of assertiveness. However, students in the R+ group had higher mean scores on the measure of decision-making at post-test than the GI group and the control group ( $p < 0.001$ ; no significant difference between the GI group and the control group). There were no differences between the R+ and GI groups for the measure of refusal behaviours. However,

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<sup>5</sup> Participants were asked to provide a brief rationale to justify their responses on the measure of drug knowledge e.g. when asked to differentiate between "good" and "bad" drugs.

the group differences were significant between the R+ and GI groups when averaged across post-test and follow-up times, with the R+ group performing better. The R+ group showed significantly more refusal behaviours (in or out of sequence) than either the GI or control groups ( $p < 0.001$ ). There was no difference between GI and control groups. Effect sizes were calculated and are presented in Table 5.20.

**Table 5.20. Refusal skills intervention: Intervention effects (Corbin et al., 1993; RCT –)**

Outcome	Comparison	Standardised mean difference (95% CI)
Sequence behaviour	GI vs. control	0.01 (-0.65, 0.68)
	R+ vs. control	1.68 (0.96, 2.40)
Occurrence behaviour	GI vs. control	0.12 (-0.54, 0.79)
	R+ vs. control	1.71 (0.99, 2.44)
General knowledge	GI vs. control	1.10 (0.38, 1.82)
	R+ vs. control	-0.14 (-0.75, 0.48)
Drug knowledge	GI vs. control	1.11 (0.39, 1.83)
	R+ vs. control	1.70 (0.98, 2.43)
Decision making	GI vs. control	-0.26 (-0.93, 0.41)
	R+ vs. control	1.31 (0.62, 1.99)
Rationale	GI vs. control	-0.12 (-0.78, 0.55)
	R+ vs. control	1.24 (0.57, 1.92)
Assertiveness	GI vs. control	-0.11 (-0.78, 0.56)
	R+ vs. control	0.03 (-0.58, 0.65)

### 5.3.5.3 Life Education Centres

The Life Education programme evaluated by Hawthorne and colleagues (1995, 1996) consisted of three parts, preparatory classroom work, the Life Education presentation and follow-up work conducted by a classroom teacher. The Life Education presentation took place in a mobile classroom with an emphasis on learning how the body worked and identifying drug use pressures. Tudor-Smith and colleagues (1995) examined the short term impact of the Decisions programme of Life Education Centres (LECs) in Wales. Children were intended to receive one LEC programme per year in infant, primary and middle school. The Decisions programme targeted 10-11 year olds and using audio-visual aids, games, films, and role play taught children about substance use prevention and peer pressure resistance.

### Quality assessment

Hawthorne and colleagues (1995) used a CBA design to examine the effects of the Life Education curriculum. The study compared students who had been exposed to the Life Education programme over five consecutive years with students not exposed to the programme but who had received conventional school-based drug education. Few details

about the study methodology were reported and it was therefore difficult to judge how well the study had been conducted. The study was consequently coded 'CBA -'. The design of the study by Tudor-Smith and colleagues (1995) was based on a UBA design and was rated '-' because of the weak design utilised.

### **Findings**

Hawthorne and colleagues (1995; CBA -) found that students who received the Life Education programme were significantly more likely to report having drunk alcohol than non-Life Education students (OR 1.3; 95% CI 1.0, 1.6). The authors reported that these findings were largely due to boys who received Life Education being significantly more likely to have drunk alcohol than non-Life Education boys (OR 1.3; 95% CI 1.1, 2.1) as there was no difference between girls. There was no difference between students who had received the Life Education programme and those who had not in terms of drinking in the previous month. However, boys who received the Life Education programme were more likely to have drunk in the previous month than non-Life Education boys (OR 1.7; 95%CI 1.1, 2.4). Again, there was no difference between girls. Boys who received the Life Education programme were also significantly more likely than non-Life Education boys to report having drunk two or more drinks per occasion (OR 1.4; 95% CI 1.0, 1.9). This finding was significant across the whole group at the student level analysis but not the school level. Effect sizes are presented for the school-level analysis in Table 5.21.

**Table 5.21. Life Education Centres: Intervention effects (school-level analysis) (Hawthorne 1995; CBA -)**

<b>Outcomes</b>	<b>OR (95% CI)</b>
<b><i>Lifetime alcohol use</i></b>	
All students	1.30 (1.06, 1.60)
Boys	1.50 (1.07, 2.10)
Girls	1.10 (0.64, 1.90)
<b><i>Past month alcohol use</i></b>	
All students	1.20 (0.90, 1.60)
Boys	1.70 (1.20, 2.40)
Girls	1.10 (0.64, 1.90)
<b><i>Alcohol misuse (2+ glasses)</i></b>	
All students	1.20 (0.90, 1.60)
Boys	1.40 (1.03, 1.90)
Girls	1.10 (0.58, 2.10)

Tudor-Smith and colleagues (1995; UBA -) reported a significant improvement after two months in children's ability to recognise substances such as heroin, pharmaceuticals,

cigarettes, and alcoholic drinks as drugs ( $p < 0.05$ ). The majority of the children's beliefs about drugs did not change after two months, with the exception of views on advertising, perceptions of smokers and drinkers ( $p < 0.05$ ), with children becoming better informed on these matters. There were no statistically significant changes in substance use behaviours, although the authors reported that the proportions of students using alcohol and cigarettes had increased by follow-up (+4% and +9%, respectively, at the two-month follow-up). Furthermore, there was a statistically significant increase in the proportion of young people who reported that friends had smoked or drunk alcohol ( $p < 0.05$ ).

#### **5.3.5.4 KIDS CARE**

Raybuck and Hicks (1994) examined the effects of the KIDS CARE programme that was designed to increase self esteem and reduce drug and alcohol use. The programme was administered in a retreat format away from the school, parents, and teachers. Children engaged in activities, discussions and games designed to teach concepts and skills. The modules were age appropriate and focused on developing prosocial ways of bonding and building self esteem. Classes engaged in informal follow-up activities and discussion following the retreat. The retreat was facilitated by an external facilitator and was repeated every school year between kindergarten and sixth grade. The retreat was a half day for students in kindergarten, first and second grade, and a full day for students in third, fourth, fifth and sixth grade.

#### **Quality assessment**

The study conducted by Raybuck and Hicks (1994) was observational, but included a comparison group from a school which had not implemented the KIDS CARE programme. The study methodology was not clearly reported and it was not clear, for example, how many students were in the intervention and comparison groups and whether they were balanced at baseline. The study was rated 'CBA -' for internal consistency.

#### **Findings**

Raybuck and Hicks (1994; CBA -) found that the intervention did not have significant effects on self-esteem on a standardised measure. However, on "Circle Words" (an adjective checklist self-esteem measure), children who participated in KIDS CARE had significantly improved scores on the positive scale compared to the comparison group ( $p < 0.01$ ), but there was no significant change on the negative scale. The retreat programme had a significant effect on the sociometric status of previously rejected or neglected children with high risk children in the intervention group more likely receive positive peer nominations (as children they like the most or whom they wish to spend more time with) than children in the comparison group.

### **5.3.5.5 Theatre in Education**

Starkey and Orme (2001) conducted an evaluation of a primary school drug education drama project. The project involved an interactive drama production and workshop day for 10-11 year olds taught by actors with teaching or workshop experience.

#### **Quality assessment**

The impact of the drama project was assessed using a UBA design. The study was not well reported and was rated 'UBA -'.

#### **Findings**

Starkey and Orme (2001; UBA -) reported that significant increases were seen in children's ability to name specific drugs (e.g. cigarettes, alcohol, heroin) between pre- and post-test, increasing from 53% at pretest to 71% at post-test ( $p < 0.001$ ). The authors also reported a significant improvement in young people's response to seeking help when presented with a lost bag (potentially containing illegal drugs) with 9% saying that they would phone or tell the police ( $p < 0.05$  compared with pretest). Following participation in the programme, the children demonstrated change in their attitudes towards drugs with an increase in the percentage agreeing that some drugs could be good for you for medical reasons ( $p < 0.01$ ) and if you take the right amount ( $p < 0.01$ ).

### **5.3.6 Summary and evidence statements**

A total of 32 primary studies examined drug education programmes that included a focus on illegal drugs in addition to alcohol. A range of programme approaches were identified; classroom-based programmes led by teachers or external contributors, programmes that combined in-school approaches with parent education, and other in-school approaches including theatre in education and a retreat-based programme.

#### **5.3.6.1 Knowledge and understanding**

The impact on knowledge and understanding was examined in 14 programmes, including nine classroom-based programmes led by teachers or external contributors, one multicomponent programme and four studies of other in-school approaches to drug education.

Participation in TITH in grades 2 to 6 was associated with improvements in knowledge related to the curriculum, although effects were more consistent in urban schools than rural schools (Ambtman et al., 1990; NRCT +). Four studies reported on the effects of life skills training on knowledge. Three studies reported that LST had an effect on knowledge at post-test (Botvin et al., 2003; RCT -; Bühler et al., 2008; RCT +; Kreutter & Gewirtz, 1991; CBA -). However, follow up of the students, who participated in Project Charlie, which was based

on the LST model, demonstrated that the intervention did not have long term effects on drug knowledge (Hurry et al., 2000; RCT +). Two studies (Abbey et al., 1990; RCT +; Witt & Witt, 1995; UBA -) that examined the BABES programme provided evidence that participation in the programme resulted in short term increases in knowledge relating to the curriculum, which focused on teaching young children about the consequences of drug and alcohol use. The results of the PDAPE programme (Baker, 2004; CBA -) were unclear; in phase one of the study participants reported increase in knowledge and skills, but in phase two students who had received the programme in the previous year reported worse outcomes than those who had not. A drug education programme for first and third grade students delivered by nursing students (Hall-Long & Dishop, 1999; UBA -) resulted in increases in knowledge across the curriculum areas of the programme. A UK study of an enrichment programme found that the intervention had a positive effect on children's knowledge (Welham, 2007; UBA -). Two science-based programmes (Sigelman et al., 2004; RCT +; Holtz & Twombly, 2007; NRCT -) were found to have improvements on knowledge about drugs immediately following curriculum delivery, but not in the longer term in one study (Sigelman et al., 2004; RCT +). Project KICK, a multicomponent programme that combined peer modelling for third grade students with parent education, had significant short term effects on drug knowledge (Rollin et al., 1992; 1995; RCT -).

One study (Allison et al., 1990; RCT -) that examined the effects of a teacher training intervention (intensive training vs. in-service training), D.A.P.P.E.R., found that the intensive intervention had no effects on students' knowledge in comparison to the in-service training approach. A second study that examined a project designed to support drug education delivery (Paxton et al., 1998; UBA -) reported that there were improvements in responses to seeking help with a lost bag. Following participation in a theatre in education programme (Starkey & Orme, 2001; UBA -), significant increases were seen in children's ability to name drugs, and in responses to seeking help with a lost bag of drugs. Children aged 10-11 years who participated in the 'Decisions' programme (Life Education Centres) also reported short term improvements in their ability to recognise substances (Tudor-Smith et al., 1995; UBA -).

### **5.3.6.2 Attitudes and values**

Participants in the DAW programme (Wright, 2007; CBA -), which included interactive sessions, were more likely to have negative attitudes to alcohol. Botvin and colleagues (2003; RCT -) reported that LST had a significant effect on anti-drinking attitudes, and this finding was supported by the German study of LST by Bühler and colleagues (2008; RCT +). A science-based programme (Sigelman et al., 2004; RCT +) had no effects on attitudes or intentions towards alcohol. There were also no effects of the D.A.P.P.E.R. teacher training

programme on attitudes (Allison et al., 1990; RCT -) and The Decisions programme of the Life Education Centres was not found to have had any impact on substance-related beliefs (Tudor-Smith et al., 1995; UBA -).

### **5.3.6.3 Personal and social skills**

There were no clear effects of the BABES programme on psychosocial skills. However, one study of the programme conducted with a high risk population (Hahn et al., 2007; NRCT +), which included an additional parent education component, had some impact on anxiety/withdrawal and social competence among children who received the enhanced intervention. Three studies examined the effects of LST for elementary students on personal and social skills. Botvin and colleagues (2003; RCT -) reported that the programme had effects on normative expectations and self esteem. A replication study by Kreutter & Gewirtz (1995; CBA -) also found that the programme had effects on self-esteem. There were also immediate effects of the LST-based Project Charlie on decision-making skills (Hurry & McGurk, 1997; RCT +), but not on self-esteem. Long term follow-up of the participants in Project Charlie found that the intervention did not have long term effects on personal or social skills (Hurry et al., 2000; RCT +). There were immediate effects of Project KICK (Rollin et al., 1992; 1995; RCT -) on participants' self esteem, decision making and refusal skills, with participants in the programme having improved outcomes on these measures. A rehearsal plus strategy that focused on rehearsal following refusal skills training had significant effects on refusal skills and decision making among participants. There were no effects of D.A.P.P.E.R., a teacher training programme on problem solving and coping (Allison et al., 1990; RCT -), and the results of the KIDS CARE programme, which although focused on improving self esteem provided no evidence of an intervention effect (Raybuck & Hicks, 1994; CBA -).

### **5.3.6.4 Alcohol use or sexual health**

The longer term effects on alcohol use behaviours were examined for nine programmes. Positive effects were reported for two programmes, DAW and a curriculum for Native American students, and were inconsistent for two further programmes SYF and LST. One programme provided by the Australian Life Education Centre, had potentially negative effects on student's drinking in later years. No effects were reported for four programmes, keepin it REAL, Million Dollar Machine, a science-based programme, and a teacher training programme DAPPER.

The curriculum for Native American students (Schinke & Tepavac, 2000; RCT +) had long term effects on alcohol use, with students who participated in the programme less likely to report consuming alcohol, 30 and 42 months after receiving the programme. The effects of

the DAW programme were less robust, due to the weak study design employed (Wright, 2007; CBA -). However, compared to students in preceding years who did not receive the programme, DAW participants were less likely to have been drunk. However, overall the programme had a less consistent effect of the use of alcohol than tobacco or illegal drugs. The study of LST conducted by Botvin and colleagues (2003; RCT -) found that the intervention had effects on drinking frequency and drinking in the past year at post-test. However these findings were not replicated in a German study of LST (Bühler et al., 2008; RCT +) or in the evaluation of Project Charlie (Hurry & McGurk, 1997; Hurry et al., 2000; both RCT +). The effects of Say Yes First, a multicomponent programme that combined a universal curriculum with parent education and case management for high risk students, were also inconsistent (Zavela et al., 1997; 2004; CBA -). Alcohol use was found to be lower in eighth grade amongst students who had received the programme in fourth grade, but by the eleventh grade there were no significant difference between intervention and comparison students.

An evaluation of the Australian Life Education Centre curriculum (Hawthorne, 1995; CBA -) found that the curriculum had no short-term effects on alcohol use and had potentially increased alcohol use in boys who participated in the programme. One evaluation of the UK Life Education curriculum for 10-11 year olds (Decisions programme) found that the intervention had no effects on alcohol use (Tudor-Smith et al., 1995; UBA -).

**Evidence statement 3**

3(a) There is moderate evidence from one RCT<sup>1</sup> to suggest that a culturally tailored skills training intervention for Native American students may have long-term effects on alcohol use. However, this evidence is not applicable to the UK given the cultural specificity of this programme. There is insufficient and inconsistent evidence from four RCTs, four CBA studies and one UBA study<sup>2</sup> to determine the effects of other drug education approaches on alcohol use in later years.

<sup>1</sup> Schinke et al., 2000 (RCT +)

<sup>2</sup> Botvin et al., 2003 (RCT -); Bühler et al., 2008 (RCT +); Hurry & McGurk, 1997; Hurry et al., 2000 (both RCT+); Zavela et al., 1997, 2004 (both CBA -); Hawthorne, 1995 (CBA -); Wright 2007 (CBA -); Tudor-Smith et al., 1995 (UBA -)

**Table 5.22. Drug (including alcohol) education: classroom-based programmes led by teachers**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Ambtman et al., 1990 Tuning In To Health: Alcohol and Other Drug Decisions	NRCT +	Canada 2 <sup>nd</sup> – 6 <sup>th</sup> grade N=2,406	Not clear	87% completed study	Intervention schools improved more than control schools on knowledge of essential elements of the programme.
Botvin et al., 2003 Life Skills Training	RCT -	USA 4 <sup>th</sup> to 6 <sup>th</sup> grade N= 1,954	PT	56%	Prevalence of drinking was significantly lower in intervention schools. Significant effects on attitudes (anti-drinking), knowledge, normative expectations and self-esteem. No effects on advertising knowledge, social skills knowledge, refusal skills knowledge, teen or adult drinking norms, and risk-taking.
Bühler et al., 2008 Allgemeine Lebenskompetenzen und Fertigkeiten	RCT +	Germany Mean 10.8 years N=643	PT	70% completed study	Significant programme effects on knowledge about skilled behaviour and life skill resources, but no programme effects were found concerning knowledge about unskilled behaviour and life skills deficits. Intervention students developed a more critical view against alcohol consumption, but intervention had no effects on alcohol use.
Hecht et al., 2008 keepin' it REAL	RCT +	USA Mean 10.4 years N=1,566	PT, 12 months	72% at 12 months	Intervention students reported greater increases in their quantity of resistance strategies but perceived that relatively more of his or her peers were using substances than control students. No difference in student's substance use intentions, parents' and friends' anti-drug injunctive norms, personal anti drug norms and substance use expectancies. No difference in lifetime or recent substance use.
Holtz & Twombly, 2007 Brain Power!	NRCT -	USA 4 <sup>th</sup> and 5 <sup>th</sup> grade N=112	PT	NR	Intervention group showed statistically significant improvements in knowledge about drugs.
Hurry & McGurk, 1997; Hurry et al., (2000) Project Charlie	RCT +	UK 10 years N= 120	PT, 3 years	77% at 3 years	No significant differences between intervention and control students in alcohol use at 13-14 years. Intervention students had significantly higher decision-making skills than control students at PT. No significant difference in self-esteem, intention to drink alcohol or peer pressure.
Kreutter & Gewirtz, 1991	CBA -	USA 6 <sup>th</sup> grade N=216	PT	NR	Intervention students had greater gains in knowledge and on measures of self-esteem.
Schinke & Tepavac, 1995 Million Dollar Machine	NRCT -	USA 3 <sup>rd</sup> - 6 <sup>th</sup> grade N= 2,475	PT, 6 months	NR	Fourth grade students in the intervention group reported significantly less actual and potential time spent drinking.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Sigelman et al., 2004 Drug and alcohol curriculum	RCT +	USA Grades 3-6 N= 327	PT, 1 year	82% completed the study	Significant intervention effect on knowledge at PT, but not 1 year. No difference between groups in attitudes or intentions. Programme did not have any significant effects on alcohol use.
Stevens et al., 1996 Here's Looking at You 2000	CBA -	USA 4 <sup>th</sup> -6 <sup>th</sup> grade N= NR	36 months	NR	No effects on initiation or drinking for students in 4-6 grades at baseline.

**Table 5.23. Drug (including alcohol) education: classroom-based programmes led by external contributors**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Baker, 2004 Preventing Alcohol and Drug Abuse Through Primary Education (PADAPE)	CBA -	USA 2 <sup>nd</sup> -5 <sup>th</sup> grade N=1,521	1 year	NR	In phase one, significant overall increase in knowledge and skills at PT. In phase two, students who had not received the intervention programme in the previous year performed better than students who had received the PADAPE programme,
Hall-Long & Dishop, 1999 Drug education programme	UBA -	USA 1 <sup>st</sup> and 3 <sup>rd</sup> grade N=263	PT	NR	There was an average increase in knowledge test scores by 30% compared to pre-test scores and increases on every area of knowledge examined
Peterson & Woodward, 1993 CHOICE programme	NRCT -	USA 6 <sup>th</sup> grade N=116	PT	NR	Compared to students in the control group, students who received the CHOICE programme had a significantly higher self-concept as measured by semantic differential.
Schinke et al., 2000 Curriculum for Native American students	RCT +	USA Mean 10.3 years N= 1,396	6, 18, 30 and 42 months	86% completed study	Significantly smaller percentage of participants in skills, and skills + community conditions reported alcohol consumption at 30 and 42 months. Fewer participants in the skills only condition reported alcohol use at 30 and 42 months (vs. control).
Welham, 2007 Enrichment programme	UBA -	UK Year 8 N=240	PT	NA	Intervention with subsequent teacher support in-class affected positively children's knowledge of how to stay healthy and the likely impact of drugs, alcohol and smoking on the maintenance of health and wellbeing.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Wright, 2007 Drug At Work (DAW)	CBA -	USA 5 <sup>th</sup> and 6 <sup>th</sup> grade N=2,691	6 <sup>th</sup> and 7 <sup>th</sup> grade	NR	DAW participants (or their classmates) were significantly more likely to have negative attitudes to drinking alcohol, less likely to have been drunk and were significantly more likely to report having friends who would stop them from getting drunk.
<b>Beginning Alcohol and Addictions Basic Education Studies (BABES)</b>					
Abbey et al., 1990	RCT +	USA 6-8 years N=55	1 month	NR	Significant effects on knowledge based directly on BABES material but not on a knowledge test applying BABES material to different situations. Intervention group reported significantly more negative attitudes about alcohol's effects than the control group. No effects on measures of coping, decision making, help seeking, peer pressure resistance, responsibility taking or self esteem. However, control group members demonstrated more active coping skills on one of the three coping scenarios.
Hahn et al., 2007 BABES Plus	NRCT +	USA Mean 5.8 years N=126	1 and 6 months post- intervention	NR	BABES Plus parents rated their children as having less anxiety/withdrawal than did the BABES Only parents, and as more socially competent than did parents in both the BABES Only and control groups. For the Aggression scale, neither of the main effects nor their interaction was significant.
Witt & Witt 1995	UBA -	USA 7-9 years N=132	PT	NR	Significant gains in knowledge (with the exception of knowledge relating to the lesson on self-image and feelings)

**Table 5.24. Drug (including alcohol) education: multicomponent programmes**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Rollin et al., 1992; 1995 Project KICK	RCT -	USA 3 <sup>rd</sup> grade N=62	PT, 6-7 months	NR	Significant intervention effect on drug knowledge, and life management, decision making skills and refusal skills, and also self concept.
<b>Say Yes First</b>					
Zavela et al., 1997	CBA -	USA 4 <sup>th</sup> grade N= 430	5 years	Not reported	Alcohol use lower than in preceding cohorts.
Zavela et al., 2004	CBA -	USA 4 <sup>th</sup> grade N= 156	8 years	Not reported	No significant difference between intervention and control students. No difference in attitudes to school or drugs, ability to resist peer pressure, social competence, or school performance and attendance.

**Table 5.25. Drug (including alcohol) education: other in-school approaches**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Allison et al., 1990 DAPPER	RCT -	Canada 5 <sup>th</sup> grade N=266	End of school year	82% completed study	No difference between groups on any of the measures of alcohol use at PT, or on knowledge, problem solving, coping and attitudes, or decision making.
Corbin et al., 1993 Refusal skills intervention	RCT -	USA 8-10 years N=74	PT, 4 weeks (intervention only)	77% completed study	GI participants had higher general knowledge scores, both R+ and GI groups had higher drug knowledge than the control group at PT (no difference between two intervention groups). No differences on assertiveness refusal behaviours between intervention groups, but R+ intervention had effects on decision making skills and demonstrated more refusal behaviours.
Paxton et al., 1998 Drug education programme	UBA -	UK 9-10 years N=1,428	Not clear	NR	Following the teacher training and delivery, more children said that they would take the drugs to the police or to their parents. Fewer pupils reported that they would intend to talk to the police if offered or found drugs and more would intend to talk to their family, teacher or friends.
Raybuck & Hicks, 1994 KIDS CARE	CBA -	USA 3 <sup>rd</sup> and 5 <sup>th</sup> grade N=132	1-2 weeks	NR	No significant effect of intervention on self-esteem on standardised measures, intervention group significantly improved on the positive scale of the "Circle Words" measure of self-esteem compared to the control group (no significant change on the negative scale). Significant effect on the sociometric status of previously rejected or neglected children with high risk children in the intervention group more likely to receive positive peer nominations than control children.
Starkey & Orme, 2001 Theatre in Education	UBA -	UK 10-11 years N= 6 schools	4 weeks	85-98%	Significant increases were seen in children's ability to name specific drugs and response to seeking help when presented with a lost bag. Children also showed change in attitudes towards drugs with the realisation that some drugs could be good for you for medical reasons.
<b>Life Education Centres</b>					
Hawthorne et al., 1995; Hawthorne, 1996	CBA -	Australia Year 6 N= 3,019	PT	Not reported	Intervention had significant negative effects on alcohol use, particularly in boys. No preventive effects of the programme at the school or population level. Indication that programme was harmful.
Tudor-Smith et al., 1995	UBA -	UK 10-11 years N=509	1 week, 2 months	67% completed FU	Significant improvement after two months in ability to recognise substances such as: heroin, pharmaceuticals, cigarettes, and alcoholic drinks as drugs. The majority of beliefs about drugs did not change after two months and there was no statistically significant changes in substance use behaviours.

## 5.4 Sex and relationships education

### 5.4.1 Overview of evidence identified

Overall nine studies were identified that examined seven programmes, which focused on different approaches to SRE. Two programmes focused on abstinence approaches; three programmes were HIV/AIDS prevention approaches; one programme employed a parenting and care-giving approach; and another aimed to improve young people's sexual health knowledge, personal insight and motivation. All seven programmes were curriculum based and delivered in schools.

### 5.4.2 Abstinence-based programmes

Four studies were identified that examined two abstinence-based approaches to SRE. One study (Abel & Greco, 2008) examined the Family Action Model for Empowerment (FAME) and three studies (Denny et al., 1999; Denny & Young, 2006; Spear et al., 1997) examined the Sex Can Wait (SCW) Programme. A summary of programme content is presented in Table 5.26.

**Table 5.26. Summary of programme content: abstinence-based programmes**

Programme	Reference(s)	Programme content
FAME (Family Action Model for Empowerment)	Abel & Greco, 2008	<ul style="list-style-type: none"> <li>8-week curriculum administered within the public school system</li> <li>After-school programme continued for eight sessions; employed a psychoeducational model and art; music, dance, group activities, role-play, audiovisual aids and written materials.</li> </ul>
Sex Can Wait	Denny et al., 1999; Denny & Young, 2006; Spear et al., 1997	<ul style="list-style-type: none"> <li>Curriculum series taught at upper elementary school, middle school and high school.</li> <li>Teachers trained at a workshop over 3.5 days.</li> <li>Delivered in 23 lessons over 5 weeks.</li> </ul>

#### 5.4.2.1 FAME (Family Action Model for Empowerment)

One study (Abel & Greco, 2008) evaluated an abstinence-orientated empowerment programme to prevent teenage pregnancy (FAME). This was a multi-dimensional school and community-based intervention which aimed to strengthen healthy family functioning and highlight sexual abstinence as a positive choice for young people. Delivered over an eight-week period, this programme focussed upon asset building, parent-teen communication and relationships, self-esteem, healthy relationships dealing with peer pressure and the benefits of valuing abstinence approaches.

#### Quality assessment

This study employed a UBA design and was given a UBA – rating. This rating reflected the poor study design and the limitations of the study findings as a result of immediate post-test results only and substantial levels of attrition (>20%).

## **Findings**

Post-test results showed that the programme had significant positive effects on the following outcomes (all  $p < 0.05$ ): attitudes towards parents communication with their child or children, overall communication with parents, ability to resist peer pressure, self-esteem and perceived ability to abstain from sex (Abel & Greco, 2008; UBA -).

### **5.4.2.2 Sex Can Wait**

Three studies reported on the Sex Can Wait (SCW) programme (Spear et al., 1997; Denny et al., 1999; Denny & Young, 2006). The SCW programme was an abstinence-based curriculum delivered across 23 lessons over a five week period, addressing self-esteem, reproductive anatomy and physiology, changes associated with puberty, values and decision-making skills. The programme included upper elementary, middle school and high school components, and only the results of the upper elementary curriculum are reported here.

### **Quality assessment**

One study (Spear et al., 1997) of the SCW programmes was based on a CBA design, whilst the second study (Denny et al., 1999; Denny & Young, 2006) employed an NRCT design. Study quality was difficult to determine as the authors reported limited details of their methodology. Furthermore, as control and intervention students were located in the same schools there are concerns regarding contamination. In addition, there was either a high rate of attrition (Denny & Young, 2006) or attrition was not reported (Spear et al., 1997), and poor reporting of baseline comparisons. Both studies were rated as ‘-’ for internal consistency.

## **Findings**

Spear and colleagues (1997; CBA -) field tested the SCW programme and reported that at post-test, participants in the intervention group showed significantly higher knowledge scores ( $p < 0.001$ ), expressed more positive attitudes towards abstinence ( $p < 0.01$ ) and more desirable attitudes ( $p < 0.05$ ). However, no significant differences were found for parental communication factors or intent to remain abstinent.

Denny and colleagues (1999; NRCT -) also reported significant post-test differences between the intervention and control groups for knowledge scores ( $p < 0.001$ ), greater levels of self-efficacy ( $p < 0.05$ ), and attitudes towards abstinence ( $p < 0.05$ ). Intervention students were also more hopeful about the future than control students ( $p < 0.05$ ), although they showed no significant differences between pre- and post-test for sexual behaviour or abstinent intentions. At 18 months follow-up (Denny & Young, 2006; NRCT -), results showed that students in the intervention group had significantly higher knowledge scores than control students ( $p < 0.05$ ). There was no significant difference between the intervention

and control groups for self-efficacy, decision-making, attitudes, hopefulness, intention to remain abstinent (see Table 5.27). For two sexual behaviour outcomes, there was no significant difference between intervention and control students for whether they had ever had sexual intercourse (OR 0.59; 95% CI 0.21, 1.64), but students in the intervention groups were less likely than control students to report that they had had sexual intercourse in the past 30 days (OR 0.08; 95% CI 0.03, 0.23). Effect sizes were calculated and are presented in Table 5.27.

**Table 5.27. SCW: Intervention effects at 18-month follow-up (Denny & Young, 2006; NRCT -)**

Outcome	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Knowledge	62	15	158	50	15	38	0.80 (0.43, 1.16)
Attitude	3.49	0.51	158	3.47	0.59	38	0.04 (-0.32, 0.39)
Hopelessness	73	19	158	73	19	38	0.00 (-0.35, 0.35)
Self-efficacy	3.87	0.74	158	3.64	0.71	38	0.31 (-0.04, 0.67)
Decision making	3.33	0.51	155	3.34	0.51	37	-0.02 (-0.38, 0.34)
Intention to remain abstinent	3.3	1.27	156	2.7	1.28	35	0.47 (0.10, 0.84)

### 5.4.3 AIDS education programmes

Three studies were identified that examined three AIDS education programmes (Gaskins et al., 2002; Pick et al., 2007; Schonfeld et al., 1995). A summary of programme content is presented in Table 5.28.

**Table 5.28. Programme components: AIDS education programmes**

Programme	Reference(s)	Programme content
An HIV/AIDS Awareness Education Programme	Gaskins et al., 2002	<ul style="list-style-type: none"> <li>Month-long curriculum-based education programme</li> <li>1-2 hours for kindergarten-1<sup>st</sup> grade students; 3-4 hours for 2<sup>nd</sup>-3<sup>rd</sup> grade students; 4-5 hours for 4<sup>th</sup>-5<sup>th</sup> grade students.</li> </ul>
I Want to, I Can...Prevent HIV/AIDS	Pick et al., 2007	<ul style="list-style-type: none"> <li>Curriculum-based programme implemented over 15-20 weeks.</li> <li>Teacher training workshops over 40 hours.</li> <li>Incorporating colourful, interactive workbooks, group work, brain-storming, role-playing, storytelling, debating, discussions and audiovisual activities.</li> </ul>
AIDS Education Programme	Schonfeld et al., 1995	<ul style="list-style-type: none"> <li>Programme delivered to kindergarten, 2<sup>nd</sup> grade and 4<sup>th</sup> grade students.</li> <li>Six 45-60 minute lessons over a three week period.</li> <li>Developmentally based programme that included demonstration, drawing exercises and interactive activities.</li> </ul>

#### **5.4.3.1 HIV/AIDS Awareness Education Programme**

One study reported the results of an HIV/AIDS awareness education programme delivered to students from kindergarten to fifth grade (Gaskins et al., 2002). The programme was delivered in 1-5 hours over one month dependent upon the age of the target population. Sessions are delivered to students in the classroom and utilised art, puppets, films, books and lectures.

##### **Quality assessment**

Gaskins and colleagues (2002) used an UBA design to evaluate the effects of the programme. The lack of a control group limits the reliability of the study results. In addition, limited detail of the intervention was provided and only immediate post-test analysis was carried out. The study was assessed as 'UBA –' for internal consistency.

##### **Findings**

Post-test results from Gaskins and colleagues (2002; UBA –) for fourth and fifth grade students showed significant improvements in knowledge scores relating to HIV transmission, with a decline in only one question relating to HIV symptoms. Second and third grade students reported similarly significant improvements in knowledge scores ( $p < 0.001$ ), with all questions showing an increase in the percentage of correct responses post-test. In comparison, kindergarten and first grade students reported significantly lower knowledge scores at post-test ( $p < 0.001$ ). However, all grades showed significantly increased levels of comfort in proposed social scenarios with an HIV positive person ( $p < 0.001$ ).

#### **5.4.3.2 I Want to, I Can... Prevent HIV/AIDS**

Pick and colleagues (2007) reported on an HIV prevention programme I Want to, I Can...Prevent HIV/AIDS, a life skills programme which was designed to promote communication as a protective factor against high-risk sexual behaviour. This study incorporated a variety of creative classroom strategies (e.g. storytelling, role-playing) with fourth grade students over a 15 to 20 week period throughout the school year.

##### **Quality Assessment**

The study by Pick and colleagues (2007) was based on an RCT cluster design and appeared to have been well designed; however the method of allocation to intervention and control groups was not explained. Other aspects of the study were well reported; the authors reported controlling for baseline measures and provided further details to show that there was no contamination between groups. The study was coded as 'RCT +'.

### **Findings**

Pick and colleagues (2007; RCT +) reported significant post-test results in the intervention group for improved attitude towards communication ( $p < 0.001$ ), improved scores for self-efficacy ( $p < 0.001$ ), intentions regarding communication ( $p < 0.001$ ), communication behaviour ( $p < 0.001$ ), and perceived norms about communication ( $p < 0.001$ ). At post-test the intervention group was also more likely to discuss behaviours on taboo ( $p < 0.001$ ), romantic ( $p < 0.001$ ) and threatening or unpleasant topics ( $p < 0.05$ ). Girls were more likely than boys to report positive attitudes, self-efficacy and intentions towards discussing difficult topics. However, boys were significantly more likely to discuss threatening or unpleasant topics ( $p < 0.001$ ).

#### **5.4.3.3 AIDS Education Programme**

Schonfeld and colleagues (1995) reported on an AIDS education programme delivered to kindergarten, second grade and fourth grade students over a three-week period. This developmentally based education programme aimed to teach children to differentiate between communicable and non-communicable illnesses with specific reference to HIV/AIDS.

### **Quality Assessment**

This study by Schonfeld and colleagues (1995) employed an appropriate methodology with study population being representative of the eligible population, there were no significant differences at baseline between the intervention and control groups, and researchers were blind to the control/treatment condition during testing and analysis. However although allocation was reported as randomised, the authors provided limited information about the allocation of classrooms to the intervention and control groups, hence this study was assessed as 'RCT +' for internal consistency.

### **Findings**

Results of the study by Schonfeld and colleagues (1995; RCT +) showed that at two and a half months follow-up, the intervention group had significantly higher scores for knowledge of the following: causality and prevention of AIDS ( $p < 0.001$ ); the causality and prevention of colds ( $p < 0.01$ ); and causality of cancer ( $p < 0.05$ ). However, there was no difference between groups for knowledge of cancer prevention at follow-up. Students in the intervention group mentioned significantly more accurate causes of HIV/AIDS (e.g. sexual transmission, blood transmission, mother-to child transmission). However, significantly fewer children in the intervention group mentioned injecting drug use as a route of HIV/AIDS transmission ( $p < 0.01$ ). Overall, the intervention was equally effective across all grades.

#### 5.4.4 Other in-school approaches

Two studies (Masterpasqua et al., 1992; Wackett & Evans, 2000) were identified that examined other approaches to SRE. Masterpasqua and colleagues (1992) examined a parenting programme for fifth and sixth grade students and Wackett and Evans (2000) examined an intervention designed to improve young people's sexual health knowledge, motivation, personal insight and skills. A summary of programme content is presented in Table 5.29.

**Table 5.29. Programme components: other in-school approaches**

Programme	Reference(s)	Programme content
Learning about Parenting/Learning to Care	Masterpasqua et al., 1992	<ul style="list-style-type: none"> <li>Two cohorts of 5<sup>th</sup>-6<sup>th</sup> graders received the programme over two years.</li> <li>The programme focussed on developmental milestones, individual differences, and parental care for children.</li> </ul>
Choices and Changes	Wackett & Evans, 2000	<ul style="list-style-type: none"> <li>Programme aims to improve sexual health knowledge, motivation and personal insight and skills.</li> <li>Delivered in eight 1 hour sessions over four weeks.</li> </ul>

##### 5.4.4.1 Learning about Parenting/Learning to Care

One study (Masterpasqua et al., 1992) reported findings from the school-based Parenting and Care-giving programme, which was aimed at improving children's understanding of care in order to prevent the long-term impact of negative early childrearing experiences. The authors reported on data from two cohorts of fifth and six grade students.

##### Quality Assessment

Masterpasqua and colleagues (1992) failed to report details of how classrooms were allocated to intervention or control groups. They also did not provide sufficient information about baseline measurements, pre-test results or follow up times. Therefore, this study was coded as a 'NRCT -'.

##### Findings

The post-test results from year one (without pre-test results) showed a significant increase in the number of parenting ( $p < 0.01$ ) and nurturing solutions ( $p < 0.05$ ) that intervention students were able to provide to common parent-child problems, compared to control (Masterpasqua et al., 1992; NRCT -). However, there was no difference between intervention and control groups in parenting knowledge or the number of physically punishing solutions provided. The results for year two (where pre-test results were also available) showed that intervention students had significant increases in parenting knowledge ( $p < 0.001$ ) and in the number of total and caring solutions provided in response to parent-child problems ( $p < 0.001$  and  $p < 0.01$ , respectively), compared to control students. Intervention students also reported a

reduction in the number of physically punishing solutions ( $p < 0.001$ ), compared to the control group. Effect sizes were calculated for these outcomes and are presented in Table 5.30.

**Table 5.30. Learning about Parenting: Intervention effects (Masterpasqua et al., 1992; NRCT -)**

Outcome	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
<b>Year 1</b>							
Parenting knowledge	33.99	3.73	67	33.05	4.17	71	0.24 (-0.10, 0.57)
Total solutions	18.91	2.85	67	17.29	3.17	71	0.53 (0.19, 0.87)
Care solutions	5.2	1.81	67	4.43	1.87	71	0.42 (0.08, 0.75)
Punishing solutions	0.52	0.56	67	0.59	0.84	71	-0.10 (-0.43, 0.24)
<b>Year 2</b>							
Parenting knowledge	34.59	3.63	108	32.97	4.08	109	0.42 (0.15, 0.69)
Total solutions	18.85	3.43	108	17.52	3.53	109	0.38 (0.11, 0.65)
Care solutions	5.59	1.8	108	5.03	1.82	109	0.31 (0.04, 0.58)
Punishing solutions	0.8	0.7	108	0.91	0.88	109	-0.14 (-0.40, 0.13)

#### 5.4.4.2 Choices and Changes programme

One study (Wackett & Evans, 2000) examined the effects of the Choices and Changes programme, which aimed to improve young people's sexual health knowledge, motivation, personal insight and skills.

#### Quality Assessment

Wackett and Evans (2000) used a UBA design to examine the effects of the Choices and Changes programme. The authors reported limited information on the intervention and control groups, and no details of baseline measurements were reported. Overall the design of the study was limited and was assessed as a 'UBA -' for internal consistency.

#### Findings

Few analyses were conducted on the data, however proportions responding positively to the intervention were tabulated and pooled results examined (Wackett & Evans, 2000; UBA -). Findings showed that participants' responses for assertiveness skills were high at pre-test (70.9%) and remained similar at follow-up (between 70.7% and 66.3%). Views of supporting environments (43.8%) improved slightly at post-test and follow-up times (47.2%, 50.0% and 56.3% respectively). Pooled results showed an improvement in knowledge regarding, for example, fertility and anatomy (from 58.8% pre-test to 65.6% at final follow-up). Similarly, young people showed stronger positive views regarding the importance of the life programme for themselves (from 69.9% to 77.4%) and their peers (from 68.4% to 77.1%).

Participants also reported stronger positive views on the importance of setting boundaries (from 78.7% to 88.2%); the influence of the media on young people's body image and sporting performance (from 44.8% to 51.2%); and (limited to grade 7 only) their views that it is important for young people to discuss and set sexual limits when dating (from 52.2% to 69.8%). Further results indicated a small decrease in self efficacy at final follow-up (from 70.9% to 66.3%).

#### **5.4.5 Summary and evidence statements**

A total of seven programmes were identified that examined primary school-based sex and relationship interventions. The programmes identified included a variety of intervention approaches including abstinence-based approaches, HIV/AIDS prevention, parenting and care-giving, and sexual health education.

##### **5.4.5.1 Knowledge and understanding**

Five programmes reported on the impact on participants' knowledge and understanding. Young people participating in the SCW programme (Spear et al., 1997; CBA -; Denny et al., 1999; Denny & Young, 2006; both NRCT -) reported improved knowledge relating to the abstinence-based curriculum at immediate post-test and at 18 months follow-up. Two HIV prevention programmes (Gaskins et al., 2002; UBA -; Schonfeld et al., 1995; RCT +) reported improvements in knowledge acquisition, however the findings of the study carried out by Gaskins and colleagues (2002; UBA -) were inconsistent and insufficient to evaluate in light of the poor quality of the study. Masterpasqua and colleagues (1992; NRCT -) reported improvements in the intervention group for parenting knowledge, whilst Wackett & Evans (2000; UBA -) reported marginal improvements in sexual health knowledge. However, both these studies were poorly designed.

##### **5.4.5.2 Attitudes and values**

Overall, four programmes reported outcomes relating to attitudes and values. In a programme designed to prevent teenage pregnancy (Abel & Greco, 2008; UBA -), participants reported an increase in feelings that they mattered to their parents, and increased self-efficacy and behavioural intentions towards abstinence. Participants in the SCW programme reported no difference in attitudes or values at post-test (Spear et al., 1997; CBA -; Denny et al., 1999; NRCT -) or at follow-up (Denny & Young, 2006; NRCT -). Pick and colleagues (2007; NRCT +) reported that the effects of their programme resulted in improved attitudes towards communication at one year follow-up. Wackett and Evans, (2000; UBA -) showed that participants reported increased attitudes and values on the importance of the programme, views of the media and communicating about sex. These results were maintained at follow-up.

### **5.4.5.3 Personal and social skills**

Personal and social skills outcomes were reported in five programmes. Participants in the FAME programme (Abel & Greco, 2008; UBA -) reported significant increases in personal and social skills including improved communication with their parents. Gaskins and colleagues (2002; UBA -) reported that participants in an HIV/AIDS awareness education programme showed significant increases in perceived ease of socialising with HIV positive people. Pooled results from the Choices and Changes programme (Wackett & Evans, 2000; UBA -) showed no difference in assertiveness skills at follow-up. Participants in the SCW programme reported greater levels of self-efficacy, but no difference in levels of decision-making at follow-up (Denny et al., 1999; Denny & Young, 2006; both NRCT -). Pick and colleagues (2007; RCT +) reported that the effects of their programme resulted in increased communication with parents at one year follow-up.

### **5.4.5.4 Health and social outcomes related to alcohol and sexual health**

Health and social outcomes were examined for the SCW programme (Denny et al., 1999; Denny & Young, 2006; both NRCT -). Findings showed that there was no difference between the intervention and control groups for behavioural intentions. However, at 18 months follow-up, the intervention group was less likely to report sexual activity in the past 30 days in comparison with the control group (Denny & Young, 2006; NRCT -).

**Evidence statement 4**

- 4(a) There is weak evidence from two NRCTs<sup>1</sup> to suggest that an abstinence education programme that targeted children aged 10-12 years can improve sexual health knowledge, but the long term impact on sexual behaviours is less clear. This evidence may be directly applicable to PSHE delivery in primary schools focusing on SRE and alcohol education because the curriculum topic and content of this programme are relevant.
- 4(b) There is moderate evidence from one RCT<sup>2</sup> to suggest that SRE programmes targeting communication, such as I Want to, I Can...Prevent HIV/AIDS, can improve parent and child communication about sexual health. This evidence may be directly applicable to the UK because the curriculum topic and content of these programmes are relevant to PSHE delivery in primary schools focusing on SRE and alcohol education.
- 4(c) There is inconsistent and insufficient evidence from two NRCTs, one CBA study and two UBA studies<sup>3</sup> to determine the effectiveness of SRE programmes on attitudes and values relating to sexual health.

<sup>1</sup> Denny et al., 1999; Denny and Young 2006 (both NRCT -)

<sup>2</sup> Pick et al., 2007 (RCT +)

<sup>3</sup> Abel and Greco 2008 (UBA -); Spear et al., 1997 (CBA -); Denny et al., 1999; Denny and Young 2006 (both NRCT -); Wackett and Evans 2000 (UBA -)

**Table 5.31. Sex and relationships education: Abstinence-based programmes**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Abel & Greco, 2008 FAME (Family Action Model for Empowerment)	UBA -	USA 5 <sup>th</sup> -9 <sup>th</sup> grade N=123 (intervention)	PT	>20% loss to follow-up	Significant changes in attitudes at PT.
<b>Sex Can Wait</b>					
Spear et al., 1997	CBA -	USA 5 <sup>th</sup> -6 <sup>th</sup> grade N=287	PT	Not reported	Intervention group had significantly higher knowledge scores, attitudes towards abstinence and more life skill factors.
Denny et al., 1999	NRCT -	USA 5 <sup>th</sup> -6 <sup>th</sup> grade N=301	PT	Not reported	The intervention group reported significantly higher knowledge scores, desirable attitudes and attitudes towards abstinence.
Denny et al., 2006	NRCT -	USA 5 <sup>th</sup> -6 <sup>th</sup> grade N=376	18 months	196 (52%) at 18 month follow up	Intervention students had significantly higher knowledge scores than control students, and were significantly less likely to have had sexual intercourse in the past 30 days. No significant difference between groups for self-efficacy, decision-making, attitudes, hopefulness, or behavioural outcomes: intention to remain abstinent, or whether ever had sexual intercourse.

**Table 5.32. Sex and relationships education: AIDS/HIV education programmes**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Gaskins et al., 2002 An HIV/AIDS Awareness Education Programme	UBA -	USA Kindergarten-5 <sup>th</sup> grade N=339	PT	358 (one class was not available at pre-test)	Kindergarten and 1 <sup>st</sup> grade students reported a significant decrease in knowledge scores, but, 2 <sup>nd</sup> -5 <sup>th</sup> grade students reported significant increases. Increased reports of perceived comfort at being around an HIV positive person for all grades.
Pick et al., 2007 I Want to, I Can....Prevent HIV/AIDS	RCT +	Mexico 4 <sup>th</sup> grade N=1581	1 year	Only those completing pre- and post-test were reported	Intervention group showed significant improvements in communication attitudes, self-efficacy, intentions, behaviour, and perceived socio-cultural norms relating to communication. At PT the intervention group were also more likely to discuss behaviours on taboo, romantic and unpleasant topics.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Schonfeld et al., 1995 AIDS Education Programme	RCT +	USA Kindergarten-6 <sup>th</sup> grade N=189	2.5 months	166 (88%)	Intervention group had significantly higher scores for the causality and prevention of AIDS and colds and causality of cancer, and mentioned significantly more correct causes of AIDS. No difference in knowledge of cancer prevention was identified after the intervention.

**Table 5.33. Sex and relationships education: Other in-school approaches**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Masterpasqua et al., 1992 Learning about Parenting/Learning to Care	NRCT -	USA 5 <sup>th</sup> -6 <sup>th</sup> grade N= 217	PT	Not reported	Significant improvements in the intervention group's parenting knowledge, including the number of total solutions and positive solutions to parent-child problems they were able to provide in comparison to the control group.
Wackett & Evans, 2000 Choices and Changes	UBA -	Canada 4 <sup>th</sup> -7 <sup>th</sup> grade N=938	PT, 1 and 3-4 months	10-15% loss to follow-up	Increases in sexual health knowledge, but no change in assertiveness skills or supportive environments. The importance of when dating students to discuss sexual limits at the outset of a relationship reported a high response at follow-up.

## 5.5 General health education programmes

### 5.5.1 Overview of evidence identified

Three studies (Andrews, 1992; Utley et al., 2001; Young et al., 1997) were identified that examined general health education programmes which included modules or topics related to alcohol education or SRE.

**Table 5.34. Programme components: General health education programmes**

Programme	Reference(s)	Programme components
Growing Healthy Curriculum	Andrews, 1992	<ul style="list-style-type: none"> <li>• School health curriculum for kindergarten to sixth grade</li> <li>• Length/intensity not reported</li> <li>• Delivered by teachers</li> </ul>
Peer tutoring	Utley et al., 2001	<ul style="list-style-type: none"> <li>• Health education curriculum based on peer tutoring programme for students with developmental disabilities</li> <li>• 3 sessions a week for 3 weeks</li> <li>• Taught by teachers and peers</li> </ul>
Contemporary Health Series	Young et al., 1997	<ul style="list-style-type: none"> <li>• Life skills modules from a health education curriculum</li> <li>• 16 modules in total; 3 compulsory life skills modules and 13 optional modules</li> <li>• Taught by teachers and counsellors</li> </ul>

### 5.5.2 General health education programmes

#### 5.5.2.1 Growing Healthy Curriculum

Andrews (1992) examined the impact of the Growing Healthy Curriculum. The programme focused on improving students' attitudes towards good health practices and behaviour. The programme was delivered in kindergarten to sixth grade but no further details about the programme were reported.

#### **Quality assessment**

Although a control group was utilised in the evaluation of the Growing Healthy Curriculum (Andrews, 1992), the study methodology was poorly reported. There were few details describing the intervention and the number of participants in the study was not reported although it was reported that the study included students from five school districts. Overall the study was rated 'CBA -' for internal consistency.

#### **Findings**

There was little evidence to suggest that the Growing Healthy Curriculum programme (Andrews, 1992; CBA -) had an impact on attitudes to drinking, although students who received the programme from kindergarten to sixth grade were significantly less likely to think they would drink as adults in the fifth and ninth grades ( $p < 0.05$ ). There were no differences between groups for the percentage of students who had tried alcohol. However,

students who received the Growing Healthy curriculum from kindergarten to sixth grade were significantly more likely to drink on a regular basis in third, fifth, sixth and ninth grades ( $p < 0.05$ ) than control students.

#### **5.5.2.2 Peer tutoring for students with developmental disabilities**

Utley and colleagues (2001) examined the effectiveness of class wide peer tutoring (CWPT) in a health education curriculum for children aged 7-9 years with developmental disabilities. Further information was not reported about the nature of the students' disabilities but intelligence test scores in the sample ranged from 52 to 57. The units of the curriculum covered the following topics: body parts and their functions; poisons; drugs and their effects; and dangerous situations. Prior to implementation, students and teachers participated in training sessions for CWPT, after which, CWPT was delivered for 30-minutes for three days per week. After five weeks, peer tutoring was withdrawn for two weeks and traditional teaching methods used followed by three more weeks of peer tutoring.

#### **Quality assessment**

The study by Utley and colleagues (2001) was the only study identified in the literature searches that conducted research in a sample with disabilities. Disability research has historically relied on small samples and uncontrolled designs. Researchers may face difficulties in finding research participants and it may not be possible to find an adequately matched comparison groups (Odom et al., 2007). However this study was based on a particularly small sample size and consequently tests of significance were not reported. The authors described the study as 'a BAB reversal design' (i.e. intervention was delivered [B], then withdrawn [A], and then reinstated [B]), and a control group was not used for comparison, rather students' outcomes were compared over the period when CWPT was and was not in place. The study was rated 'UBA -' for internal consistency.

#### **Findings**

Utley and colleagues (2001; UBA -) reported that students had an increase in knowledge on all of the areas covered by the curriculum.

#### **5.5.2.3 Contemporary Health Series**

Young and colleagues (1997) examined the effects of selected modules from the Contemporary Health Series for sixth grade students, which consisted of 16 modules focusing on health and life skills. Following training, teachers implemented three life skills modules which focused on skills development (the remaining 13 modules were optional).

### **Quality assessment**

The design of the study used to evaluate the Contemporary Health Series (Young et al., 1997) was not clearly described but was judged to be a CBA, as allocation to intervention and control groups was not described as experimental. As the study methodology was poorly reported the study was rated ‘-’ for internal consistency.

### **Findings**

Compared with the control group, students who received the Contemporary Health Series (Young et al., 1997; CBA -) reported a greater positive change in their school and home self-esteem ( $p < 0.05$  and  $p < 0.001$ , respectively), relationship/communication characteristics ( $p < 0.001$ ) and decision-making skills ( $p < 0.05$ ). Intervention students also reported less positive attitudes toward the use of alcohol than control students, and showed positive changes on the measures of practices and perceptions of peers' and parents' norms regarding drug use and other illegal drugs (all  $p < 0.001$ ).

### **5.5.3 Summary and evidence statements**

Three studies examined general health education programmes that included modules or topics related to alcohol education and SRE. One study examined a programme for children with developmental disabilities.

#### **5.5.3.1 Knowledge and understandings**

One study of an intervention that targeted general health behaviours examined the impact on knowledge. A peer tutoring intervention for children with developmental disabilities (Utley et al., 2001; UBA -) resulted in increases in knowledge about the body and its functions, and the effects of drugs. However, these findings were based on a small sample size ( $n=5$ ) so should be interpreted with caution.

#### **5.5.3.2 Attitudes and values**

The impact on attitudes and values was examined in two general health education approaches. There were no effects of the Growing Healthy Curriculum for kindergarten to sixth grade students on attitudes towards alcohol use (Andrews, 1992; CBA -). The life skills components of a general health curriculum were found to have had an impact on attitudes to alcohol at post-test, with intervention students reporting less positive attitudes (Young et al., 1997; CBA -).

#### **5.5.3.3 Personal and social skills**

One study (Young et al., 1997; CBA -) examined programme impact on personal and social skills. The life skills components of a general health curriculum were found to have resulted

in positive changes in self esteem and in decision making skills among intervention students at post-test.

#### **5.5.3.4 Alcohol and sexual health**

No reported studies reported this outcome

#### **Evidence statement 5**

5(b) There is insufficient and inconsistent evidence from two CBA studies and one UBA study<sup>1</sup> to determine the effects of general health education programmes that targeted primary school age children on outcomes related to alcohol use and sexual health.

<sup>1</sup> Andrews 1992 (CBA -); Young et al., 1997 (CBA -); Utley et al., 2001 (UBA -)

**Table 5.35. General health education programmes**

Author (Year)	Design	Population	Follow-up	Analysed	Findings
Andrews, 1992 Growing Healthy Curriculum	CBA -	USA Kindergarten 6 <sup>th</sup> grade N= NR	Tested every year 6 <sup>th</sup> -12 <sup>th</sup> grade	NR	No evidence that the programme had any impact on alcohol use or behaviours.
Utlely et al., 2001 Peer tutoring	UBA -	USA 7-9 years N=5	PT	100%	Results showed an increase in knowledge for all areas covered in the intervention: body parts, body functions, poisons, drugs and their effects, dangerous situations.
Young et al., 1997 Contemporary Health Series	CBA -	USA 6 <sup>th</sup> grade N=328	PT	NR	Intervention resulted in a positive change compared with control group in pupils' school and home self-esteem, relationship/communication characteristics, decision-making skills, and attitudes toward the use of alcohol.

## 5.6 Social development programmes

### 5.6.1 Overview of evidence identified

A total of 16 studies were identified that examined seven programmes focused on social development interventions designed to positively influence later behaviour. Six programmes combined school and family-based components while one programme was school-based only. Six programmes looked at outcomes related to alcohol or drugs and one programme investigated outcomes related to both substance misuse and sexual health.

### 5.6.2 Programmes with a school-based component

Three studies (Kellam et al., 2008; Poduska et al., 2008; van Lier et al., 2009) were identified that examined one social development programme, the Good Behavior Game, which included school-based components only.

**Table 5.36. Summary of programme content: Single component social development programmes**

Programme	Reference(s)	Programme content
Good Behavior Game	Kellam et al., 2008; Poduska et al., 2008; van Lier et al., 2009	<ul style="list-style-type: none"> <li>• 2 year programme</li> <li>• Classroom based game; children rewarded for adhering to class rules</li> <li>• Children assigned to groups and encouraged to manage their own and team mates behaviour.</li> </ul>

#### 5.6.2.1 Good Behavior Game

Three articles (Kellam et al., 2008; Poduska et al., 2008; van Lier et al., 2009) examined the effects of the Good Behavior Game (GBG), which aimed to promote pro social behaviours whilst reducing disruptive and aggressive behaviour in the classroom over two years in primary school aged children. Two articles (Kellam et al., 2008; Poduska et al., 2008) reported on the effects of the programme at age 19-21, in a cohort of students from schools in Baltimore, USA, who received the programme in the first and second grades (6-8 years old). van Lier and colleagues (2009) examined the impact of the programme on young adolescent outcomes in a sample of 7-year old children from elementary schools in Rotterdam and Amsterdam, the Netherlands. The GBG involved implementing teacher and student chosen rules and rewarding children who did not violate the rules.

#### Quality assessment

Both studies of the GBG were cluster RCTs and were rated ‘++’ for quality. Both studies detailed well-described interventions, significant follow up times, intention to treat analysis and well reported outcomes. However although well reported, neither study fully detailed the methods used to randomly assign clusters and only the Baltimore-based study (Kellam et al., 2008; Poduska et al., 2008) adequately described the source population.

## Findings

Kellam and colleagues (2008; RCT ++) reported a reduction in lifetime alcohol use/dependence disorders in those who participated in the Good Behavior Game; intervention participants reported marginally significantly fewer alcohol use/dependence disorders in young adulthood compared to internal control classes ( $p=0.08$ ) and significantly fewer compared to external classes ( $p<0.05$ ). A marginally significant reduction in the odds of an alcohol diagnosis (OR 0.50; 95% CI 0.25, 0.99) was also reported, implying a 50% reduction in the odds of a lifetime alcohol abuse disorder for those in the intervention group. In young adulthood (Poduska et al., 2008; RCT ++), rates of any service use were significantly lower for males in the intervention group compared to internal controls in both cohorts ( $p<0.05$ ). Rates of drug treatment service use did not significantly differ between groups. In cohort two significantly less males in the intervention group accessed mental or medical health services than internal controls ( $p<0.01$ ).

In the Dutch study, van Lier and colleagues (2009; RCT ++) found no significant effect of participation in the Good Behavior Game on past month or past year alcohol use at three or six year follow up. Over half (54%) of children reported consuming alcohol between the ages of 10-15. However, the authors found that compared to the control group, the rate of growth of alcohol use between three and six years following participation in the intervention was significantly reduced ( $p<0.05$ ).

### 5.6.3 Programmes combining school and family-based components

Twelve studies were identified that examined six social development programmes, which combined school and family-based components.

**Table 5.37. Summary of programme content: Multi-component social development programmes**

Programme	Reference(s)	Programme content
Seattle Social Development Project	Hawkins et al., 1999; 2005 ; Lonczak et al., 2002 ; O'Donnell et al., 1995	<ul style="list-style-type: none"> <li>• 5 or 2 year programme versions</li> <li>• Classroom instruction and management</li> <li>• Child skill development</li> <li>• Parent intervention</li> </ul>
Raising Healthy Children	Brown et al., 2005; Catalano et al., 2003	<ul style="list-style-type: none"> <li>• Teacher and staff development workshops</li> <li>• After-school tutoring sessions and study clubs (Grades 4-6),</li> <li>• Parenting workshops and in-home services for selected families (Grades 1-8).</li> </ul>
Linking the Interests of Families and Teachers	Eddy et al., 2003; Reid et al., 1999	<ul style="list-style-type: none"> <li>• Classroom-based programme (20 lessons)</li> <li>• Playground behaviour intervention</li> <li>• Parent management training programme and weekly newsletters</li> <li>• Ongoing access to a classroom-based telephone answering machine</li> </ul>

Programme	Reference(s)	Programme content
Developmental drug prevention programmes	Furr-Holden et al., 2004; Ialongo et al., 1999	<ul style="list-style-type: none"> <li>Classroom centred intervention: curriculum enhancements, classroom behaviour management practices.</li> <li>Family School Partnership: staff trained in parent-school communication, weekly home-school activities, parent workshops</li> </ul>
Child Development Project	Battistich et al., 2000; 2004	<ul style="list-style-type: none"> <li>3 year classroom curriculum in the upper 3 grades of elementary school</li> <li>School wide activities</li> <li>Family involvement activities at home</li> </ul>
Positive Action Program	Flay et al., 2003	<ul style="list-style-type: none"> <li>Classroom curriculum (140 lessons per grade)</li> <li>School wide climate programme</li> <li>Parental and community involvement</li> </ul>

### 5.6.3.1 Seattle Social Development Project

Four articles reported on evaluations of the Seattle Social Development Project (SSDP) (Hawkins et al., 1999, 2005; Lonczak et al., 2002; O'Donnell et al., 1995). The SSDP was delivered to students in the first to sixth grades (full intervention) or fifth and sixth grade only (late intervention), and included modified teaching practices, child social skills training, and developmentally appropriate parent training (O'Donnell et al., 1995). In the fifth and sixth grades, parents were offered participation in Preparing for the Drug Free Years, a five session programme designed to reduce a child's risk for drug use (Hawkins et al., 1999). Both studies were part of a larger ongoing longitudinal study. O'Donnell and colleagues (1995) reported outcomes for students who had received the full intervention programme at the beginning of fifth grade and at the end of sixth grade. Hawkins and colleagues (1999) reported 6-year follow-up data for all fifth grade students assigned to the full and late intervention or control groups. Hawkins and colleagues (2005) reported follow-up data relating to mental health, crime and substance use at age 21 for those who received the full intervention and the late intervention. Lonczak and colleagues (2002) reported outcomes at age 21 for sexual behaviour and associated outcomes for the full intervention group.

#### Quality assessment

Evaluation of the SSDP was based on a quasi-experimental design (NRCT), with participants non-randomly assigned to intervention or control groups. The study by O'Donnell and colleagues (1995) appeared to have been adequately conducted. The intervention and comparison conditions were well described and the authors tested for attrition biases within the sample. The study was coded 'NRCT +'. The study by Hawkins and colleagues (1999) was also well reported and judged to have been adequately conducted. The study experienced a low rate of attrition, with 93% of participants followed up at 6 years, and was rated 'NRCT +'. Two studies (Lonczak et al., 2002; Hawkins et al., 2005) were follow-up studies of Hawkins and colleagues (1999) so their quality assessment

rating was based on this study. In these two studies, with follow-up of nine years, over 90% of the original sample was retained in the analyses.

### **Findings**

O'Donnell and colleagues (1995; NRCT +) found that at the end of sixth grade there were no differences between intervention and control students on a measure of lifetime alcohol use in a subsample of low income participants (Males: mean difference 0.01 95% CI -0.25, 0.27; Females: mean difference -0.21 95% CI -0.45, 0.03).

At the 6-year follow-up when students were aged 18, Hawkins and colleagues (1999; NRCT +) reported that significant differences were found between control and full SSDP intervention students on alcohol use measures. Although there was no differences in lifetime alcohol use, fewer full intervention students than control students reported having drunk alcohol 10 or more times in the past year (RR 0.61 95% CI 0.39, 0.95;  $p < 0.05$ ). Full intervention students were also significantly less likely than control students to have engaged in sexual intercourse ( $p < 0.05$ ) and were less likely to have had multiple partners by the age of 18 ( $p < 0.05$ ). More control students had been pregnant or gotten someone pregnant, although this finding only approached statistical significance ( $p = 0.06$ ), and there was no difference between the full intervention and control in the number of participants that had fathered or had had a baby. At age 18, students who had received the full SSDP intervention reported significantly stronger commitment ( $p < 0.01$ ) and attachment to school ( $p < 0.05$ ) compared to control students. The authors did not find any significant effects of the late intervention programme. Effect sizes are presented in Table 5.38,

**Table 5.38. SSDP: Intervention effects at age 18 (Hawkins et al., 1999; NRCT +)**

Outcome	Comparison	Prevalence difference (95% CI)
Lifetime alcohol use	Full intervention vs. control	-1.00 (-10.45, 8.45)
	Late intervention vs. control	-0.80 (-9.05, 7.45)
Lifetime sexually active	Full intervention vs. control	-10.90 (-19.80, -2.00)
	Late intervention vs. control	-6.90 (-14.41, 0.61)
Lifetime multiple sex partners	Full intervention vs. control	-11.80 (-22.31, -1.29)
	Late intervention vs. control	-2.40 (-11.55, 6.75)
Lifetime been pregnant or gotten a woman pregnant	Full intervention vs. control	-9.30 (-17.94, -0.66)
	Late intervention vs. control	1.00 (-7.35, 9.35)
Lifetime had or fathered a baby	Full intervention vs. control	-5.20 (-12.00, 1.60)
	Late intervention vs. control	-0.40 (-7.01, 6.21)

At aged 21 (Hawkins et al., 2005; NRCT +), there were no significant differences between the full and late intervention and control groups for past month alcohol use. Significant outcomes reported for the full-intervention group in comparison to the control groups

included better regulation of emotions ( $p<0.01$ ), fewer symptoms of social phobias ( $p<0.05$ ), fewer suicidal thoughts ( $p<0.01$ ), lower likelihood of being involved in a wide variety of crime in the past year or having a lifetime court record ( $p<0.05$ ) and a higher likelihood of graduating high school ( $p<0.01$ ). The vast majority of outcomes for the late-intervention group were non-significant compared to the control group. Effect sizes were calculated and are presented in Table 5.39.

**Table 5.39. SSDP: Intervention effects at age 21 (Hawkins et al., 2005; NRCT +)**

Outcome	Comparison	Standardised mean difference (95% CI)
High school graduate	Full intervention vs. control	0.10 (0.02, 0.18)
	Late intervention vs. control	0.04 (-0.04, 0.12)
Poor emotional regulation	Full intervention vs. control	-0.15 (-0.25, -0.05)
	Late intervention vs. control	-0.03 (-0.11, 0.05)
Anxiety symptom count	Full intervention vs. control	-0.35 (-0.80, 0.10)
	Late intervention vs. control	-0.06 (-0.45, 0.33)
Social phobia symptom count	Full intervention vs. control	-0.30 (-0.54, -0.06)
	Late intervention vs. control	-0.06 (-0.28, 0.16)
Depressive symptom count	Full intervention vs. control	-0.63 (-1.34, 0.08)
	Late intervention vs. control	-0.35 (-0.96, 0.26)
Suicide thoughts	Full intervention vs. control	-0.30 (-0.48, -0.12)
	Late intervention vs. control	-0.25 (-0.41, -0.09)
Anxiety diagnostic criteria met	Full intervention vs. control	-0.02 (-0.08, 0.04)
	Late intervention vs. control	-0.01 (-0.05, 0.03)
Social phobia diagnostic criteria met	Full intervention vs. control	-0.06 (-0.14, 0.02)
	Late intervention vs. control	-0.01 (-0.09, 0.07)
Depressive diagnostic criteria met	Full intervention vs. control	-0.08 (-0.18, 0.02)
	Late intervention vs. control	-0.08 (-0.16, -0.00)
Any substance use in past month	Full intervention vs. control	-0.08 (-0.16, -0.00)
	Late intervention vs. control	-0.06 (-0.14, 0.02)

Lonczak and colleagues (2002; NRCT +) also examined the effects of the SSDP at age 21 years. Compared to control participants, participants in the full intervention group had, on average, their first sexual experience significantly later ( $p<0.05$ ) and significantly fewer lifetime sexual partners ( $p<0.05$ ). Participants in the full intervention group were significantly more likely to report condom use during last intercourse than those in the control group ( $p<0.05$ ). There were no effects of the intervention on past-year condom use frequency among single participants, condom use during first intercourse or STD diagnosis. Females in the full intervention group were significantly less likely to have become pregnant ( $p<0.05$ ) or to have had a baby ( $p<0.05$ ) by age 21 years than females in the control group, but there were no significant differences between the number of intervention and control males who

reported causing a pregnancy or birth. Effect sizes were calculated for these outcomes are presented in Table 5.40 and Table 5.41.

**Table 5.40. SSDP: Intervention effects at age 21 - dichotomous (Lonczak et al., 2002; NRCT +)**

Outcome	Intervention		Control		OR (95% CI)
	Events	Total	Events	Total	
Condom use during first intercourse	96	131	127	192	1.42 (0.87, 2.3)
Condom use during last intercourse	53	89	68	154	1.88 (1.11, 3.19)
Lifetime STD	19	144	37	205	0.67 (0.38, 1.27)
Lifetime pregnancy	27	71	55	99	0.50 (0.27, 0.93)
Lifetime birth	16	71	40	99	0.42 (0.21, 0.84)
Causing pregnancy	25	73	38	106	0.95 (0.51, 1.78)
Fathering a child	17	73	21	106	1.22 (0.59, 2.53)

**Table 5.41. SSDP: Intervention effects at age 21 - continuous (Lonczak et al., 2002; NRCT +)**

Outcome	Intervention			Control			Standardised mean difference (95% CI)
	Mean	SD	Total	Mean	SD	Total	
Age at first sexual experience	16.32	2.34	131	15.75	2.35	188	0.24 (0.02, 0.47)
Frequency of condom use	3.28	1.37	81	3.12	1.45	142	0.11 (-0.16, 0.39)
No of lifetime sexual partners	3.58	2.2	144	4.13	2.05	205	-0.26 (-0.47, -0.05)

### 5.6.3.2 Raising Healthy Children

Two articles (Brown et al., 2005; Catalano et al., 2003) evaluated the effectiveness of the Raising Healthy Children (RHC) programme, a multicomponent programme aimed at reducing adolescent alcohol, cannabis and cigarette use. The programme consisted of: (1) school intervention strategies (including a series of teacher and staff development workshops teaching proactive classroom management techniques; cooperative learning methods and strategies to promote student motivation, participation, reading, and interpersonal problem solving skills); (2) student intervention strategies delivered during grades 4-6, with booster sessions throughout middle and high school years; (3) family intervention strategies (including parenting workshops and in home services, delivered in grades 1-8). Data were reported for students who participated in the programme as first and second grade students and were followed in the first and second grades (Catalano et al., 2003) and from sixth through to tenth grade (Brown et al., 2005).

### **Quality assessment**

Whilst the RCT of the RHC programme (Brown et al., 2005; Catalano et al., 2003) generally appeared to have been well conducted, full details of the methods of randomisation and of the source population were not reported. As a result of these limitations to the study the RCT was rated '+’.

### **Findings**

There was no significant difference between students who received the RHC programme and control students in terms of change in alcohol use over 5 years (Brown et al., 2005). However, there was a significant intervention effect on alcohol use frequency. There was a significantly greater rate of linear decline in alcohol frequency in the intervention group during Grades 8-10 relative to the control group (adjusted mean frequency ES = 0.40;  $p < 0.05$ ).

Catalano and colleagues (2003) reported the effects of the intervention on teacher and parent rated academic performance and social behaviour. In comparison to the control group, teachers rated intervention students as having significantly higher academic performance and commitment to school ( $p < 0.05$ ) and significantly higher social competency ( $p < 0.01$ ) with increasing growth rate ( $p < 0.01$ ) and significantly lower levels of anti social behaviour ( $p < 0.05$ ) with decreasing growth rate. When controlled for gender, income and baseline scores, parent reported data indicated intervention students had higher academic performance and school commitment ( $p < 0.05$ ) than control students.

#### **5.6.3.3 Linking the Interests of Families and Teachers (LIFT)**

Two articles (Eddy et al., 2003; Reid et al., 1999) evaluated the effectiveness of the Linking the Interests of Families and Teachers (LIFT) prevention programme. The aim of the programme was to tackle conduct problems including the use of alcohol and other substances. The programme consisted of a 10-week classroom-based programme delivered to first and fifth grade students, a playground behaviour intervention, a behaviour management programme for parents and weekly newsletters, and ongoing access to a classroom-based telephone answering machine. Reid and colleagues (1999) evaluated the study following its completion and Eddy and colleagues (2003) evaluated the programme's effects on fifth graders four years on.

### **Quality assessment**

The study was not well reported (RCT -). Few details were reported regarding the method of randomisation. In addition, intervention and control participants were not matched at

baseline. Intervention students were significantly younger and less likely to be from an ethnic minority.

### **Findings**

Eddy and colleagues (2003; RCT -) reported that significant differences were found in hazard rates between the LIFT intervention schools and control schools. Self-reports of patterned alcohol use during middle school (alcohol use at least once every 2 or 3 months) indicated that youth in the control group were 1.49 times more likely to report patterned alcohol use during middle school than youth in the intervention group. Reid and colleagues (1999), reporting on immediate outcomes from the intervention, found that teacher rated social skills were significantly higher for children who received the intervention group than in the control group.

#### **5.6.3.4 Developmental drug prevention programme**

Two studies (Furr-Holden et al., 2004, Ialongo et al., 1999) examined the effectiveness of a programme that incorporated two developmental drug prevention programmes, which targeted problem behaviours in primary school aged children. The two programmes examined were a classroom-centred intervention that combined a classroom-based curriculum with teacher training and a family-school partnership intervention that emphasised parent-school communication and partnership building through workshops and communication activities. Ialongo and colleagues (1999) followed up students at one year and Furr-Holden and colleagues (2004) followed up students five, six and seven years after the intervention between the ages of 11 and 14 years.

### **Quality assessment**

First grade classrooms in nine schools were randomly assigned using computer generated methods to the intervention or control group. Other study methodology aspects were clearly reported such as the level of attrition, which was relatively low over the long follow-up duration of the study, and details of the control group. The study by Ialongo and colleagues (1999) was rated 'RCT ++' for internal consistency. However in the study by Furr-Holden and colleagues (2004), it was clear whether the intervention and control groups were comparable at baseline and the study was coded 'RCT +'.

### **Findings**

At one year follow up, it was reported that those who received the family-school partnership intervention demonstrated significantly fewer problem behaviours than the control group and those who received the classroom curriculum were rated as displaying fewer problem behaviours than boys in the control group (Ialongo et al., 1999; RCT ++). Improvements

were reported for boys only for reading in the classroom curriculum and family-school partnership groups and for maths in the classroom curriculum group.

Furr-Holden and colleagues (2004; RCT +) reported that over three years of assessment in grades 6-8 (age 11-14 years), the percentage of students reporting unsupervised alcohol use did not differ significantly across the intervention and control groups as shown in Table 5.42, and was lowest in the control group (29% of control participants vs. 34% and 37% of classroom-centred intervention participants and family-school partnership participants, respectively).

**Table 5.42. Developmental drug prevention programme: Unsupervised alcohol use (Furr-Holden et al., 2004)**

Comparison	Intervention		Control		Risk ratio (95% CI)*
	Events	Total	Event	Total	
Classroom-centred intervention vs. control	65	192	52	178	0.95 (0.58, 1.54)
Family-school partnership vs. control	73	196	52	178	1.07 (0.67, 1.71)

\*Adjusted for age, sex, family type, teacher-rated total problems, parent management, and family history of drug, alcohol, or tobacco use

### 5.6.3.5 Positive Action Program

One study reported on the long-term effectiveness of the Positive Action Program (Flay et al., 2003) that aimed to reduce problem behaviours and enhance school performance through a detailed curriculum consisting of over 140 lessons per grade through kindergarten to sixth grade, a school-climate programme and family involvement components. The study retrospectively examined the effects of the programme through the differences in middle and high schools classes by numbers of students who had or had not received the Positive Action Program in previous years.

#### Quality assessment

This case-control study (CSS) was rated 'CSS +' for quality. The study was reasonably well reported with follow up at four years. The overall sample was not matched on baselines, but data was provided for a matched sample. Little description was provided of the source population and selection.

#### Findings

Flay and colleagues (2003; CCS +) reported significantly fewer problem behaviours in middle and high schools with higher numbers of Positive Action graduates. Schools with over 80% Positive Action graduates were significantly less likely to misuse substances in middle schools ( $p < 0.01$ ) and high schools ( $p < 0.05$ ). There appeared to be educational benefits of the programme with students at elementary schools who received Positive Action scoring 45% better on the Florida Reading Test and 4.5% better on the Florida

Comprehensive Aptitude Test. Middle schools with higher number of Positive Action graduates scored better for reading and maths.

### **5.6.3.6 Child Development Project**

Two studies reported on the effects of the Child Development Project (Battistich et al., 2000; 2004); a programme that aimed to reduce drug use and other problem behaviours through a three year curriculum combined with school-wide activities involving families and activities at home involving both student and parents. The programme was carried out during the final three years of elementary school, and students were followed up post-intervention (Battistich et al., 2000) and during middle school (Battistich et al., 2004).

#### **Quality assessment**

The study adequately described allocation of schools, the intervention and details around outcomes from the programme. However, the programme was not implemented equally in schools and the study involved a different cohort of students in each year. Details around participant numbers and attrition rate were not adequately covered. Overall the study was rated 'NRCT +' for quality.

#### **Findings**

Following intervention (Battistich et al., 2000; NRCT +), alcohol use among programme students declined from baseline, whereas comparison students showed a small, but non-significant increase (mean difference 0.15;  $p < 0.10$ ). Intervention students' alcohol use in 'high change' schools declined over time, whereas control students increased their use (mean difference 0.18;  $p < 0.05$ ). In a follow-up study, Battistich and colleagues (2004; NRCT +) reported that intervention and comparison students did not differ with respect to alcohol use in middle school. Intervention students scored significantly higher than comparison students in self-efficacy ( $p < 0.01$ ) but not in terms of global self-esteem. Intervention students scored higher than comparison students for positive teacher relations ( $p < 0.05$ ) and liking for school ( $p < 0.05$ ). For sense of school community and task orientation towards learning, differences approached significance, but no differences were found for academic performance.

### **5.6.4 Summary and evidence statements**

In total, eight programmes that examined primary school-based social development interventions with outcomes relating to substance use or sex and relationships were identified. Interventions focused on the students' behaviour, social skills and values and outcomes for six studies included alcohol and sexual behaviour in adolescence or young adulthood.

#### **5.6.4.1 Knowledge and understanding**

None of the included studies reported this outcome.

#### **5.6.4.2 Attitudes and values**

Four programmes reported on outcomes relating to attitudes and values. Hawkins and colleagues (2005; NRCT +) reported a positive relationship between students who received the full SSDP intervention and high school graduation, and at follow-up aged 18, intervention students were more committed and attached to their school (Hawkins et al., 1999; NRCT +). Participation in the Raising Healthy Children programme was positively associated with teacher-rated academic performance and school commitment (Catalano et al., 2003; RCT +) while Battistich and colleagues (2004; NRCT +) reported that the Child Development Program effectively improved teacher relations and liking for school in comparison to controls, but found no effect on academic performance. The Positive Action Program was associated with positively impacting upon reading and maths performance at middle school (Flay et al., 2003; CCS +).

#### **5.6.4.3 Personal and social skills**

Of the seven programmes detailed here, six included outcomes relating to personal and social skills. In comparison to control students, at the age of 21 full-intervention group participants in the SSDP reported better regulation of emotions and fewer symptoms of social phobias (Hawkins et al., 2005; NRCT +). Teacher-rated levels of anti-social behaviour were found to be lower in students who had received the Raising Healthy Children intervention (Catalano et al., 2003; RCT +) and teacher-rated social skills were deemed to be higher in students who had been exposed to LIFT (Reid et al., 1999; RCT -) when compared to control groups. Jalongo and colleagues (1999; RCT +) found that one year following the Developmental Drug Prevention Programmes those who received the family-school partnership intervention or classroom curriculum demonstrated fewer problem behaviours than controls. Fewer problem behaviours were also reported by Flay and colleagues (2003; CSS +) in their evaluation of the Positive Action Program in middle and high schools with higher numbers of Positive Action graduates. Intervention students in the Child Development Project scored higher than controls in sense of efficacy and global self-esteem and had more positive teacher relations (Battistich et al., 2004; NRCT +).

#### **5.6.4.4 Health and social outcomes related to alcohol and sex and relationships**

Evaluation of six programmes included results relating to alcohol use and one of these six also included outcomes in relation to sexual health behaviour.

Following participation in the SSDP, at age 18 full-intervention students reported drinking on fewer occasions than control students (Hawkins et al., 1999; NRCT +) but at age 21 there

was no effect of the intervention on past month alcohol use (Hawkins et al., 2005; NRCT +). Two studies of the SSDP examined sexual health outcomes. At age 18 (Hawkins et al., 1999; NRCT +), the full intervention had positive impacts on sexual health outcomes including number of sexual partners and pregnancy. Lonczak and colleagues (2002; NRCT +) reported that at age 21, the same intervention impacted positively on age of first sexual experience, number of sexual partners, pregnancy, and condom use during last intercourse. A Dutch study of the Good Behaviour Game programme found that it positively impacted upon the rate of growth of alcohol use between 3 and 6 year follow up, but not on past year alcohol use at either time (van Lier et al., 2009; RCT ++). However, Kellam and colleagues (2008; RCT ++) reported that the Good Behaviour Game reduced lifetime alcohol use and dependence in intervention students in young adulthood. LIFT positively impacted upon frequency of alcohol use; participants in the control group were more likely to use alcohol once every 2 or 3 months during middle school than the intervention group (Eddy et al., 2003; RCT -). However, Furr-Holden and colleagues (2004; RCT +) found that in grades 6-8, the percentage of students reporting unsupervised alcohol use was not affected by exposure to the developmental drug prevention programmes. Raising Healthy Children did not reduce prevalence of alcohol use (Brown et al., 2005; RCT +), but did reduce frequency of use. Flay and colleagues (2003; CCS +) reported that participation in the Positive Action Program was associated with less drug use in middle school and high school, but did not specify any programme effects on alcohol that were independent of other drug use.

**Evidence statement 6**

- 6(a) There is moderate evidence from one RCT, three NRCTs and one CSS study<sup>1</sup> to suggest that programmes, which target social development and combine school and family-based components, may positively impact on attachment to school and academic performance. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisable beyond the populations studied.
- 6(b) There is moderate evidence from three RCTs, one NRCT and one CSS study<sup>2</sup> to suggest that programmes, which target social development and combine school and family-based components, may have a positive impact on problem behaviours and social skills. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisable beyond the populations studied.
- 6(c) There is moderate evidence from three NRCTs<sup>3</sup> to suggest that a social development programme, which combined school and family-based components, may have long term impacts on alcohol use and sexual behaviour in young adulthood. This evidence may only be partially applicable to the UK because these programmes were developed and evaluated in the USA, and the findings may not be generalisable beyond the populations studied.
- 6(d) There is strong evidence from three RCTs<sup>4</sup> to suggest that the Good Behavior Game, which targeted behaviours in the classroom, may impact on alcohol abuse and dependence in adulthood and slow the rate of alcohol use in adolescence. This evidence may be directly applicable to the UK because although the programme was developed and evaluated in the USA, it has been replicated in populations outside of the USA.

<sup>1</sup> Hawkins et al., 1999, 2005 (both NRCT +); Catalano et al., 2003 (RCT +); Battistich et al., 2004 (NRCT +); Flay et al., 2003 (CSS+);

<sup>2</sup> Catalano et al., 2003 (RCT +); Reid et al., 1999 (RCT -); Jalongo et al., 1999 (RCT +); Flay et al., 2003 (CSS+); Battistich et al., 2004 (NRCT +);

<sup>3</sup> Hawkins et al., 1999, 2005; Lonczak et al., 2002 (all NRCT +)

<sup>4</sup> Kellam et al., 2008; Poduska et al., 2008; van Lier et al., 2009 (all RCT ++)

### 5.43. Social development programmes

Author (Year)	Design	Population	Follow-up	Analysed	Findings
<b>Seattle Social Development Programme</b>					
O'Donnell et al., 1995	NRCT +	USA 1 <sup>st</sup> grade N = 177	PT (6 years)	60%	No significant differences between intervention and control students.
Hawkins et al., 1999	NRCT +	USA 5 <sup>th</sup> grade N = 643	6 years	93%	Fewer students receiving the full intervention reported heavy drinking (compared to control students). No difference in lifetime alcohol use between groups. Students in the full intervention condition reported significantly stronger commitment and attachment to school.
Hawkins et al., 2005	NRCT +	USA 1 <sup>st</sup> - 6 <sup>th</sup> grade & 5 <sup>th</sup> - 6 <sup>th</sup> grade N = 643	9 years	94%	No significant differences between the full and late intervention and control groups for past month alcohol use were reported.
Lonczak et al., 2002	NRCT +	1 <sup>st</sup> - 6 <sup>th</sup> grade N= 376	9 years	93%	Students in the intervention condition reported later age of first sexual experience, lower number of sexual partners, higher rates of condom use in last sexual encounter and lower pregnancy rates amongst females. No significant differences between groups for condom use during the past year or during first intercourse or rate of STD diagnosis.
<b>Raising Healthy Children</b>					
Brown et al., 2005	RCT +	USA Mean 7.7 (SD 0.6) years N= 1,040	6, 7, 8 years	88%	No significant difference between groups in terms of change in alcohol use over 5 years. However, significant intervention effect on alcohol use frequency (greater rate of linear decline in alcohol frequency in the intervention group)
Catalano et al., 2003	RCT +	USA Mean 7.4 (SD 0.6) years N = 938	1, 2 years	98%	Teachers rated intervention students as having higher academic performance, commitment to school and social competency and lower levels of anti social behaviour. Parent reported data indicated intervention students had higher academic performance and school commitment.
<b>Developmental drug prevention programmes</b>					
Furr Holden et al., 2004	RCT +	USA Mean 6.2 (SD 0.3) years N = 653	4, 5 and 6 years	84%	Little impact of either intervention on alcohol use
Ialongo et al., 1999	RCT +	USA Mean 6.2 (SD 0.3) years N = 653	1 year	91%	Students receiving the family-school partnership intervention demonstrated fewer problem behaviours than the control group. Those receiving the classroom curriculum displayed fewer problem behaviours than boys in the control group.

Author (Year)	Design	Population	Follow-up	Analysed	Findings
<b>Good Behaviour Game</b>					
Kellam et al., 2008; Poduska et al., 2008	RCT ++	USA 1 <sup>st</sup> grade N = 922	At age 19-21 years	75%	Intervention students had lower lifetime alcohol use/ dependence disorder than controls and a significant reduction in the odds of a lifetime alcohol abuse disorder. No significant differences between intervention and control groups for access to drug treatment services. Rates of all service use were lower for males against controls in both cohorts.
van Lier et al., 2009	RCT ++	The Netherlands Mean 6.9 (SD 0.6) years N = 666	3 - 6 years	72%	No significant effect of participation in the Good Behavior Game on past month or past year alcohol use at three or six year follow up. The rate of growth of alcohol use between three and six years following participation in the Game was significantly reduced
<b>Child Development Project</b>					
Battistich et al., 2000	NRCT +	USA Grades 3-5 or 4-6 N = 24 schools	4 years	Not reported	Alcohol use among programme students declined, whilst alcohol use in comparison students increased. Intervention students' alcohol use in "high change" schools declined over time, whereas control students' alcohol use increased.
Battistich et al., 2004	NRCT +	USA Grades 3-5 or 4-6 N = 1246	5-7 years	Not reported	Intervention and comparison students did not differ significantly with respect to their use of alcohol in middle school
<b>Linking the Interests of Families and Teachers (LIFT)</b>					
Eddy et al., 2003	RCT -	USA Mean 10.4 years N = 361	4 years	2.8% dropped out	Youth in the control group more likely to report patterned alcohol use during middle school.
Reid et al., 1999	RCT -	USA 1 <sup>st</sup> and 5 <sup>th</sup> grades N = 671	1 year (PT)	Not reported	Teacher rated social skills of children in the intervention group were significantly higher than in the control group. Mothers of children in the intervention group with higher levels of aversive verbal behaviour improved the most.
<b>Other programmes</b>					
Flay et al., 2003 Positive Action Program	CCS +	USA K-6 grade N = 36 schools	4 years	Not applicable	Schools with higher numbers of intervention students were reported to have significantly fewer problem behaviours in middle and high schools. Schools with over 80% Positive Action graduates were significantly less likely to use drugs in middle and high schools.

## **6 Discussion**

### **6.1 Summary of the review of effectiveness**

The review of effectiveness included a total of two systematic reviews and meta-analyses, and 73 primary studies. Studies were grouped according to the intervention focus, resulting in 14 studies of alcohol education programmes, 33 studies of drug (including alcohol) education programmes, nine SRE programmes, three general health education programmes and 16 social development programmes.

#### **6.1.1 Systematic reviews and meta-analyses**

Two systematic reviews were identified for inclusion. The review by Spoth and colleagues (2008) focused specifically on the prevention of alcohol use, whereas Gottfredson and Wilson (2008) focused on substance use prevention. Both reviews concluded that there was limited evidence to determine which programme approaches were most effective for primary school aged children, and Gottfredson and Wilson (2008) suggested that intervention with young adolescents may be more effective. Spoth and colleagues (2008) suggested that intervention with younger children may be most effective when it takes place across multiple domains, most typically combining school and family-based intervention.

#### **6.1.2 Alcohol education**

A total of 13 studies were identified that examined alcohol education programmes targeting children aged 11 years and under. Nine studies were classroom-based curriculums led by teachers or external contributors, and four studies examined one-off intervention sessions. Of the classroom-based programmes, the PY/PM programme that focused on teaching students about the adverse effects of alcohol on the brain and vehicle safety skills, was shown to have significant effects on knowledge about the effects of alcohol on development and the brain, vehicle safety and media literacy. This effect was demonstrated with third, fourth and fifth grade students (Bohman et al., 2004; Bell et al., 2005a, 2005b) and students in first and second grade (Bell et al., 2007). The long term effects on alcohol consumption were examined for three programmes (AMPS, APPT and PY/PM) but none showed consistent effects. Of the single session interventions, there was evidence that they modified their intended target in the short term (i.e. the expectancy modification intervention modified expectancies) but these effects appeared to be short lived.

#### **6.1.3 Drug education (including alcohol)**

A total of 32 studies were identified that examined drug education programmes, which focused on illegal drugs (and tobacco) in addition to alcohol. A total of 20 studies reported on

18 classroom-based programmes, led by teachers (n=11 studies) or external contributors (n=9 studies). Four studies reported on programmes which combined in-school approaches with parent education and eight studies reported on a range of other in-school approaches including theatre in education and a programme based on a retreat format. The effects of these programmes on knowledge and attitudes in relation to alcohol use were not clear. Although LST has been shown to be effective with young adolescents, only very short term outcomes were presented for the study conducted with primary school aged children, and although the programme appeared to have positive effects on normative expectations and self-esteem, these findings were not supported by other studies of the LST approach in this age group. Only two programmes demonstrated effects on alcohol use, a curriculum for Native American students and a normative education programme, DAW. However, the evaluation of the DAW programme was rated poorly and therefore the results of this programme should be interpreted with caution.

#### **6.1.4 Sex and relationships education**

Eight studies were identified that examined seven programmes focusing on different approaches to SRE. Two programmes focused on abstinence approaches; three programmes were HIV/AIDS prevention approaches; one programme employed a parenting and care-giving approach; and another aimed to improve young people's sexual health knowledge, personal insight and motivation. All seven programmes were curriculum based and delivered in schools. Programmes based on an abstinence approach or HIV/AIDS prevention appeared to improve knowledge and there were positive effects of two programmes, which specifically targeted communication (FAME and I Want to, I Can...Prevent HIV/AIDS), on parental communication. One abstinence-based programme, Sex Can Wait, was shown to have some long term effects on sexual behaviour, although there was no difference in whether participants had ever had sex, participants who received the intervention were less likely than control participants to report sexual intercourse in the last 30 days, 18 months after intervention.

#### **6.1.5 General health education programmes**

Three studies (Andrews, 1992; Utley et al., 2001; Young et al., 1997) were identified that examined general health education programmes which included modules or topics related to alcohol education or SRE. There was no clear evidence of the effectiveness of these programmes in terms of alcohol use or sexual health or related behaviours. Although, one study that examined the impact of the life skills components of a larger health curriculum found post-test effects on attitudes to alcohol, self esteem and decision making skills.

### **6.1.6 Social development programmes**

A total of 16 studies were identified that examined seven programmes focused on social development interventions designed to positively influence later behaviour. Six programmes combined school and family-based components while one programme was school-based only. Programmes that combined classroom-based intervention with components targeting parental participation, and focusing on wider problem behaviours had long term effects on attachment to school, social skills and alcohol use, and the SSDP also had long term effects on sexual health behaviours.

## **6.2 Summary of review of economic evaluations**

No studies of economic evaluations were identified for inclusion in the review.

## **6.3 Strengths and limitations**

This review of the effectiveness and cost-effectiveness of PSHE in primary schools focusing on SRE and alcohol education was based on a comprehensive and systematic literature review. Over 7,500 titles and abstracts were screened for inclusion in the review, and 501 full text articles were reviewed. In addition, the review has been conducted using a standardised and transparent approach, adhering to NICE protocols for the development of NICE public health guidance.

### **6.3.1 Quality of the included studies**

The studies identified for inclusion in the review were based on a range of study designs, with the majority of studies based on an RCT cluster design. Overall only five studies, two SRs and three RCTs, were rated high quality (++). Of the remaining studies, approximately a third were rated moderate quality and two-thirds were rated poor quality. Across the majority of studies, whether participants and/or investigators were blind to group assignment, and whether allocation was concealed was poorly reported on; with most studies not reporting on these aspects. In addition, it was difficult to state with confidence that contamination was acceptability low. In terms of analyses, very few studies reported that an intention-to-treat (ITT) analysis had been conducted, few studies were reported to be sufficiently powered or presented power calculations, and effect size estimates were rarely reported. In addition, not all studies provided sufficient data to calculate effect sizes, with a lack of detail regarding numbers allocated to intervention and control groups. In relation to the external validity of the included studies, generalisibility was on the whole difficult to judge. Very few studies reported details about the source population or whether the selection of participants resulted in a representative sample.

Approximately 60% of studies only reported the short-term effects (<6 months) of the interventions and programmes examined, with a large proportion of these studies only

reporting immediate post-test effects. There was, therefore, limited evidence on the long term effects of the programmes included in the review on alcohol use and sexual behaviour. The exception to this was the studies that examined social development programmes, the majority of which examined the long term effects of these programmes into young adulthood. Because of the short length of follow-up, outcomes reported tended to be limited to knowledge, attitudes and skills. The choice of outcomes measured across studies varied greatly, and there was little consistency in how outcomes were assessed. This meant that it was not possible to combine studies in a meta-analysis.

### **6.3.2 Applicability**

Six studies (Hurry & McGurk, 1997; Hurry et al., 2000; Paxton et al., 1998; Starkey & Orme, 2001; Tudor-Smith et al., 1995; Welham et al., 2007) reported on evaluations conducted in the UK, all of which evaluated drug education programmes. Four studies were based on UBA designs with short term (<6 months) follow-up and two studies were of an RCT which followed up participants three years later. As with previous reviews in the field of alcohol and drug prevention (Jones et al., 2006, 2007) the vast majority of studies were conducted in the USA. This therefore limits the applicability of a substantial proportion of the evidence identified. As reported previously, the generalisability of the included studies was difficult to judge and this further limits the applicability of the evidence identified.

### **6.3.3 How and why programmes worked**

Due to the short timescales available, it was beyond the scope of the review to undertake a full examination of how and why the programmes that demonstrated effectiveness worked. In addition, no studies were identified that sought to address this question or that reported mediation or component analysis. It was also not possible to examine how different programme providers or the way in which an intervention was delivered, impacted on programme effectiveness.

### **6.3.4 Targeting wider risk behaviours**

The studies included in this review that examined social development programmes demonstrate that programmes targeting developmental outcomes, such as conduct disorders and social skills, may have long term impacts on alcohol use and sexual health (Hawkins et al., 1999; Lonczak et al., 2002). It was beyond the scope of the review to examine programmes that did not focus on SRE and/or alcohol education. However, the literature searches identified a large body of literature which examined interventions that targeted key risk factors that may predict later alcohol use, including programmes targeting conduct problems and social skills. Two reviews (Adi et al., 2007a, 2007b) undertaken to support the development of NICE guidance on promoting the mental wellbeing of children in

primary education highlighted that there was strong evidence to support the effectiveness of multi-component programmes, which typically combined social skills development curricula and programmes for parents.

#### **6.4 Research recommendations**

This review had identified a number of gaps in the evidence in relation to the effectiveness of PSHE in primary schools focusing on SRE and alcohol education. In particular, a lack of research arising from the UK limits the conclusions that can be drawn from the studies identified for inclusion in this review. The following are listed as key research recommendations:

- There needs to be further evaluation of the effectiveness and cost-effectiveness of PSHE approaches in primary school focusing on alcohol education and SRE, which are currently being delivered or planned in the UK. In addition, full economic evaluations are required that consider both the costs and consequences of implementing these types of interventions and programmes.
- Improvements in study design and quality of reporting are needed with respect to all types of study designs. For RCTs, improvements are required with respect to the methods used to randomise participants or clusters and for quasi-experimental study designs, authors should ensure that methods used to allocate intervention and control participants or clusters are clearly reported.

## **7 Conclusions**

Overall, this review of the effectiveness and cost-effectiveness of PSHE in primary schools focusing on SRE and alcohol education has highlighted a number of weaknesses in the evidence base. There is evidence that social development programmes, which combine school- and family-based components, may have long term impacts on school attachment, social skills, alcohol use and sexual health. However, the applicability of these programmes warrants further study in a UK context before widespread implementation can be supported. There is a lack of clear, long-term evidence for the effectiveness of other approaches to SRE and alcohol education, and further good quality, UK-based research is needed.

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**Appendix 1. Non-statutory framework for PSHE****Key stage 1****1. Developing confidence and responsibility and making the most of their abilities**

- a) to recognise what they like and dislike, what is fair and unfair, and what is right and wrong
- b) to share their opinions on things that matter to them and explain their views
- c) to recognise, name and deal with their feelings in a positive way
- d) to think about themselves, learn from their experiences and recognise what they are good at
- e) how to set simple goals.

**2. Preparing to play an active role at citizens**

- a) to take part in discussions with one other person and the whole class
- b) to take part in a simple debate about topical issues
- c) to recognise choices they can make, and recognise the difference between right and wrong
- d) to agree and follow rules for their group and classroom, and understand how rules help them
- e) to realise that people and other living things have needs, and that they have responsibilities to meet them
- f) that they belong to various groups and communities, such as family and school
- g) what improves and harms their local, natural and built environments and about some of the ways people look after them
- h) to contribute to the life of the class and school
- i) to realise that money comes from different sources and can be used for different purposes.

**3. Developing a healthy, safer lifestyle**

- a) how to make simple choices that improve their health and wellbeing
- b) to maintain personal hygiene
- c) how some diseases spread and can be controlled
- d) about the process of growing from young to old and how people's needs change
- e) the names of the main parts of the body
- f) that all household products, including medicines, can be harmful if not used properly
- g) rules for, and ways of, keeping safe, including basic road safety, and about people who can help them to stay safe.

**4. Developing good relationships and respecting differences between people**

- a) to recognise how their behaviour affects other people
- b) to listen to other people, and play and work cooperatively

- c) to identify and respect the differences and similarities between people
- d) that family and friends should care for each other
- e) that there are different types of teasing and bullying, that bullying is wrong, and how to get help to deal with bullying.

## Key stage 2

### Developing confidence and responsibility and making the most of their abilities

- a) to talk and write about their opinions, and explain their views, on issues that affect themselves and society
- b) to recognise their worth as individuals by identifying positive things about themselves and their achievements, seeing their mistakes, making amends and setting personal goals
- c) to face new challenges positively by collecting information, looking for help, making responsible choices, and taking action
- d) to recognise, as they approach puberty, how people's emotions change at that time and how to deal with their feelings towards themselves, their family and others in a positive way
- e) about the range of jobs carried out by people they know, and to understand how they can develop skills to make their own contribution in the future
- f) to look after their money and realise that future wants and needs may be met through saving.

### Preparing to play an active role as citizens

- a) to research, discuss and debate topical issues, problems and events
- b) why and how rules and laws are made and enforced, why different rules are needed in different situations and how to take part in making and changing rules
- c) to realise the consequences of anti-social and aggressive behaviours, such as bullying and racism, on individuals and communities
- d) that there are different kinds of responsibilities, rights and duties at home, at school and in the community, and that these can sometimes conflict with each other
- e) to reflect on spiritual, moral, social, and cultural issues, using imagination to understand other people's experiences
- f) to resolve differences by looking at alternatives, making decisions and explaining choices
- g) what democracy is, and about the basic institutions that support it locally and nationally
- h) to recognise the role of voluntary, community and pressure groups

- i) to appreciate the range of national, regional, religious and ethnic identities in the United Kingdom
- j) that resources can be allocated in different ways and that these economic choices affect individuals, communities and the sustainability of the environment
- k) to explore how the media present information.

#### **Developing a healthy, safer lifestyle**

- a) what makes a healthy lifestyle, including the benefits of exercise and healthy eating, what affects mental health, and how to make informed choices
- b) that bacteria and viruses can affect health and that following simple, safe routines can reduce their spread
- c) about how the body changes as they approach puberty
- d) which commonly available substances and drugs are legal and illegal, their effects and risks
- e) to recognise the different risks in different situations and then decide how to behave responsibly, including sensible road use, and judging what kind of physical contact is acceptable or unacceptable
- f) that pressure to behave in an unacceptable or risky way can come from a variety of sources, including people they know, and how to ask for help and use basic techniques for resisting pressure to do wrong
- g) school rules about health and safety, basic emergency aid procedures and where to get help.

#### **Developing good relationships and respecting the differences between people**

- a) that their actions affect themselves and others, to care about other people's feelings and to try to see things from their points of view

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## Appendix 5. Results of the quality assessment

**Table 8.1. Quality assessment: Systematic reviews and meta-analyses**

- 1.1 The study addresses an appropriate and clearly focused question
- 1.2 A description of the methodology used is included
- 1.3 The literature search was sufficiently rigorous to identify all relevant studies
- 1.4 Study quality is assessed and taken into account
- 1.5 There are enough similarities between the studies selected to make combining them reasonable

Key: ++ Well covered +Adequately addressed - Poorly addressed × Not addressed N/A Not applicable

Reference(s)	Questions					Coding
	1.1	1.2	1.3	1.4	1.5	
Gottfredson & Wilson, 2003	++	++	+	++	+	++
Spoth et al., 2008	++	++	++	++	+	++

**Table 8.2. Quality assessment: Randomised controlled trials**

	Abbey, 1990	Austin & Johnson, 1995 <sup>a</sup>	Bell et al., 2005a	Bell et al., 2007	Bohman et al., 2004	Bühler et al., 2008	Catalano et al., 2003	Corbin et al., 1993 <sup>a</sup>	Cruz & Dunn, 2003
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	NR	NR	NR	NR	NR	+	NR	+	NR
1.2 Is the eligible population or area representative of the source population or area?	NR	NR	NR	+	NR	-	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	+	NR	NR	NR	NR	++	NR	-	NR
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	+	+	+	+	NR	+	+
2.2 Were interventions (and comparisons) well described and appropriate?	++	++	+	+	++	++	+	+	++
2.3 Was the allocation concealed?	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR	NR	NR	NR	NA	NR	NR
2.5 Was the exposure to the intervention and comparison adequate?	NR	NA	++	NR	NR	NR	++	-	-
2.6 Was contamination acceptably low?	NR	NA	NR	NR	NR	NR	NA	NR	NR
2.7 Were other interventions similar in both groups?	NR	NR	NA	NR	NR	NR	NA	-	NA
2.8 Were all participants accounted for at study conclusion?	++	-	NR	++	++	-	++	-	NR
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	+	+	+	+	NR	++	++	++	++
3.2 Were all outcome measurements complete?	NR	NR	NR	NR	NR	++	NA	++	NR
3.3 Were all important outcomes assessed?	++	++	+	+	++	++	++	++	+

	Abbey, 1990	Austin & Johnson, 1995 <sup>a</sup>	Bell et al., 2005a	Bell et al., 2007	Bohman et al., 2004	Bühler et al., 2008	Catalano et al., 2003	Corbin et al., 1993 <sup>a</sup>	Cruz & Dunn, 2003
3.4 Were outcomes relevant?	++	-	++	++	++	++	++	++	++
3.5 Were there similar follow-up times in exposure and comparison groups?	+	++	++	NR	+	NR	++	NR	NR
3.6 Was follow-up time meaningful?	+	-	-	-	+	-	++	-	-
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++	NR	+	+	++	+	+	NR	++
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NR	NA	NA	NR	NA	NA	NR	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	++	NR	NR	NR	++	NR	-	++
4.4 Were the estimates of effect size given or calculable?	NR	NR	NR	++	NR	++	NR	-	++
4.5 Were the analytical methods appropriate?	++	+	+	+	+	++	++	+	++
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	++	+	+	+	+	++	+	+	++
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	+	+	+	-	+	+	+	-	-
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	-	-	-	-	-	+	-	-	-
<sup>a</sup> RCT based on randomisation at the individual level NR – not reported; NA – not applicable									

**Table 8.3. Quality assessment: Randomised controlled trials continued**

	Godbold, 1999	Hecht et al., 2008	Ialongo et al., 1999	Kellam et al., 2008	Kraus et al., 1994	Pick et al., 2007	Rollin et al., 1992; 1995	Schonfeld et al., 1995	van Lier et al., 2009
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	+	NR	NR	+	NR	+	NR	+	NR
1.2 Is the eligible population or area representative of the source population or area?	++	NR	NR	++	NR	NR	NR	+	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	+	NR	++	+	NR	NR	+	NR
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	++	+	+	+	-	+	+
2.2 Were interventions (and comparisons) well described and appropriate?	+	++	++	++	++	+	+	++	++
2.3 Was the allocation concealed?	NR	NR	++	+	NR	NR	-	NR	+
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NA	NA	NA	NR	NR	NA	+	NA
2.5 Was the exposure to the intervention and comparison adequate?	-	++	++	NR	++	+	+	+	++
2.6 Was contamination acceptably low?	NR	NR	NA	++	NR	++	NR	NA	++
2.7 Were other interventions similar in both groups?	-	++	NA	++	NR	NR	NR	NA	NR
2.8 Were all participants accounted for at study conclusion?	NR	+	+	+	+	-	-	+	++
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NA	NR	NR	NR	NR
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	+	+	++	++	+	++	+	++	NR
3.2 Were all outcome measurements complete?	NR	+	++	++	NA	++	+	NR	++
3.3 Were all important outcomes assessed?	+	+	++	++	++	++	+	++	++
3.4 Were outcomes relevant?	+	++	++	++	++	++	+	++	++

	Godbold, 1999	Hecht et al., 2008	Ialongo et al., 1999	Kellam et al., 2008	Kraus et al., 1994	Pick et al., 2007	Rollin et al., 1992; 1995	Schonfeld et al., 1995	van Lier et al., 2009
3.5 Were there similar follow-up times in exposure and comparison groups?	++	++	++	++	++	NR	+	+	++
3.6 Was follow-up time meaningful?	-	+	+	++	+	++	-	+	++
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NR	+	+	++	++	NR	-	++	NR
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NR	++	++	NA	NA	NR	NA	++
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	+	NR	NR	NR	NR	NR	NR	NR	NR
4.4 Were the estimates of effect size given or calculable?	NR	+	-	++	NR	++	-	NR	+
4.5 Were the analytical methods appropriate?	+	++	++	++	+	++	+	++	++
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	++	-	++	+	++	-	+	+
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	-	+	++	++	+	+	-	+	++
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	+	-	-	+	+	-	-	+	-
NR – not reported; NA – not applicable									

**Table 8.4. Quality assessment: Non-randomised controlled trials**

	Ambtman et al., 1990	Battistich et al., 2000	Denny & Young, 2006	Hahn et al., 2007	Hawkins et al., 1999	Holtz & Twombly, 2007	Masterpaqua et al., 1992	Peterson & Woodward, 1993
<b>Section 1: Population</b>								
1.1 Is the source population or source area well described?	NR	NR	NR	NR	+	+	NR	NR
1.2 Is the eligible population or area representative of the source population or area?	++	NR	NR	+	+	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	++	NR	NR	+	+	NR	NR	NR
<b>Section 2: Method of allocation</b>								
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	-	+	-	-	-	NR
2.2 Were interventions (and comparisons) well described and appropriate?	+	+	+	+	++	+	+	-
2.3 Was the allocation concealed?	NA	-	-	NR	-	NR	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NA	NA	NA	NR	NR	NR	NA
2.5 Was the exposure to the intervention and comparison adequate?	-	-	NR	NR	++	++	++	NR
2.6 Was contamination acceptably low?	NA	NR	+	++	NR	NR	NA	NR
2.7 Were other interventions similar in both groups?	NR	NR	NR	++	NR	NR	NR	NR
2.8 Were all participants accounted for at study conclusion?	++	NR	-	-	++	NR	NR	NR
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR
<b>Section 3: Outcomes</b>								
3.1 Were outcome measures reliable?	-	NR	+	++	NR	+	+	++
3.2 Were all outcome measurements complete?	+	NR	+	++	++	NR	NR	+

	Ambtman et al., 1990	Battistich et al., 2000	Denny & Young, 2006	Hahn et al., 2007	Hawkins et al., 1999	Holtz & Twombly, 2007	Masterpaqua et al., 1992	Peterson & Woodward, 1993
3.3 Were all important outcomes assessed?	+	++	+	++	++	+	+	-
3.4 Were outcomes relevant?	+	++	+	++	++	+	++	+
3.5 Were there similar follow-up times in exposure and comparison groups?	-	+	+	++	++	+	NR	NR
3.6 Was follow-up time meaningful?	-	-	+	+	++	-	NR	-
<b>Section 4: Analyses</b>								
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NR	+	NR	+	++	+	-	NR
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NA	NA	NR	NR	NA	NA	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	NR	NR	NR	NR	NR	NR	NR
4.4 Were the estimates of effect size given or calculable?	NR	+	NR	+	++	NR	NR	-
4.5 Were the analytical methods appropriate?	+	+	+	++	++	+	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	+	NR	++	++	+	+	-
<b>Section 5: Summary</b>								
5.1 Are the study results internally valid (i.e. unbiased)?	+	+	-	+	+	-	-	-
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	+	-	-	-	+	-	-	-
NR – not reported; NA – not applicable								

**Table 8.5. Quality assessment: Controlled before and after studies**

	Andrews, 1992	Baker, 2004	Bell et al., 2005b	Flay et al., 2003	Kreutter & Gewirtz, 1991	Raybuck & Hicks, 1994	Spear et al., 1997	Stevens et al., 1996	Wright, 2007	Young et al., 1997
<b>Section 1: Population</b>										
1.1 Is the source population or source area well described?	NR	++	+	NR	NR	NR	NR	+	+	NR
1.2 Is the eligible population or area representative of the source population or area?	NR	+	NR	NR	NR	NR	NR	+	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	-	NR	NR	NR	-	NR	NR	NR	NR
<b>Section 2: Method of allocation</b>										
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	NR	+	NA	+	+	NR	NA	NA	NR
2.2 Were interventions (and comparisons) well described and appropriate?	-	++	NR	+	-	-	+	-	++	-
2.3 Was the allocation concealed?	NA	NR	NR	NA	NA	NA	NR	+	NA	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR	NA	NR	NA	NA	+		NR
2.5 Was the exposure to the intervention and comparison adequate?	NR	+	++	NR	NR	NR	NR	NR	NR	+
2.6 Was contamination acceptably low?	NA	NR	NR	NA	NR	NA	NR	NA	-	NA
2.7 Were other interventions similar in both groups?	NR	NR	NR	-	NR	NR	NR	NA	-	NA
2.8 Were all participants accounted for at study conclusion?	-	NR	NR	NA	NR	-	-	++	-	NR
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Section 3: Outcomes</b>										
3.1 Were outcome measures reliable?	NR	+	+	+	NR	+	++	NR	NR	++
3.2 Were all outcome measurements complete?	NR	NR	NR	+	NA	NR	NR	NA	+	++
3.3 Were all important outcomes assessed?	++	-	+	+		-	+	++	+	++

3.4 Were outcomes relevant?	++	+	+	+	++	+	++	++	++	++
3.5 Were there similar follow-up times in exposure and comparison groups?	NR	NA	+	+	+	NR	NR	++	NR	++
3.6 Was follow-up time meaningful?	-	+	++	+	-	-	-	++	++	++
<b>Section 4: Analyses</b>										
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NR	-	++	+	NR	-	NR	NR	NR	NR
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NA	NA	NA	NA	NA	NR	NA	NA	NA
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	+	NR							
4.4 Were the estimates of effect size given or calculable?	NR	NR	NR	+	NR	NR	NR	NR	NR	NR
4.5 Were the analytical methods appropriate?	-	++	++	+	+	+	+	++	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	+	++	+	++	+	+	++	+	++
<b>Section 5: Summary</b>										
5.1 Are the study results internally valid (i.e. unbiased)?	-	-	-	+	-	-	-	-	-	-
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	-	-	-	-	-	-	-	+	-	+
NR – not reported; NA – not applicable										

**Table 8.6. Quality assessment: Uncontrolled before and after studies**

	Abel & Greco, 2008	Gamble & Burgess, 1994	Gaskins et al., 2002	Hall-Long & Dishop, 1999	Paxton et al., 1998	Starkey & Orme, 2001	Tudor-Smith et al., 1995	Utley et al., 2001	Wackett et al., 2000	Welham, 2007	Witt & Witt, 1995
<b>Section 1: Population</b>											
1.1 Is the source population or source area well described?	NR	NR	+	+	-	NR	-	++	NR	NR	NR
1.2 Is the eligible population or area representative of the source population or area?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	NR	NR	NR	NR	-	NR	-	NR	NR	NR
<b>Section 2: Method of allocation</b>											
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA	NA
2.2 Were interventions (and comparisons) well described and appropriate?	+	+	-	++	-	NA	-	+	+	+	+
2.3 Was the allocation concealed?	NA	NA	NA	NA	NA	NA	NA	NA	NR	NA	NA
2.4 Were participants and/or investigators blind to exposure and comparison?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.5 Was the exposure to the intervention and comparison adequate?	NA	NA	NR	NR	NR	NA	-	+	++	NR	NR
2.6 Was contamination acceptably low?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.7 Were other interventions similar in both groups?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.8 Were all participants accounted for at study conclusion?	-	NR	-	NR	+	+	-	++	++	NA	-
2.9 Did the setting reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Section 3: Outcomes</b>											
3.1 Were outcome measures reliable?	+	NR	++	NR	NR	-	+	+	-	NR	NR
3.2 Were all outcome measurements complete?	NA	NR	+	NR	NR	+	NR	++	++	NA	NR
3.3 Were all important outcomes assessed?	NA	-	+	+	-	-	+	++	-	NA	+

3.4 Were outcomes relevant?	NA	+	+	++	-	+	+	++	+	NA	+
3.5 Were there similar follow-up times in exposure and comparison groups?	NA	++	NA	NA							
3.6 Was follow-up time meaningful?	-	-	-	NR	-	-	+	-	+	NR	-
<b>Section 4: Analyses</b>											
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NA	NR	NA	NA							
4.2 Was Intention to treat (ITT) analysis conducted?	NA										
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	NA	NR	NR	NR	++	NR	-	NR	NR	NR
4.4 Were the estimates of effect size given or calculable?	+	-	+	NR	-	+	NR	NA	NR	NA	NA
4.5 Were the analytical methods appropriate?	+	+	+	-	-	++	++	-	-	NA	-
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	-	+	NA	NA	+	NR	NR	NR	NA	NA
<b>Section 5: Summary</b>											
5.1 Are the study results internally valid (i.e. unbiased)?	-	-	-	-	-	-	-	-	-	-	-
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	-	-	-	-	-	-	-	-	-	-	-
NR – not reported; NA – not applicable											

## Appendix 6. Results of quality assessment for studies included in Jones and colleagues (2007)

### Table 8.7. Quality assessment for RCTs and NRCTs

- 1.1 The study addressed an appropriate and clearly focused question
- 1.2 The assignment of participants to intervention groups is randomised
- 1.3 An adequate concealment method is used
- 1.4 Participants and investigators are kept 'blind' about intervention allocation
- 1.5 The intervention and control groups are similar at the start of the trial
- 1.6 The only difference between groups is the intervention under investigation
- 1.7 All relevant outcomes are measured in a standard, valid and reliable way
- 1.8 What percentage of the participants or clusters recruited into each intervention arm of the study dropped out before the study was completed?
- 1.9 All participants are analysed in the groups to which they were allocated? (ITT)
- 1.10 Where the study is carried out at more than one site, results are comparable for all sites

Key: ++ Well covered + Adequately covered - Poorly covered \* Not addressed NR Not reported N/A Not applicable

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Allison et al., 1990	++	-	*	N/A	-	+	++	8%	*	*	-
Botvin et al., 2003	++	-	*	N/A	++	*	+	Matched data not available for 44%	*	*	-
Brown et al., 2005	++	+	NR	N/A	+	-	++	12%	+	*	+
Donaldson et al., 1995; 2000	+	-	NR	N/A	NR	NR	++	NR	NR	N/A	-

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Eddy et al., 2003	++	+	x	x	-	-	+	3%	+	N/A	-
Furr-Holden, 2004	++	++	N/A	N/A	-	-	+	16%	+	NR	+
Hurry and McGurk 1997; Hurry et al., 2000	++	+	x	NR	-	+	+	NR	NR	N/A	+
O'Donnell et al., 1995	+	N/A	N/A	N/A	+	+	+	40%	NR	N/A	+
Padget et al., 2006	++	N/A	N/A	N/A	+	++	++	Intervention 12% and control 12%	x	NR	+
Schinke and Tepavac, 1995	++	N/A	N/A	N/A	x	++	+	NR	x	NR	-
Schinke et al., 2000	++	+	+	x	++	-	++	14.11% total	++	x	+
Shope et al., 1992	+	x	x	N/A	-	x	-	28% at 2.5 yr	x	x	-
Sigelman et al., 2004	++	-	x	N/A	+	-	++	NR	x	NR	+

**Table 8.8. Quality assessment for controlled before and after studies**

## 1.1 Contemporaneous data collection

- Score DONE pre and post intervention periods for study and control sites are the same.
- Score NOT CLEAR if it is not clear in the paper, e.g. dates of collection are not mentioned in the text.
- Score NOT DONE if data collection was not conducted contemporaneously during pre and post intervention periods for study and control sites.

## 1.2 Appropriate choice of control site

Studies using second site as controls:

- Score DONE if study and control sites are comparable with respect to dominant reimbursement system, level of care, setting of care and academic status.
- Score NOT CLEAR if not clear from paper whether study and control sites are comparable.
- Score NOT DONE if study and control sites are not comparable.

## 1.3 Baseline measurement

- Score DONE if performance or patient outcomes were measured prior to the intervention, and no substantial differences were present across study groups (e.g. where multiple pre intervention measures describe similar trends in intervention and control groups);
- Score NOT CLEAR if baseline measures are not reported, or if it is unclear whether baseline measures are substantially different across study groups;
- Score NOT DONE if there are differences at baseline in main outcome measures likely to undermine the post intervention differences (e.g. are differences between the groups before the intervention similar to those found post intervention).

## 1.4 Characteristics for studies using second site as control

- Score DONE if the authors state explicitly that the primary outcome variables were assessed blindly OR the outcome variables are objective e.g. length of hospital stay, drug levels as assessed by a standardised test;
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if the outcomes were not assessed blindly.

#### 1.5 Blinded assessment of primary outcome(s)

- Score DONE if the authors state explicitly that the primary outcome variables were assessed blindly OR the outcome variables are objective e.g. length of hospital stay, drug levels as assessed by a standardised test;
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if the outcomes were not assessed blindly.

#### 1.6 Protection against contamination

##### Studies using second site as control

- Score DONE if allocation was by community, institution, or practice and is unlikely that the control group received the intervention;
- Score NOT CLEAR if providers were allocated within a clinic or practice and communication between experimental and group providers was likely to occur;
- Score NOT DONE if it is likely that the control group received the intervention (e.g. cross-over studies or if individuals rather than providers were randomised).

#### 1.7 Reliable primary outcome measure(s)

- Score DONE if two or more raters with at least 90% agreement or kappa greater than or equal to 0.8 OR the outcome is obtained from some automated system e.g. length of hospital stay, drug levels as assessed by a standardised test;

- Score NOT CLEAR if reliability is not reported for outcome measures that are obtained by chart extraction or collected by an individual;
- Score NOT DONE if agreement is less than 90% or kappa is less than 0.8.

1.8 Follow up of professionals (protection against exclusion bias)

- Score DONE if outcome measures obtained 80-100% subjects allocated to groups. (Do not assume 100% follow-up unless stated explicitly.);
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if outcome measures obtained for less than 80% of individuals allocated to groups.

1.9 Follow up of individuals

- Score DONE if outcome measures obtained 80-100% of individuals allocated to groups or for individuals who entered the study. (Do not assume 100% follow-up unless stated explicitly.);
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if outcome measures obtained for less than 80% of individuals allocated to groups or for less than 80% of individuals who entered the study.

Reference(s)	Question									Coding
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	
Hawthorne et al., 1995; Hawthorne, 1996	Not clear	Done	Not clear	Done	Done	Not clear	Not done	Not clear	Not clear	-
Zavela et al., 1997	Not done	Not done	Not done	Not clear	Not done	Done	Done	Not clear	Done	-
Zavela et al., 2004	Done	Not clear	Not done	Not done	Not done	Not clear	Done	Not clear	Not clear	-

**Appendix 7. Conversion table for English key stages and US grade equivalents**

Age	England		USA	
		Year		Grade
0-4	Pre-School	-		-
4-5		-	Pre Kindergarten	-
5-6	Primary School (Key Stage 1)	1	Kindergarten	-
6-7		2	Elementary School	1
7-8	3	2		
8-9	Junior School (Key stage 2)	4		3
9-10		5		4
10-11		6		5
11-12	Lower Secondary (Key stage 3)	7	Middle School	6
12-13		8		7
13-14		9		8
14-15	Upper Secondary (Key stage 4)	10	High School	9
15-16		11		10
16-17	6th Form College	-		11
17-18		-		12

## **Supplement B**

# **A review of the effectiveness and cost-effectiveness of personal, social and health education in secondary school and further education focusing on sex and relationships and alcohol education for young people aged 11 to 19 years**

## **FINAL REPORT**

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## Glossary

Abstinence-only programmes	Programmes that encourage and promote abstinence as the best and only way to prevent pregnancy, HIV and other STIs.
Abstinence-plus programmes	Programmes that emphasise abstinence as the safest way to prevent pregnancy, HIV and other STIs, but also promote safer sex through the use of contraceptives.
American school grades	Education is divided into 3 levels: elementary school, junior high (or middle) school and high school.
Bias	Deviation of results or inferences from the truth, or processes leading to such deviation. Any trend in the collection, analysis, interpretation, publication or review of data that can lead to conclusions that are systematically different from the truth.
Binge drinking	Consuming large quantities of alcohol over a short period of time. Often associated with drinking to become intoxicated.
Cluster randomisation	A trial where the unit of randomisation is a cluster of participants (e.g. a school).
Controlled before and after study (CBA)	Intervention groups are tested and data collected before and after the intervention has been administered. Differ from controlled non-randomised trials in that participants are not allocated to intervention or control groups, but rather a 'convenience' control sample is used.
Drug education programmes	Programmes that include a focus on illegal drugs or tobacco in addition to alcohol.
Effect size	Effect size is a term used for a family of indices that measure the magnitude of the relationship between variables or treatment effect. Effect sizes are commonly used in meta-analyses as unlike significance tests these indices are independent of sample size.
General health education programmes	Programmes that are health based but include aspects and outcomes relating to alcohol or sex and relationships
HIV and sexual risk-reduction programmes	Programmes that focus on HIV prevention and HIV risk-behaviour, sexual risk-behaviour or a combination of both.
Intention to treat analysis	A method of data analysis in which all participants are analysed in the group they were assigned to at randomisation regardless of treatment adherence.
Internal validity	How well the study has minimised sources of bias and how likely it is that the intervention caused the observed outcomes.
Key stage	Pupils' progress through school is measured in key stages. Each key stage covers a number of school years. Starting at key stage 1 and finishing at key stage 4.
Long-term outcome	Study outcomes as evaluated at over one year post-intervention.
Medium-term outcome	Study outcomes as evaluated at six months to one year post-intervention.
Mean difference	The difference between two means divided by an estimate of the within group standard deviation.
Meta-analysis	The combination of quantitative evidence from a number of studies.
Non-Randomised Controlled Trial	These are trials where participants or clusters are allocated between intervention and control groups but the allocation is

	not randomised or quasi-randomised (e.g. alternate allocation).
Odds ratio	The odds of the event occurring in one group (e.g. intervention) divided by the odds of the event occurring in the other group (e.g. control).
Randomised Controlled Trial	Individuals or, defined groups of individuals (clusters) are randomised to either an intervention or a control group. If well implemented, randomisation should ensure that intervention and control groups only differ in their exposure to treatment.
Risk ratio	The risk of the event in the one group (e.g. intervention) divided by the risk of the event in the other group (e.g. control).
Short-term outcomes	Study outcomes evaluated at less than six months post-intervention.
Social development programmes	Programmes that aim to impact upon alcohol use or sex and relationships through social development education
Systematic review	A method of locating, appraising and synthesising evidence from primary studies, which adheres to a scientific methodology.
Uncontrolled before and after study	Intervention groups are tested and data collected before and after the intervention has been administered. No control group is used for comparison purposes.

## Abbreviations

AAPT	Adolescent Alcohol Prevention Trial
AMPS	Alcohol Misuse Prevention Study
BPBR	Be Proud! Be Responsible
CBA	Controlled before and after study
CARE	Community Awareness and Relationship Education
CBT	Cognitive Behavioural Therapy
CEA	Cost-effectiveness analysis
DARE	Drug Abuse Resistance Education
DfES	Department for Education And Skills
DH	Department of Health
HBM	Health Belief Model
HIV	Human immunodeficiency virus
I-LST	Infused Life Skills Training
ICER	Incremental cost-effectiveness ratio
ICU	Information about Consequences of Use
ITS	Interrupted times series
ITT	Intention to treat
LST	Life Skills Training
MMP	Midwest Prevention Project
MPM	Managing the Pressures before Marriage
MCMF	My Choice, My Future!
NICE	National Institute for Health and Clinical Excellence
NR	Not reported
NRCT	Non-Randomised Controlled Trial
OR	Odds Ratio
PID	Pelvic inflammatory disease
PSHE	Personal Social and Health Education
PT	Post-test
PY/PM	Protecting You/Protecting Me
QCA	Qualifications and Curriculum Authority
RAPP	Rochester AIDS Prevention Project for Youth
RCT	Randomised Controlled Trial
RCV	Re-capturing the Vision
RHC	Raising Healthy Children
SHARE	Sexual Health and Relationships: Safe, Happy and Responsible
SLT	Social Learning Theory
SR	Systematic Review
SRE	Sex and relationships education
STARS	Start Taking Alcohol Risks Seriously

STI	Sexually transmitted infection
SWAAT	Students Working Against AIDS Together
UBA	Uncontrolled before and after study
YTCs	Youth Training Centres
YAPP	Youth AIDS Prevention Project

## EXECUTIVE SUMMARY

### OBJECTIVES

This review sought to identify effective and cost-effective interventions and programmes that focus on alcohol education and sex and relationships education for secondary school aged children.

### METHODS

The methods for the review followed NICE protocols for the development of NICE public health guidance. Sixteen databases were searched for effectiveness and cost-effectiveness studies published since 1990. Two reviewers independently screened all titles and abstracts. Data extraction and quality assessment were undertaken by one reviewer and checked for accuracy by a second reviewer. Each study was also graded (++, + or -) based on the extent to which the design and execution of the study minimised the potential sources of bias. Results of the data extraction and quality assessment for each study of effectiveness and cost-effectiveness were presented in structured tables and as a narrative summary.

### ALCOHOL AND DRUG EDUCATION PROGRAMMES

A total of 119 articles met the criteria for inclusion in the review of alcohol and drug education programmes. Fourteen articles were systematic reviews and meta-analyses, 103 articles reported on the evaluation of an alcohol or substance use education programme, and two articles were economic evaluation studies. Of the 103 articles, 74 reported on evaluations of classroom-based programmes; 20 of which were alcohol specific, and 54 of which focused on substance use including alcohol. Also identified were 15 articles that reported on evaluations of brief behavioural or single session interventions, nine articles reporting on two multicomponent school- and community-based programmes and five articles reporting on evaluations of peer support and/or counselling programmes.

#### Systematic reviews and meta-analyses

A total of 14 systematic reviews and meta-analyses were identified for inclusion. The majority of the reviews identified examined the effectiveness of programmes targeting substance use including alcohol, and only three reviews focused specifically on the prevention of alcohol use. A good quality review found that there was no consistent evidence to determine which programmes were effective over the short to medium-term, but highlighted three programmes which were effective over the longer term. These included the family-based, Strengthening Families programme, and two school-based programmes, Botvin's LST and a culturally-focused curriculum for Native American students. A second review highlighted promising evidence from six additional programmes, Keepin it REAL, the Midwest Prevention Project, Project Northland, Healthy School and Drugs, Project ALERT, and the SHAHRP. Two reviews identified evidence to suggest that peer leaders strengthened the effects of school-based interventions, although another review found that any beneficial effects of peer involvement were lost when they were combined with teacher-led activities. One review did not find any evidence to suggest that any particular agency or external contributor was more effective than another.

**Evidence statement 1**

- 1 (a) There is strong evidence from two systematic reviews to suggest that a secondary-level school-based programme, Botvin's LST, can produce long-term reductions (greater than 3 years) in alcohol use. Other promising intervention approaches include: Keepin it REAL, the Midwest Prevention Project, Project Northland, Healthy School and Drugs, Project ALERT, and SHAHRP.
- 1 (b) There is moderate evidence from two systematic reviews to suggest that programmes delivered by peer leaders may be more beneficial than programmes delivered by teachers or other contributors.

**Classroom-based programmes**

A total of 74 articles were identified for inclusion that reported on evaluations of classroom-based programmes. Overall, 20 articles were identified for inclusion that reported on the evaluation of 12 alcohol education programmes across 15 studies and 54 articles were identified that examined 22 classroom-based substance use (including alcohol) prevention programmes across 34 studies.

Of the 15 studies identified for inclusion that examined alcohol education programmes, nine studies were RCTs, three were NRCTs and three were CBA studies. The 12 alcohol education programmes were primarily classroom-based curriculums, but two programmes incorporated additional materials and activities for parents. The programmes identified targeted students across a range of age groups; eight programmes targeted students aged 14 or younger and four programmes were targeted at older adolescents. Across eight studies that examined intervention effects on knowledge related to alcohol use there were indications that alcohol-specific education programmes generally increased alcohol or curriculum knowledge over the short-term. However, effects on medium- and long-term knowledge acquisition were weaker. Eight studies examined young people's alcohol-related attitudes and values, finding non-significant programme effects across the majority of programmes. However, the SHAHRP programme, which was based on a harm reduction approach, had positive short- and long-term effects on students' alcohol-related attitudes. Short-term increases in safer alcohol-related attitudes were also reported in a study that examined a highly-role specific programme compared to a less-role specific alcohol programme. Few studies examined intervention effects on personal and social skills. Intervention impacts on a range of alcohol-related measures were examined across the included studies. The SHAHRP programme appeared to have the most consistent effects on short-term alcohol use, and additionally had effects on hazardous/harmful drinking. Medium- to long-term effects on alcohol consumption were found to be limited. Studies were either methodologically poor, as in the case of the AAPT programme, or reported conflicting or diminished effects. For example, 17-months after delivery of the SHAHRP programme the positive short-term effects appeared to be declining. Although intervention effects favoured SHAHRP, differences between intervention and control students in terms of their alcohol consumption and other measures of alcohol use including harmful/hazardous drinking were no longer significant. There were no long-term effects of a longer term version of the AMPS programme on alcohol consumption, but there did appear to be intervention effects on alcohol misuse.

**Evidence statement 2**

- 2 (a) There is strong evidence from four RCTs, two NRCTs and two CBA studies to suggest that classroom-based alcohol specific programmes are effective at increasing alcohol-related knowledge in the short-term, but have inconsistent or mixed effects on alcohol-related knowledge in the medium- to long-term. Findings may only be partially applicable to the UK as studies were implemented within Australia, Germany and the USA and may not be generalisable beyond the populations studied.
- 2 (b) Overall, there is inconsistent evidence from four RCTs, three NRCTs and one CBA study to determine the effects of alcohol specific education programmes on attitudes and values relating to alcohol. However, there is moderate evidence from one NRCT to suggest that programmes based on a harm reduction approach may have positive short- to long-term effects on students' alcohol-related attitudes. In addition, there is weak evidence from one NRCT to suggest that programmes with a high level of role-specification for providers may have short-term positive impacts on attitudes and values.
- 2 (c) There is inconsistent evidence from one RCT and one CBA study to determine the effects of programmes focusing on reducing the harm from drinking and driving on drink driving measures.
- 2 (d) There is moderate evidence from five RCTs, three NRCTs and two CBA studies to suggest that alcohol-specific education programmes may have mixed short-term effects on health outcomes relating to alcohol use. One NRCT of a programme focusing on harm reduction through skills-based activities (SHAHRP), showed short-term reductions in alcohol use. In particular effects were seen on risky drinking behaviours such as drunkenness and binge drinking. Findings may only be partially applicable to the UK as this study was conducted in Australia and may not be generalisable beyond the populations studied.
- 2 (e) There is moderate evidence from eight RCTs, one NRCT and one CBA study to suggest that alcohol-specific education programmes have limited medium- to long-term effects on health outcomes related to alcohol use, such as frequency of alcohol consumption and drunkenness. Findings may only be partially applicable to the UK as studies were implemented outside the UK and may not be generalisable beyond the populations studied.

Of the 34 studies, which examined 22 classroom-based substance use (including alcohol) prevention programmes, 23 were based on RCT designs, seven were NRCTs and four were CBA studies. Although all of the programmes were primarily classroom-based, five programmes combined school components with family- and/or community-based components. Two studies combined two originally school-based only programmes (DARE and LST, respectively) with components targeting parents. The majority of programmes targeted students aged 14 or younger. Four studies, including evaluations of LST, AMPS, DARE, and the Healthy School and Drugs Project, respectively, examined programme effects on alcohol-related knowledge. Overall both short and medium-term increases in alcohol knowledge were reported but these were not sustained long-term. Twenty-one studies

reported outcomes relating to alcohol or substance use attitudes and behavioural intentions. There were inconsistent effects on attitudes towards alcohol use and peer norms, but eight studies, which examined behavioural intentions indicated generally positive programme effects on intentions to drink or get drunk. Intervention effects on personal and social skills were examined across a small number of programmes but found to be inconsistent. Four programmes, the Positive Youth Development Programme, the Unplugged programme, a revised version of Project Alert, and the Healthy School and Drug Project had positive short-term programme effects on alcohol use. However, the findings of Positive Youth Development Programme were limited by the poor quality of the study. Positive longer term effects were demonstrated for two programmes, Keepin It REAL and Be Under Your Own Influence/All Stars, which combined school and media intervention components. The strongest evidence of effectiveness came from a series of studies which examined Botvin's LST. Two studies found positive short- and medium-term effects on drinking frequency and binge-drinking, and these were sustained long-term. However, replication of the programme by other research groups suggests that there may be issues with the transferability of LST to other settings.

### **Evidence statement 3**

- 3 (a) There is moderate evidence from two RCTs, one NRCT and one CBA study to suggest that classroom-based substance use programmes are effective at improving knowledge relating to substance use and its effects in the short- to medium-term, but that these effects are not sustained in the long-term. Findings may only be partially applicable to the UK as studies were implemented outside the UK and may not be generalisable beyond the populations studied.
- 3 (b) There is moderate evidence from 12 RCTs, seven NRCTs and two CBA studies to suggest that classroom-based substance use programmes may have mixed effects on student's substance use-related attitudes and values. There is moderate evidence from seven RCTs, four NRCTs and two CBA studies to suggest that these programmes may impact on attitudes to substance use in the short- to medium-term and further evidence from five RCTs and three NRCTs to suggest that they may have a positive impact on long-term behavioural intentions. There is weak evidence from six RCTs, one NRCT and one CBA study to suggest that classroom-based substance use programmes have no medium- to long-term effects on peer norms. Findings may only be partially applicable to the UK as studies were implemented in the USA and may not be generalisable beyond the populations studied.
- 3 (c) There is weak and inconsistent evidence from one RCT, three NRCTs and one CBA study to determine the effects of classroom-based substance use programmes on young peoples' personal and social skills.
- 3 (d) There is moderate evidence from 14 RCTs, two NRCTs and two CBA studies to suggest that the following classroom-based substance use programmes may have inconsistent or no effects on alcohol use: DARE, Going Places, Lion's Quest SFA, All Stars Senior, Project Alert, Project SMART, Project TND, NARCONON drug education curriculum. In addition, there is weak

evidence from one CBA study to suggest that the Adolescent Decision Making Programme may have potentially harmful long-term effects on alcohol consumption.

- 3 (e) There is weak evidence from two RCTs and one NRCT to suggest that programmes that combine school-based curriculums with additional components may have positive effects on alcohol consumption. The Healthy School and Drugs Project, a three-year programme, which included a nine lesson teacher-led curriculum, formulation of school policy on substance use and involvement of parents, had short-term effects on alcohol use, but longer term effects of the programme have not been examined. Positive longer term effects were demonstrated for two programmes, Keepin It REAL and Be Under Your Own Influence/All Stars, which combined school-based curriculums with media intervention components. Findings may only be partially applicable to the UK as studies were implemented in the Netherlands and the USA and may not be generalisable beyond the populations studied.
- 3 (f) There is moderate evidence from three RCTs to suggest that LST has positive short-, medium- and long-term effects on drinking frequency and binge drinking. However, there is moderate evidence from three RCTs and one NRCT to suggest that there may be issues with the transferability of LST to other settings. Findings may only be partially applicable to the UK as studies were implemented in Spain and the USA and may not be generalisable beyond the populations studied.

### **Brief behavioural or single session interventions**

A total of 15 articles were identified that reported on evaluations of seven brief behavioural or single session intervention approaches across 13 studies. Of the 13 studies, 11 studies were RCTs, one was an NRCT and one was a CBA study. All thirteen studies were primarily school-based but six studies examined interventions which incorporated materials targeting parents. A range of providers were utilised including school nurses, physicians, teachers, fitness professionals, consultants, trained research staff and motivational speakers. Two studies were based on mailed intervention materials and therefore did not involve a provider in the delivery.

None of the studies examined intervention effects on knowledge or understanding but eleven studies examined intervention effects on students' attitudes and values. Across these studies, there was an indication of positive intervention effects in the short-term, resulting in increases in negative views of alcohol and/or its consequences and a decrease in alcohol-related expectancies. Brief behavioural or single session intervention approaches appeared to have inconsistent short- and medium-term effects on student's intentions to drink. Few studies examined intervention effects on personal and social skills, and for two studies that examined impacts on self-control and parent-child relationships intervention effects were mixed. Eight studies that examined STARS for Families and Project SPORT, two intervention approaches based on brief nurse consultations, indicated mixed, but generally positive effects of this programme approach on alcohol consumption and heavy drinking in the short- to medium-term. An alcohol tailored beverage programme and an intervention founded on the Behaviour-Image Model had inconsistent effects on alcohol use, and two further programmes, a

single session on the dangers of binge drinking, and the one week long Programme “Kickoff”, had no effects on alcohol use.

#### **Evidence statement 4**

- 4 (a) There is moderate evidence from nine RCTs, one NRCT and one CBA study to suggest that brief behavioural or single session intervention approaches relating to alcohol use may have mixed effects on attitudes and values relating to alcohol use. There is moderate evidence from four RCT, one NRCT and one CBA study to suggest that these programmes may have positive short-term effects on how student’s view alcohol use and its consequences and further evidence from five RCTs and one NRCT to suggest that brief behavioural interventions have mixed or inconsistent effects on intentions to drink. Findings may only be partially applicable to the UK as the majority of studies were implemented in the USA and may not be generalisable beyond the populations studied. In addition, the emphasis of the STARS for Families and Project SPORT interventions on abstinence may be of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.
- 4 (b) There is inconsistent evidence from two studies to determine the effects of brief behavioural and single session intervention approaches on personal and social skills.
- 4 (c) There is moderate evidence from five RCTs to suggest that brief behavioural interventions based on nurse-led consultations, such as the STARS for Families and Project SPORT programmes, can produce short-term reductions in alcohol use, but further moderate evidence from three RCTs to suggest that these effects may not be sustained in the medium-term. There is weak evidence from two RCTs, one NRCT and one CBA study to suggest that other brief behavioural and single session intervention approaches may have a limited impact on alcohol consumption. These findings may only be partially applicable to the UK as the majority of studies were implemented in the USA and may not be generalisable beyond the populations studied. In addition, the emphasis of the STARS programme on abstinence may be of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

#### **Multicomponent school- and community-based programmes**

Nine studies were identified that examined two multicomponent, school- and community-based programmes: Project Northland and the Midwest Prevention Project. Both programmes were based in communities in the USA and combined comprehensive school-based curriculums, with community-based activities and parental involvement components. All nine studies identified for inclusion were based on an RCT design.

None of the studies examined intervention effects on knowledge or understanding, or personal and social skills. There no were effects of Project Northland on attitudes and values and neither of the studies of the MPP examined intervention effects on these outcomes. Project Northland significantly reduced growth in binge drinking and tendency to use alcohol during Phase I and II of the programme, however, during the interim phase of the programme growth in alcohol use was greater among intervention students than control students. The three-year MPP did not have significant effects on

alcohol use in one cohort of ninth/tenth grade students, but a short-term secondary prevention effect was reported in a second cohort.

**Evidence statement 5**

- 5 (a) There is no evidence from eight RCTs to determine the impact of multicomponent, school- and community-based programmes on knowledge, or personal and social skills.
- 5 (b) There is moderate evidence from three RCTs to suggest that Project Northland, a long-term multicomponent, school- and community-based programme, has no effects on attitudes and values related to alcohol consumption.
- 5 (c) There is moderate evidence from two RCTs to suggest that the Midwest Prevention Project has no effects on alcohol consumption and inconsistent evidence from five RCTs to suggest that Project Northland may have mixed effects on alcohol consumption. Two RCTs showed reductions in alcohol consumption, particularly among younger adolescents, but replication of the programme among an urban sample showed that the programme was not effective. Findings may only be partially applicable to the UK as studies were implemented in the USA and may not be generalisable beyond the populations studied.

**Peer support and counselling programmes**

Five studies examined five peer support and counselling programmes. Of the five studies identified for inclusion, one study was based on an RCT design; two studies were NRCTs; and two studies were based on CBA designs. All five programmes were school-based only and the provider for three peer support programmes was peers alone. The two counselling programmes were delivered by health counsellor or educational psychology students, respectively.

None of the studies examined intervention effects on knowledge or understanding, or personal and social skills. Three studies examined short-term intervention effects on attitudes and values. For two peer leadership programmes there appeared to be modest impacts on attitudes to alcohol and one study of a counselling programme found that the programme had a positive impact on the number of psychological problems that students' attributed to their alcohol use. Neither of the counselling programmes was shown to be effective in reducing alcohol consumption, and one programme had potentially harmful effects on high school students' alcohol consumption. There were inconsistent effects of peer support programmes on alcohol use.

**Evidence statement 6**

There is inconsistent evidence from one RCT, two NRCTs and two CBA studies to determine the effectiveness of counselling and peer support on attitudinal and behavioural outcomes related to alcohol use. Findings may only be partially applicable to the UK as studies were implemented in the USA and may not be generalisable beyond the populations studied.

**Review of published economic evaluations**

Two studies were identified that met the criteria for inclusion in the review of published economic evaluations. One study assessed the cost-effectiveness of standard and infused LST, and a second

study assessed the costs, benefits and cost-effectiveness of the MPP. The standard LST programme was found to be more cost effective than I-LST by \$33.46 per student after 1 year of intervention delivery. In the second year, however, standard LST had no effects and the authors concluded that I-LST was more cost-effective. The 3-year total costs of the two programmes were estimated at \$109,429.04 and \$93,088.17, respectively. The results of the cost-benefit analysis (CBA) of the MPP demonstrated a \$700 net saving per family per year resulting from a reduction in the incidence of monthly drunkenness. Cost benefits ratios were also shown to be favourable (ratio to \$1 spent on prevention to saving is \$1:1.69). Compared to “usual” drug education the ICER of the MPP was reported to be equal to the ratio of its incremental cost per incremental effects, equivalent to \$10 per net reduction in the incidence of monthly drunkenness.

**Evidence statement 7**

There is inconsistent evidence from two economic evaluation studies to determine the cost-effectiveness of school-based interventions that aim to prevent or reduce alcohol use in young people under 18 years old. This evidence may be of limited applicability to a UK context because cost and benefit estimates were based on data from studies conducted in the USA.

**SEX AND RELATIONSHIPS EDUCATION**

A total of 75 articles met the criteria for inclusion in the review of sex and relationships education programme. Nine articles were systematic reviews and meta-analyses, 65 articles reported on evaluations of sex and relationships education interventions, and one article was an economic evaluation study.

**Systematic reviews and meta-analyses**

Nine systematic reviews evaluated abstinence only and abstinence plus safer-sex promotion programmes (Underhill et al., 2007, 2008; Bennett & Assefi, 2005), safer-sex promotion (Oakley et al., 1995; Franklin et al., 2007; Kirby et al., 1994; Pedlow and Carey, 2003; Robin et al., 2004) and sexuality-focused interventions (Sales et al., 2006). Findings from three reviews that examined abstinence-only and abstinence-plus programmes (Underhill et al., 2007, 2008; Bennett and Assefi, 2005) indicated that abstinence-only programmes have limited effects or are ineffective for preventing or reducing sexual risk behaviours. In addition, Oakley et al (1995) found evidence to suggest that abstinence only education may have an adverse effect and actually increase sexual experimentation among students. For programmes that incorporated information on safe sex and use of contraception, there was evidence from five reviews (Underhill et al., 2008; Pedlow & Carey, 2003; Franklin et al., 1997; Kirby et al., 1994; Oakley et al., 1995) to suggest that interventions may have effects on preventing sexual risk behaviours, but that these effects tend to be modest. There was no evidence that sexuality and AIDS education increased sexual activity.

**Evidence statement 8**

- 8 (a) There is strong evidence from three systematic reviews to suggest that abstinence-only programmes have limited effects or are ineffective for preventing or reducing sexual risk behaviours.
- 8 (b) There is moderate evidence from five systematic reviews to suggest that interventions incorporating information on safer sex and contraceptive use may have positive, but limited effects on preventing sexual risk behaviours. There is no evidence that such programmes increase the occurrence of sexual activity among young people.
- 8 (c) There is moderate evidence from four systematic reviews to suggest that effective characteristics of sexual risk reduction interventions include: (1) a theoretical basis; (2) use of trained adult health educators as providers; and (3) provision of highly specific content focusing on sexual risk reduction.

**UK-based studies**

Twelve UK studies, evaluating seven programmes, were identified that could be defined as predominantly sex and relationships education. Of the 12 studies, six were RCTs, two studies were based on an NRCT design, and five were CBA studies. Seven studies (Henderson et al., 2007; Mellanby et al., 1995; 2001; Stephenson et al., 2004; 2008; Tucker et al., 2007; Wight et al., 2002) reported on evaluations of three comprehensive school-based programmes, A PAUSE, RIPPLE and SHARE, respectively. Two studies (Gillies et al., 1990; Bellingham et al., 1993) reported on evaluations of the Streetwise UK, AIDS education comic, Denman et al (1995) examined a theatre in education programme and two studies (Graham et al., 2002; Magnusson et al., 2004) examined single lessons on emergency contraception and contraceptive services, respectively.

Across four studies (Tucker et al., 2007, Wight et al., 2002; Stephenson et al., 2004; Mellanby et al., 2001) that examined three comprehensive school-based programmes, there were indications that these programmes had significant effects on knowledge about STIs. Three studies (Denman et al., 1995; Bellingham and Gillies, 1993; Gillies et al., 1990) that examined a theatre in AIDS/HIV education programme and the Streetwise UK comic, respectively, had positive impacts on knowledge about HIV, and a teacher-led intervention about emergency contraception (Graham et al., 2002) increased knowledge relating to contraception. The effects of three comprehensive SRE programmes on attitudes were mixed. There were inconsistent or no effects of the peer-led RIPPLE programme and A PAUSE, but there were positive programme effects of the SHARE programme (Tucker et al., 2007) on attitudes concerning condom use and STI prevention, and on self-efficacy to use condoms. Other intervention approaches focusing on HIV prevention (Denman et al., 1995; Bellingham and Gillies, 1993; Gillies et al., 1990) and emergency contraception (Graham et al., 2002) had limited impacts on attitudes and values. Results for skills outcomes were limited with few studies reporting on these outcomes. In addition, few of the studies found significant programme effects on health outcomes related to sexual health. There were positive medium- and long-term effects of the A PAUSE (Mellanby et al., 1995) and RIPPLE (Stephenson et al., 2004) programmes on the number of students who reported ever having had sex, although for RIPPLE this effect was only apparent among

females at the 18-month follow-up. There were no effects of either the RIPPLE (Stephenson et al., 2004; 2008) or SHARE (Wight et al., 2002) programmes on use of condoms or other forms of contraception. There was mixed evidence on the effects of these programmes on pregnancy. There were no medium-term effects of the SHARE (Wight et al., 2002) or RIPPLE (Stephenson et al., 2004) programmes on rates of unintended pregnancies, however, Stephenson et al (2008) found that at age 20, students who participated in the peer-led RIPPLE programme were less likely to have been pregnant. There were no long-term effects of the RIPPLE (Stephenson et al., 2008) or SHARE (Henderson et al., 2006) programmes on abortion rates. Other intervention approaches focusing on HIV prevention (Denman et al., 1995; Bellingham and Gillies, 1993), and single lessons regarding emergency contraception (Graham et al., 2002) and contraceptive services (Magnusson et al., 2004), respectively, had no impact on sexual behaviours.

#### **Evidence statement 9**

- 9 (a) There is moderate evidence from two RCTs and two CBA studies to suggest that comprehensive sex education programmes may be effective at increasing students' knowledge about STIs in the short- to long-term. In addition, there is weak evidence from one RCT and two CBA studies to suggest that brief interventions focusing on HIV prevention, such as theatre in education or a comic-based intervention, may have short-term positive effects on knowledge about HIV/AIDs. This evidence is directly applicable as these studies were conducted in the UK.
- 9 (b) Overall, there is inconsistent evidence from two RCTs and two CBA studies to determine the effects of comprehensive sex education programmes on attitudes and values relating to sexual health. However, there is weak evidence from one CBA study to suggest that a two-year sex education programme aimed at reducing unsafe sexual behaviour and unwanted pregnancy (SHARE) may have positive effects on long-term attitudes and intentions regarding condoms. There is moderate evidence from two RCTs, one NRCT and two CBA studies to suggest that brief or single session interventions focusing on HIV prevention or contraceptives and contraceptive services may have a limited impact on students' attitudes and values. This evidence is directly applicable as the study was conducted in the UK.
- 9 (c) There is inconsistent evidence from two RCTs and one CBA study to determine the effects of UK-based SRE approaches on personal and social skills.
- 9 (d) There is moderate evidence from one RCT and one NRCT to suggest that comprehensive SRE programmes, that include peer-led sessions such as RIPPLE and A PAUSE, may delay sexual initiation, but strong evidence from three RCTs and one NRCT to suggest that SRE programmes and single session interventions focusing on contraceptives and contraceptive services may have no impacts on condom or contraceptive use. This evidence is directly applicable as the studies were conducted in the UK.
- 9 (e) There is mixed evidence from three RCTs on the effects of comprehensive SRE programmes on outcomes relating to pregnancy. There is moderate evidence from one RCT of the peer-led

RIPPLE programme to suggest that this programme may reduce teenage pregnancy, but not abortion, rates in the long-term and strong evidence from one RCT of the teacher-led SHARE programme to suggest that this programme has no long-term effects on conceptions or terminations. This evidence is directly applicable as the studies were conducted in the UK.

### Abstinence-only programmes

Ten articles were identified that evaluated eight programmes defined as abstinence-only programmes across nine studies. These programmes encouraged and promoted abstinence as the best and only way to prevent pregnancy, HIV and other STIs. Of the nine studies, two were RCTs and seven were NRCTs. Four programmes were teacher-led and one was peer-led. The provider for three programmes was not reported. Abstinence-only programmes were generally targeted at students younger than 14 years, with the exception of the Sex Can Wait programme, which consists of upper elementary, middle and high school components.

Overall, abstinence-only programmes appeared to be effective at increasing knowledge related to STIs in the short- to medium-term. Evidence was lacking on the longer term effects of abstinence-only programmes on knowledge. Eight studies examined effects on attitudes and values, and abstinence-only programmes were generally found to have had a positive effect on participants' beliefs and attitudes towards abstinence, and no programmes reported an adverse programme effect on attitudes towards abstinence or intentions to have sex. Results from the studies that examined intervention effects on parent-child communication indicated that abstinence-only programmes did not affect communication. Eight studies demonstrated that abstinence-only programmes had non-significant or inconsistent effects on the initiation of sexual activity. Two studies, which reported outcomes relating to contraception, found no impact on contraception use. One abstinence-only programme, Success Express, had a negative effect; at follow-up intervention students reported greater lifetime sexual experience than controls. However, in a replication study of this programme there was no difference between intervention and control students on this measure.

#### Evidence statement 10

- 10 (a) There is moderate evidence from one RCT and two NRCTs to suggest that abstinence only programmes may have positive short- to long-term effects on knowledge relating to STIs. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.
- 10 (b) There is weak evidence from four NRCTs to suggest that abstinence only programmes may have short-term positive effects on attitudes and intentions towards sexual activity. There is weak evidence from one NRCT to judge the impact of abstinence programs on long-term intentions. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

- 10 (c) There is moderate evidence from two RCTs and four NRCTs to suggest that abstinence only programmes may have no impact on the initiation of sexual behaviours or the maintenance of sexual abstinence. In addition, there is moderate evidence from one RCT and three NRCTs to suggest that abstinence only programmes may have no impact on or increase sexual activity. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.
- 10 (d) There is weak evidence from one RCT to suggest that abstinence only education programmes may have no impact on long-term pregnancy rates and contraception use. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

### **Abstinence-plus programmes**

A total of 24 articles were identified that reported on the evaluation of 15 abstinence plus programmes across 18 studies. Abstinence plus programmes were defined as those that reported an emphasis on abstinence as the safest way to avoid HIV/STI infection and pregnancy, but also promoted safer sex through the use of contraceptives. Of the 18 studies identified, ten were RCTs and eight were NRCTs. Two programmes, Safer Choices and YAPP, incorporated activities for parents and one programme, Protection Express, was exclusively peer-led. The programmes identified tended to target older adolescents (>14 years) or students across a range of ages, from the age of 13 upwards.

Thirteen studies examined intervention effects on sexual health knowledge, finding that abstinence-plus programmes were generally effective in improving sexual health knowledge in the short- and medium-term. In addition, three studies reported sustained long-term increases in knowledge among students exposed to abstinence plus programmes compared to controls. The results of 14 studies demonstrated that intervention effects on behavioural intentions, attitudes to sexual behaviour, and self-efficacy were inconsistent and there was no clear indication of the direction of effects. In addition, some programmes, such as Draw the Line/Respect the Line, had differing effects on male and female students. Across five programmes that incorporated skills building activities there were positive short- to medium-term effects on skills relating to sexual risk prevention. There was no indication of short-term intervention effects on the initiation of sexual involvement and at the medium-term follow-up, programme effects were largely inconsistent with four studies reporting no effects on initiation of sexual intercourse. In addition, intervention effects on frequency of sexual intercourse, number of sexual partners and contraceptive use were found to be inconsistent or non-existent in the short-, medium- and long-term. Two studies examined the medium- to long-term effects of a HLM-SLT curriculum and Reducing the Risk, respectively, on pregnancy. Neither study identified significant programme effects on this outcome.

**Evidence statement 11**

- 11 (a) There is moderate evidence from three RCTs and three NRCTs to suggest that programmes that emphasise abstinence but that also promote safer sex, may produce short- to long-term term improvements in sexual health-related knowledge. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.
- 11 (b) There is inconsistent evidence from four RCTs and four NRCTs to determine the effects of abstinence-plus programmes on attitudes, behavioural intentions and self-efficacy relating to sexual behaviour.
- 11 (c) There is inconsistent evidence from one RCT and two NRCT to determine the long-term effects of abstinence-plus programmes on communication with parents. There is moderate evidence from one RCT and one NRCT to suggest abstinence-plus programmes that incorporate skills building activities may have positive, short and medium- to long-term effects on skills relevant to prevention. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.
- 11 (d) There is moderate evidence from five RCTs and five NRCTs to suggest that abstinence-plus programmes may not have a consistent short-, medium- or long-term impact on the initiation of sexual activity or the maintenance of abstinence. In addition, there is moderate evidence from four RCTs and two NRCTs to suggest that abstinence plus programmes may not have an impact on frequency of sexual activity and risky sexual behaviours.
- 11 (e) There is moderate evidence from six RCTs and three NRCTs to suggest that abstinence-plus programmes may not have a consistent impact on condom and other contraceptive use, and moderate evidence from one RCT and one NRCT to suggest that abstinence-plus programmes have no medium- to long-term impact on pregnancy rates.

**HIV and sexual risk-reduction programmes**

Overall, 11 studies were identified that examined HIV and sexual risk-reduction programmes. Studies were defined by their specific focus on HIV prevention and HIV risk-behaviour, sexual risk-behaviour or a combination of both. Of the 11 included studies, eight were RCTs, two were NRCT and one was based on a CBA study design. All programmes were delivered in school time however one programme included six computer-based activities to be completed outside of school time. The included studies focused on different ages and school years. One programme targeted students aged 12-14 years, but in general, programmes were targeted at older adolescents.

Seven studies examined intervention effects on general HIV and sexual health knowledge, finding significant effects on knowledge over the short-term. Two studies, which explored medium- to long-term effects on knowledge of HIV and contraception, reported significant effects. Outcomes relating to attitudes were reported by seven studies. Condom self-efficacy, perception of social norms and

condom use/prevention intentions were the outcomes most commonly reported across these studies but intervention effects were found to be inconsistent with no clear direction of effect. Short-term programme effects on personal and social skills were predominantly positive and included positive programme effects on behavioural prevention skills and condom negotiation skills. However, none of the included studies examined medium- to long-term impacts on skills. Intervention impacts on sexual initiation were explored in four studies, which overall indicated inconsistent effects on this outcome. Further studies indicated no impact on sexual activity or the numbers of sexual partners. Six studies showed positive short-term programme effects on condom use and protected intercourse, but longer term programme effects on contraception use appeared to be limited. Limited outcomes were presented on HIV/STI testing, alcohol or drug use and pregnancy.

**Evidence statement 12**

- 12 (a) There is moderate evidence from five RCTs, two NRCTs and one CBA study to suggest that HIV and sexual risk-reduction programmes can improve sexual health and HIV knowledge in the short-, medium-and long-term. This evidence may be only partially applicable to the UK as five of the studies were conducted in the USA, one in Italy and one in the Netherlands and may not be generalisable beyond the populations studied.
- 12 (b) There is mixed evidence from four RCTs and one NRCT that examined the effects of HIV and sexual risk-reduction programmes on young people's (14 years) attitudes and values towards sexual health and alcohol. This evidence may be only partially applicable to the UK as studies were carried out in the USA, Italy and the Netherlands and may not be generalisable beyond the populations studied.
- 12 (c) There is moderate evidence from two RCTs, one NRCT and one CBA study to suggest that HIV and sexual risk-reduction programmes may improve personal and social skills including behavioural prevention skills and condom negotiation skills in the short-term. There was no evidence to determine the effects of HIV and sexual risk-reduction on personal and social skills in the medium- to long-term. This evidence may be only partially applicable to the UK as studies were carried out in the USA and Italy and may not be generalisable beyond the populations studied.
- 12 (d) There is moderate evidence from seven RCTs to suggest that HIV and sexual risk-reduction programmes may have no effects on sexual initiation, frequency of sexual activity or number of sexual partners. This evidence may be only partially applicable to the UK as studies were carried out in the USA, Norway, Italy and Netherlands and may not be generalisable beyond the populations studied.
- 12 (e) There is strong evidence from three RCTs, two NRCTs and one CBA study to suggest that HIV and sexual risk-reduction programmes can increase condom use or protected intercourse in the short- to medium-term. However, there was moderate evidence from two RCTs to suggest that the long-term effects of HIV and sexual risk-reduction programmes on contraceptive use may be limited. This evidence may be only partially applicable to the UK as

studies were carried out in the USA, Norway, and Sweden and may not be generalisable beyond the populations studied.

- 12 (f) There is moderate evidence from two RCTs to suggest that HIV and sexual risk-reduction programmes have no medium- to long-term effect on sexually transmitted infections, alcohol and drug use or on conceptions. As both studies were implemented in the USA findings may be only partially applicable to the UK and may not be generalisable beyond the populations studied.

### Other school-based approaches

Seven studies were identified that reported on six different programme approaches relating to sexual health; one was an NRCT, five were CBA studies and one study was based on an interrupted time series design. Two studies examined school-based clinic programmes, two studies reported findings from one programme using baby simulators (Baby Think it Over), and three studies examined the effects of combined community and school-based programmes.

None of the studies examined intervention effects on knowledge or understanding. Three studies, which examined school-based health clinics and an infant simulation intervention, respectively, reported inconsistent effects on attitudes towards sexual health and only one study examined programme effects on personal and social skills. There were no effects of the Baby Think it Over infant simulation programme on any of the sexual behaviour measures examined. Three studies that examined a school and community partnership approach to tackling teenage pregnancy, generally found that although there were reductions in pregnancy rates among 14-17 year olds at the intervention sites, these reductions were not found to be significant compared to non-intervention sites. However, one study that examined pregnancy rates over 20 years concluded that the intervention had had a positive effect on teenage pregnancies. Two studies, which examined the long-term effects of school-based health centres, found that these programmes did not have consistent effects on participant's sexual behaviour.

### Evidence statement 13

- 13 (a) There is inconsistent evidence from one NRCT and two CBAs to determine the effects of school-based clinics or an infant simulation intervention on knowledge, attitudes, values and personal and social skills.
- 13 (b) There is weak evidence from one NRCT and one CBA study to suggest that infant simulation programmes have no effect on health outcomes related to sexual health. This evidence may be only partially applicable to the UK as studies were carried out in the USA and may not be generalisable beyond the populations studied.
- 13 (c) There is weak evidence from one CBA studies and two ITS to suggest that a comprehensive school- and community-based approach to teenage pregnancy may produce modest reductions in teenage pregnancy rates. This evidence may be only partially applicable to the UK as studies were carried out in the USA and may not be generalisable beyond the populations studied.

13 (d) There is inconsistent evidence from two CBAs to determine the effects of school-based clinics on health outcomes related to sexual health.

#### Review of published economic evaluations

One study was identified that met the criteria for inclusion in the review of published economic evaluations. The study evaluated the cost-effectiveness and cost benefits of a school-based sex and relationships education programme, Safer Choices. Overall the net benefit of the Safer Choices programmes was \$174,276 and the benefit-cost ratio was 2.65, indicating that for every \$1 spent on the programme, \$2.65 were saved in medical and societal costs. The generalisability of the study to a UK context was unclear as the data used in the evaluation was based on studies conducted in the USA, and utilised other US population estimates. However, the authors state that the methods and data used were conservative and it is possible that the intervention may be cost saving in a UK context.

#### Evidence statement 14

There is moderate evidence from one economic evaluation study to suggest that a sex and relationships education programme, Safer Choices, may be cost-effective and cost saving. This evidence may be of limited applicability to a UK context because cost and benefit estimates were based on data from studies conducted in the USA.

### GENERAL HEALTH EDUCATION PROGRAMMES

#### Systematic reviews and meta-analyses

No systematic reviews or meta-analyses were identified for inclusion in the review of general health education programmes.

#### General health education programmes

Overall, nine studies reported on the evaluation of six general health education programmes that reported relevant alcohol and sexual education outcomes. Of the nine studies, eight were RCTs and one was a CBA study. All six programmes were primarily delivered in schools. Four programmes were solely school-based and two programmes incorporated both school and community elements. All six programmes targeted young adolescents aged less than 14 years.

One study examined programme effects on knowledge, finding no significant effects of Project Model Health on curriculum knowledge. However, there were positive medium-term effects of this programme on attitudes towards postponing sex and using contraceptives, and attitudes and intentions towards alcohol and other drugs. A second study found a medium-term impact on students' perceptions of peer attitudes towards alcohol and other drugs in those receiving the intensive condition of the Healthy for Life Programme. However, there was no longer term effect of this programme. None of the studies examined intervention effects on personal and social skills. Two programmes, the Reach for Health curriculum and the Aban Aya project, which incorporated community components, had positive effects on sexual behaviour in the medium- to long-term. Four

school-based programmes had either no effect or harmful effects on sexual behaviours and alcohol use.

**Evidence statement 15**

- 15 (a) There is inconsistent evidence from one RCT and one CBA study to determine the effect of general health education programmes on knowledge, attitudes and values relating to sexual health and alcohol use.
- 15 (b) There is moderate evidence from three RCTs to suggest that general health education programmes incorporating an intensive community intervention element in conjunction with a curriculum base may have a positive effect on sexual behaviour and substance use. The evidence may only be partially applicable to the UK as programmes were implemented in the USA and focused primarily on black and minority ethnic groups. As such their generalisability may be limited to the populations studied.
- 15 (c) There is moderate evidence from five RCTs to suggest that curriculum-based, general health education programmes have no impact on, and in some cases may have a negative impact on, sexual behaviours and alcohol use. Studies were based on two programmes conducted in the USA and Australia and therefore the evidence may not be generalisable beyond the populations studied.

**Review of published economic evaluations**

No published economic evaluation studies were identified for inclusion in the review of general health education programmes.

**CONCLUSIONS****Alcohol and drug education programmes**

The evidence suggests that classroom-based programmes, regardless of whether the focus is on alcohol alone or as one of a number of substances, may have beneficial effects on alcohol-related knowledge, particularly in the short- to medium-term. Programme effects on attitudes and values were mixed and inconsistent across a range of intervention approaches and the evidence was insufficient to draw conclusions about the impact of these programmes on personal and social skills. Overall, the findings of the review of alcohol and drug education programmes highlight that there is a lack of clear, medium- to long-term evidence for the effectiveness of school-based alcohol education programmes on health and social outcomes relating to alcohol use. In addition, the applicability to a UK context of those programmes that have demonstrated effectiveness, such as LST, STARS for Families and Project SPORT, is limited. There is lack of evidence on which to draw conclusions about the cost-effectiveness of alcohol and drug education programmes. Further good quality UK-based research of promising or novel intervention approaches, including assessment of cost-effectiveness, is required in order to improve the evidence base on which to make UK-based policy and practice recommendations for PSHE focusing on alcohol education.

### **Sex and relationships education programmes**

There were consistently positive programme effects on acquisition of sexual health knowledge, across the SRE education programmes that examined this outcome, regardless of whether the programme emphasised abstinence or not. A range of outcomes were reported with regards to attitudes and values and programme effects were mixed or inconsistent across these measures. It was therefore not possible to draw unequivocal conclusions about the impact of SRE programmes on attitudes and values relating to sexual health. The evidence suggests that while abstinence-only programmes have no effects on health and social outcomes related to sexual health, programmes that incorporate information on safer sex and contraceptive use may have positive, but limited effects on the prevention of sexual risk behaviours, in particular limited effects on contraceptive use. Although the applicability of some of these programmes to a UK context is limited, these conclusions are supported by the evidence drawn from studies conducted in the UK. There is lack of evidence on which to draw conclusions about the cost-effectiveness of SRE programmes. Further good quality UK-based research of promising or novel intervention approaches, including assessment of cost-effectiveness, is required in order to build on the evidence base on which to make UK-based policy and practice recommendations for PSHE focusing on SRE.

### **General health education programmes**

There was a lack of evidence on which to draw clear conclusions about the effects of the general health education programmes on knowledge, and attitudes and values relating to alcohol use and sexual health. The evidence suggests that general health education programmes, which incorporate an intensive community intervention element in conjunction with a curriculum base may have a positive effect on sexual behaviour and substance use. There were no effects, or in some cases harmful effects on sexual health and alcohol use outcomes for curriculum-based, general health education programmes. In addition, the applicability of these programmes to a UK context was limited.

## 1 Introduction

### 1.1 Aims and objectives

This review was undertaken to support the development of guidance by the National Institute for Health and Clinical Excellence (NICE) aimed at promoting school, college and community-based personal, social and health education (PSHE), with particular reference to sexual health behaviours and alcohol use behaviours. As such, the review sought to identify effective and cost-effective interventions and programmes that focus on modifying attitudinal and behavioural outcomes in relation to alcohol use and sexual health.

### 1.2 Research question

The following key questions were addressed:

1. What services, interventions, programmes, policies or strategies for children and young people aged 11 years and above are effective and cost effective in contributing to the achievement of the “Every child matters” outcomes for PSHE, related to sexual health and alcohol?
2. What elements/components of those services, interventions, programmes, policies or strategies for children and young people aged 11 years and above are effective and cost effective in contributing to the achievement of the “Every child matters” outcomes for PSHE, related to sexual health and alcohol?

## 2 Background

Alcohol use and sexual health in addition to being independent issues of public health concern (see section 2 in Jones et al., 2009), are also interrelated public health issues. Research findings suggest that generally alcohol use per se, and binge drinking in particular, is associated with being sexually active (Miller et al., 2007; Ramisetty-Mikler et al., 2004). Specifically, research has indicated that early regular alcohol consumption (usually before age 16 years) is associated with early onset sexual activity (Choquet et al., 1992; Robertson and Plant, 1988). Further research implies that early alcohol consumption and a high level of alcohol consumption results in an increased likelihood of a higher number of sexual partners (Lowry et al., 1994; Ramisetty-Mikler et al., 2004). Alcohol use at first sexual intercourse has also been associated with greater risk-taking behaviours such as lower levels of condom use (Dye and Upchurch, 2006); and studies have found lower levels of condom use in those who binge drink or who have alcohol-related problems (Kim-Godwin et al., 2007). Furthermore, alcohol use has been reported as a substance used to facilitate sexual encounters (Bellis et al., 2008). Thus, the misuse of alcohol has been linked to unprotected sex (Hibell et al., 2004) and to some extent to regretted sex (Hibell et al., 2004; Bellis et al., 2008) and forced sex (Miller et al., 2007) also. In addition, alcohol consumption, particularly increased levels of alcohol consumption, has been associated with females becoming pregnant or males making a female pregnant (Miller et al., 2007). Recent work has further highlighted the relationship between teenage pregnancy and alcohol consumption (Bellis et al., 2009), with findings indicating a link between alcohol-related hospital admissions and conception rates. Even after accounting for deprivation data showed the highest conception rates to be in areas with the highest alcohol-related hospital admissions. This emphasises the importance of SRE and alcohol education, particularly in secondary schools, prior to the onset of sexual activity and alcohol consumption and the uptake of risky behaviours.

Many young people under age 18 are aware that they consume more alcohol now than same age people would have ten years ago (Department of Health, 2007). Furthermore, alcohol is associated with crime and anti-social behaviour which is estimated to cost £7.3 billion; with an annual cost of £6.4 billion due to alcohol-related loss of productivity in the workplace; and the human and emotional impact of alcohol-related crime estimated to cost £4.7 billion (The Strategy Unit, 2004). It is important to measure the health costs in addition to the social costs of alcohol use. In 2008 research was carried out to measure the impact of alcohol on health. Findings revealed that males aged 16-24 years have the highest proportion of deaths attributable to alcohol (26.6%). Furthermore, hospital admission for mental and behavioural disorders due to alcohol use were the most common cause of admission in both males and females aged under 45 years in England (Jones et al., 2008).

In addition to the long-term negative health outcomes related to alcohol there is also the contribution of poor sexual health which disproportionately affects young people. Rates of sexually transmitted infections for the top five infections (Chlamydia, gonorrhoea, syphilis, herpes and warts) are increasing. Infections in females aged 16-19 years have increased 15% from 2004 to 2008 and in young males aged 16-19 years numbers of infections have increased by 23% (Health Protection

Agency, 2009). Limited information exists on the wider financial and health costs of poor sexual health. However, they are likely to be considerable. Thus separately, preventing alcohol use and poor sexual health can have social and health benefits and addressing the two together, beginning in PSHE classes, could compound the benefits.

## 2.1 Personal, Social Health education (PSHE)

(For details of PSHE in primary schools please see section 2.2 in Jones et al., 2009).

Progress is currently being made towards making PSHE statutory within UK schools. Currently Key Stages 3 and 4 there are themes to the curriculum that ought to incorporate points as follows:

### ***National Curriculum Science***

#### Key stage 3

- That fertilisation in humans is the fusion of a male and female cell.
- About the physical and emotional changes that take place during adolescence.
- About the human reproductive system, including the menstrual cycle and fertilisation.
- How the foetus develops in the uterus how the growth of bacteria and the replication of viruses can affect health.

#### Key stage 4

- The way in which hormonal control occurs, including the effects of sex hormones.
- Some medical uses of hormones, including the control and promotion of fertility.
- The defence mechanisms of the body.
- How sex is determined in humans.

Sex and relationship education curriculum and standards guidance (Department for Education and Employment, 2000) states that at secondary school level, sex and relationship education (SRE) should contribute to PSHE education by preparing young people for and adult life and ensuring that they can:

- Develop positive values and a moral framework that will guide their decisions, judgements and behaviour;
- Be aware of their sexuality and understand human sexuality;
- Understand the arguments for delaying sexual activity;
- Understand the reasons for having protected sex;
- Understand the consequences of their actions and behave responsibly within sexual and pastoral relationships;
- Have the confidence and self-esteem to value themselves and others and respect for individual conscience and the skills to judge what kind of relationships they want;
- Communicate effectively;

- Have sufficient information and skills to protect themselves and, where they have one, their partner from unintended/unwanted conceptions, and sexually transmitted infections including HIV;
- Avoid being exploited or exploiting others;
- Avoid being pressured into unwanted or unprotected sex;
- Access confidential sexual health advice, support and if necessary treatment; and
- Know how the law applies to sexual relationships.

Alcohol education is also included in the wider provision for PSHE and according to curriculum guidance (Qualifications and Curriculum Authority, 2007) it ought to teach the facts and laws about drug, alcohol and tobacco use and misuse, and the personal and social consequences of misuse for themselves and for others. The Department for Children Schools and Families (2008) recognises the need to address the issue of high quality and consistent sex and relationship education within further education institutions such as colleges, particularly for those post-16 years and those aged 14-19 years in non-school education. It also recognised that, since further education colleges are the main provider of post-16 education for those with learning difficulties and disabilities it is important to address inequalities in service provision as their sexual health needs may have previously been overlooked (Department for Education and Skills, 2007).

## **2.2 Government policy**

(For further details of government policies related to PSHE please see section 2.3 in Jones et al., 2009).

Sex and relationship and alcohol education are intrinsic to the whole school approach promoted in the healthy schools programme (Department of Health, 2005). In order to gain healthy schools status for PSHE the Department of Health (2005) states that schools must demonstrate that they have met the criteria in the following:

- uses the PSHE framework to deliver a planned programme of PSHE, in line with DfES/Qualifications and Curriculum Authority (QCA) guidance;
- monitors and evaluates PSHE provision to ensure the quality of teaching and learning;
- assesses pupils' progress and achievement in line with QCA guidance;
- has a named member of staff responsible for PSHE provision with status, training and appropriate senior management support within the school;
- has up to date policies in place – developed through wide consultation, implemented, and monitored and evaluated for impact – covering sex and relationship education, drug education and incidents, child protection, and confidentiality;
- has an implemented non-smoking policy, or is working towards being smoke free by September 2007;

- involves professionals from appropriate external agencies to create specialist teams to support PSHE delivery and to improve skills and knowledge, such as a school nurse, sexual health outreach workers and drug education advisers;
- has arrangements in place to refer pupils to specialist services who can give professional advice on matters such as contraception, sexual health and drugs;
- uses local data and information to inform activities and support important national priorities such as reducing teenage pregnancies, sexually transmitted infections and drug/alcohol misuse;
- ensures provision of appropriate PSHE professional development opportunities for staff – such as the Certification Programmes for teachers and nurses offered by DH/DfES; and
- has mechanisms in place to ensure all pupils' views are reflected in curriculum planning, teaching and learning, and the whole school environment, including those with special educational needs and specific health conditions, as well as disaffected pupils, young carers and teenage parents.

An extended schools approach to education promotes the general, sexual and substance-related health of adolescents aged 11 to 19 years through improving access to contraceptive and sexual health advice and targeted specialist substance use prevention services (Department for Educational and Skills, 2006). Sexual health services in education settings that are most successful are those that bring together a range of partners including those in the key areas of health, education, social services, and youth support services (Department for Education and Skills, 2007). Sexual health service provision within further education includes a wide variety of people involved in setting up services from PCT and local authorities, further education, and the surrounding community.

The Department of Health (2009) provided additional funding of £26.8m in 2008 to support improved access to contraceptive services. Progress has been made relating to the provision of young people's sexual health clinics linked to educational institutions. However, the Sex Education forum (Emmerson, 2008 and 2007) carried out a national mapping survey of sexual health services in educational settings. Findings showed that 29% of secondary schools have on-site sexual health services, with pupil referral units providing a greater level of on-site services (34.4%). However, a much larger proportion (72%) of further education settings, including sixth-forms provided some sexual health service for their students.

### 3 Methodology

#### 3.1 Search strategy

Systematic searches of electronic databases and websites were undertaken to identify studies that examined the effectiveness and/or cost-effectiveness of alcohol education and/or SRE delivered in isolation or as part of a wider programme of study such as PSHE or its equivalents. Searches were conducted across a range of health, education and social care databases as shown in Box 3.1.

##### **Box 3.1. Health, education and social care databases**

- ASSIA (Applied Social Science Index and Abstracts)
- CINAHL (Cumulative Index of Nursing and Allied Health Literature)
- Database of Abstracts of Reviews of Effectiveness (DARE)
- The Cochrane Library
- EMBASE
- ERIC
- British Education Index
- Australian Education Index
- HMIC (or Kings Fund catalogue and DH data)
- MEDLINE
- PsycINFO
- Sociological Abstracts
- Social Science Citation Index
- EPPI Centre databases
- The Campbell Collaboration
- C2-SPECTR & C2-PROT Campbell Collaboration

Economic evaluation studies were identified by searching the following major health economics databases:

- NHS Economic Evaluations Database (NHS EED)
- EconLit

## 3.2 Inclusion and exclusion criteria

### 3.2.1 Population

Studies were eligible for inclusion if they included children aged 11 to 19 years old in full time education. This included children in secondary schools, sixth form and further education colleges and those receiving education outside of a mainstream school setting including:

- Children receiving home education
- Children receiving education in pupil referral units

Studies were eligible for inclusion if they were undertaken in the UK, Western Europe, Australia, New Zealand, Canada and the USA.

### 3.2.2 Interventions

Studies were eligible for inclusion if they examined interventions that focused on SRE and/or alcohol education. Relevant intervention approaches included:

- Interventions and programmes agreed, planned or delivered by teachers or other professionals
- Interventions and programmes planned and/or delivered by external agencies and individuals
- Intervention involving the 'informal' and extended school curriculum
- Peer led education

### 3.2.3 Comparator(s)

Studies were eligible for inclusion if they compared the intervention of interest against a no intervention control or against another intervention approach.

### 3.2.4 Outcomes

Studies from outside of the UK were eligible for inclusion only if they examined the primary outcome of interest:

- Health and social outcomes relating to alcohol use and sexual health

The following secondary outcomes were assessed but, unless the study was conducted in the UK, only where a study reported primary outcomes of interest:

- Knowledge and understanding
- Personal and social skills
- Attitudes and values

### 3.2.5 Study design

Systematic reviews, randomised controlled trials, controlled non-randomised studies and, controlled before and after studies that compared a school-based intervention against no intervention or another type of intervention were eligible for inclusion in the assessment of effectiveness.

Studies were eligible for inclusion in the assessment of cost-effectiveness if they were economic evaluations conducted alongside trials, modelling studies and analyses of administrative databases. Only full economic evaluations that compared two or more options and considered both costs and consequences (including cost-effectiveness, cost utility and cost-benefit analyses) were included.

### **3.3 Data extraction strategy**

All titles and abstracts retrieved were screened independently by two reviewers (LJ, GB, JD, HS, KS) according to the inclusion/exclusion criteria described above. Disagreements were resolved through consensus and where necessary a third reviewer was consulted. Relevant articles were retrieved in full and full text screening was undertaken independently by two reviewers (LJ, GB, HS, OW).

One reviewer (LJ, GB, HS, OW) independently extracted and assessed the quality of the individual studies into an Access database. All data extraction and quality assessment were independently checked for accuracy by a second reviewer. The results of the data extraction are presented in an addendum to this report.

### **3.4 Quality assessment strategy**

The quality of the studies was assessed according to criteria set out in the NICE Centre for Public Health Excellence Methods Manual (2009). Each of the effectiveness and cost-effectiveness studies was graded using a code, ++, + or – based on the extent to which the potential sources of bias had been minimised:

- ++ All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions are thought very unlikely to alter.
- + Some of the criteria have been fulfilled. These criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.
- Few or no criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter.

Results of the quality assessment are presented in Appendix 4 and 5.

### **3.5 Methods of analysis/synthesis**

#### **3.5.1 Effectiveness studies**

The results of the data extraction and quality assessment for each study of effectiveness are presented in structured tables and as a narrative summary. The possible effects of study quality on the effectiveness data and review findings are also discussed within the text of the review.

Studies are grouped according to intervention focus (e.g. alcohol, substance use, abstinence) and for alcohol studies by approach (e.g. single session, classroom-based) and the outcomes examined. Where sufficient data were available, intervention effect sizes have been calculated and presented as odds ratios (OR) for dichotomous data and as mean differences for continuous data. Where study authors reported intervention effect sizes, these have been extracted directly as risk ratios (RR) or OR

as reported in the original publication. Forest plots were generated for single studies using RevMan (version 5) and are presented in an addendum to this report. Heterogeneity between the included studies was assessed by considering differences in (a) the study population, (b) intervention approach, (c) outcome measures, and (d) study quality. However, given the anticipated heterogeneity between the included studies it was judged to be unlikely that pooling would be appropriate or feasible.

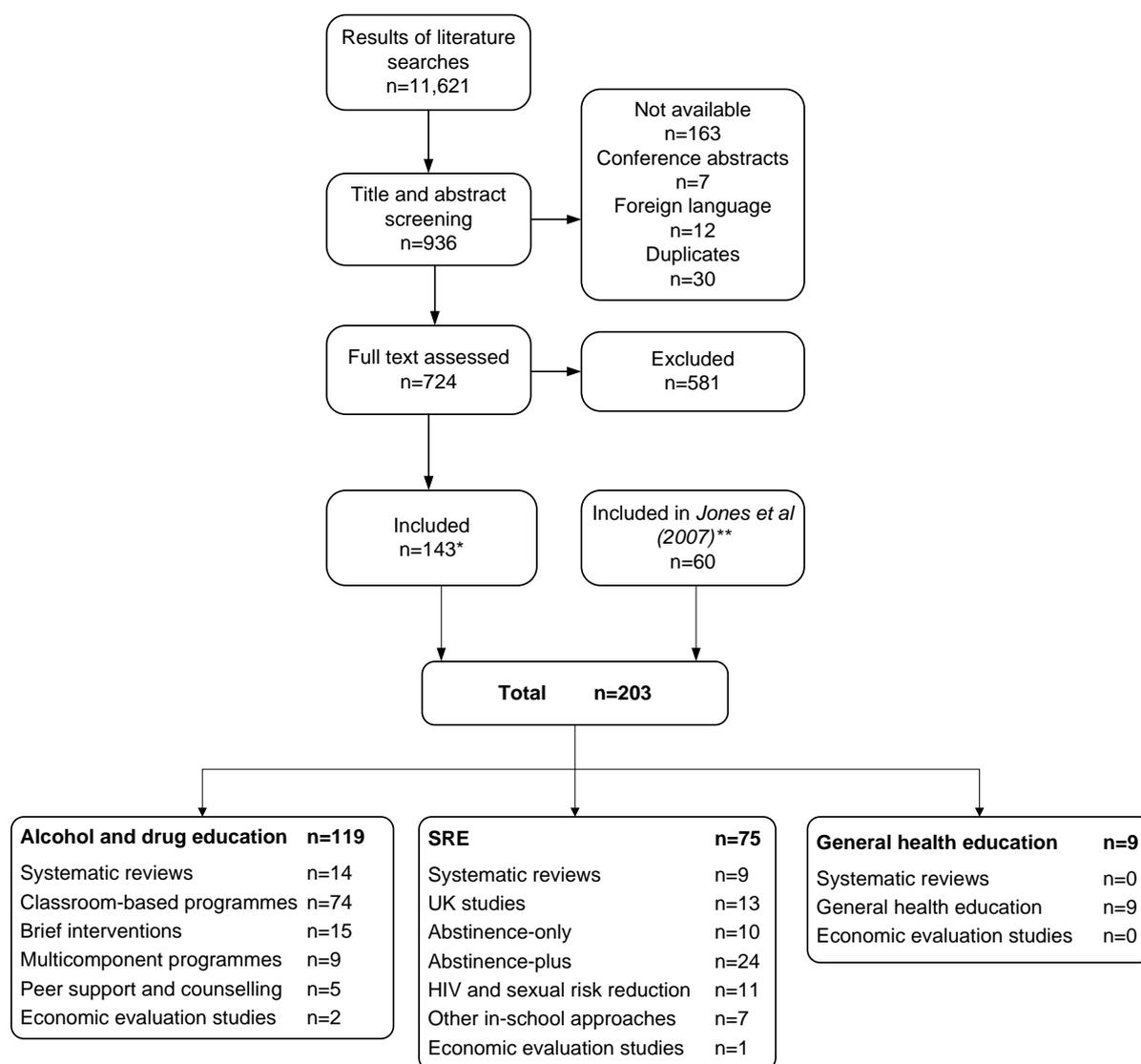
### **3.5.2 Published economic evaluations**

Details of each identified published economic evaluation, together with a critical appraisal of its quality were presented in structured tables and as a narrative summary. For economic studies conducted alongside trials, the validity of the included studies was assessed by considering the source of the resource use and effectiveness data, the methods used to measure and calculate costs, the methods of analysis used and the generalisability of the results to the UK population.

## 4 Summary of study identification

### 4.1 Review of effectiveness and cost-effectiveness

A total of 11,621 references were identified from the literature searches. Following screening of titles and abstracts, 936 articles were identified as potentially relevant and attempts were made to source the full text articles. Of these articles, 163 were not available, seven were conference abstracts and 12 were foreign language articles. These studies were therefore not subject to further screening and a total of 724 full-text articles were screened against the inclusion criteria for the study. The process of study selection is summarised in Figure 1.



\*Includes a further 49 studies included in Jones et al (2007)

\*\*Not identified in the literature searches conducted for this review

Figure 4.1. Process of study selection

#### 4.1.1 Included studies

A total of 143 articles met the criteria for inclusion. A further 60 articles that were included in a systematic review of the effectiveness and cost-effectiveness of interventions in primary and secondary schools to prevent and/or reduce alcohol use, previously conducted by the lead author and colleagues (Jones et al., 2007), but not identified in the searches conducted for this review, also met the criteria for inclusion. Therefore a total of 203 articles were identified for inclusion in the review of effectiveness and cost-effectiveness. Of these, 119 articles focused on alcohol and drug education programmes, 75 articles focused on sex and relationships education and the remaining nine articles examined general education programmes which targeted both alcohol, and sex and relationships. Twenty-three articles were systematic reviews and/or meta-analyses, 152 studies were based on experimental designs of which 111 used random assignment. Twenty-five observational studies were identified for inclusion including 22 controlled before and after (CBA) studies, two interrupted time series (ITS) and one uncontrolled before and after study<sup>1</sup> (UBA). Three economic evaluation studies were also identified.

**Table 4.1. Summary of study designs identified for inclusion**

Section	Total	SR/MA	RCT	NRCT	CBA	Other	Economic evaluation
Alcohol	119	14	72	19	12	0	2
SRE	75	9	31	22	9	3*	1
General	9	-	8	-	1	0	-
Total	203	23	111	41	22	3	3

\*one UBA study and two ITS

#### 4.1.2 Excluded studies

A total of 581 articles did not meet the criteria for inclusion in the review and were excluded for the following reasons:

- Study design did not meet design criteria for inclusion in the review, n=320
- Population targeted by the intervention(s) did not meet the review criteria, n=202
- Intervention examined was not based in a school setting, n=38
- Intervention or intervention was not alcohol education or SRE related, n=17
- Intervention targeted at risk or high risk population, n=4

References for the excluded studies are presented in Appendix 2.

<sup>1</sup> This study was included because it was related to two UK-based RCTs of the RIPPLE programme.

## **5 Alcohol and drug education programmes**

A total of 119 articles met the criteria for inclusion in the review of alcohol and drug education programmes. Fourteen articles were systematic reviews and meta-analyses, 103 articles reported on the evaluation of an alcohol or substance use education programme, and two articles were economic evaluation studies. Of the 103 articles, 74 reported on evaluations of classroom-based programmes; 20 of which were alcohol specific, and 54 of which focused on substance use including alcohol. Also identified were 15 articles that reported on evaluations of brief or single session interventions, nine articles reporting on two multicomponent school- and community-based programmes and five articles reporting on evaluations of peer support and/or counselling programmes.

### **5.1 Systematic reviews and meta-analyses**

#### **5.1.1 Overview of evidence identified**

Fourteen systematic reviews and meta-analyses were identified for inclusion, which examined interventions targeting alcohol and other substance use.

#### **5.1.2 Quality assessment**

Four reviews (Foxcroft et al., 2002; White et al., 2004; Spoth et al., 2008; Gottfredson & Wilson, 2003) were rated good quality (++ rating), eight reviews (Coggans et al., 2003; Dusenbury et al., 1997; Loveland-Cherry, 2003; Skara & Sussman, 2003; Tobler, 1993; Tobler et al., 1997, 2000; Werch & Owen, 2002) were rated moderate quality (+ rating) and the remaining two reviews (Bruvold, 1990; Cuijpers, 2002) were rated poor quality (- rating). All 14 reviews addressed an appropriate and clearly focused question, but descriptions of the methodology used were poorly reported in four reviews (Bruvold, 1990; Coggans et al., 2003; Cuijpers, 2002; Dusenbury et al., 1997) as details about data extraction and quality assessment were not reported. In one review (Bruvold, 1990), details were also lacking on how studies were located for inclusion and so it was not possible to determine whether the literature review was sufficiently rigorous. For four further reviews (Cuijpers, 2002; Tobler, 1993; Tobler et al., 1997, 2000) details of the literature search were poorly reported. Five reviews (Foxcroft et al., 2002; Loveland-Cherry, 2003; Tobler et al., 1997, 2000; Gottfredson and Wilson, 2003) fully assessed and took study quality into account when reporting findings and this was judged to have been adequately done in four further reviews (Dusenbury et al., 1997; Tobler, 1993; White et al., 2004; Spoth et al., 2008). The remaining reviews (Bruvold, 1990; Coggans et al., 2003; Cuijpers, 2002; Skara & Sussman, 2003; Werch & Owen, 2002) did not adequately assess study quality. The majority of the reviews presented findings in a narrative synthesis, and of the studies that statistically combined studies the methods used appeared to have been suitable.

### 5.1.3 Findings

#### 5.1.3.1 Classroom-based programmes

Seven reviews (Loveland-Cherry, 2003; Tobler, 1993; Tobler et al., 1997, 2000; Cuijpers, 2002; Gottfredson and Wilson, 2003) examined the effectiveness of school-based programmes delivered within classroom-based curriculums. Four articles were identified that reported on a series of meta-analyses undertaken by Tobler (1993; Tobler et al., 1997; Tobler et al., 2000; Black et al., 1998).

Loveland-Cherry (2003) reported that among programmes that lasted for three months or less, decreases in potential drinking were reported. However, overall the author reported that the effects of the programmes examined were inconsistent, relatively small and short-lived, and that few studies demonstrated long-term results. The most recent meta-analysis undertaken by Tobler and colleagues (2000; SR +) reported that for programmes targeting alcohol use, there was a small, but nonsignificant difference between non-interactive and interactive programmes, in favour of interactive programmes. In a subset of high-quality programmes, the difference between non-interactive and interactive programmes targeting alcohol was found to be significantly in favour of interactive programmes. Based on the evidence reviewed, Cuijpers (2002) proposed evidence-based quality criteria for drug prevention programmes. They stated that programmes should be based on well-designed scientific research demonstrating effectiveness, use interactive delivery methods, be based on the social influence model and focus on normative education, commitment not to use substances, and intentions not to use. In addition, the authors reported that adding community interventions, life-skills training and/or the use of peer leaders strengthened the effects of school-based interventions. Gottfredson and Wilson (2003) combined data from 94 studies of school-based prevention activities. Assessment of the relationship between programme effectiveness and age, suggested an advantage for programmes delivered to middle/junior high school students (equivalent to ages 11-15 years) compared to programmes targeting elementary or senior school age students (although the difference was not statistically significant). Neither programme length nor duration was found to be predictive of student outcomes. Examination of providers revealed a positive benefit of the involvement of peers as leaders but this benefit disappeared in studies which combined peer and teacher involvement.

#### 5.1.3.2 Multicomponent programmes

Five reviews (Dusenbury et al., 1997; Foxcroft et al., 2002; Gottfredson & Wilson, 2003; Skara & Sussman, 2003; Spoth et al., 2008) examined the effects of a range of substance use prevention programmes. Two reviews (Foxcroft et al., 2002; Spoth et al., 2008) specifically focused on interventions aimed at the prevention or reduction of alcohol use.

Foxcroft et al (2002) reported that it was difficult to draw firm conclusions about the effectiveness of interventions delivered over the short- and medium-term because of mixed findings. Three programmes were found to have long-term effects on alcohol use, Botvin's Life Skills Training (LST), a culturally tailored curriculum for Native Americans and the family-based Strengthening Families Programme. The Strengthening Families Programme was highlighted as showing particular promise as an effective intervention. Based on a reanalysis of data to account for participants lost to follow-up,

the authors calculated a number needed to treat (NNT) of 9 for three alcohol use behaviours: ever used alcohol (95% CI: 5 to  $\infty$ ), ever used alcohol without permission (95% CI: 5 to 160), and ever been drunk (95% CI: 5 to 327). This indicated that for every nine individuals who received the intervention, 4 years later there would be one fewer young person reporting that they had ever used alcohol, used alcohol without permission or ever been drunk. Ten drug prevention curricula were included in the review by Dusenbury and colleagues (1997). The authors reported that the substance use curricula reviewed had been shown to effectively reduce substance use, and that in particular LST has been shown to have effects into young adulthood. Six curricula (Alcohol Misuse Prevention Project, Growing Healthy, Know Your Body, LST, Project Northland and STAR) were shown to have intervention effects lasting for at least two years after the pretest. The authors report that two programmes (Project Alert and DARE) did not appear to have sustained effects on drug use, although they had variable success at reducing substance use in the short-term. Skara and Sussman (2003) reported very little data that was specific to alcohol use, but two studies that reported on the Healthy School and Drugs Project and the Midwest Prevention Project, respectively, provided sufficient information for the calculation of the percentage reduction in weekly alcohol use rates from baseline to follow-up (for experimental conditions relative to control conditions). Long-term reductions were 6.9% and 11.7% for the two programmes, respectively. Of six studies assessing alcohol or cannabis use, the authors reported that five had maintained long-term reductions in alcohol use at the end of the study period. Spoth et al (2008) examined the literature on preventive interventions for underage drinking. Forty-one interventions met the criteria for inclusion in the review; 12 met the criteria for "most promising" evidence and 29 met the criteria for "mixed or emerging" evidence. For young people aged 10-15 years eight school-based or multicomponent interventions were highlighted as "most promising": Keepin it REAL, Midwest Prevention Project, Project Northland, BiCultural Competence Skills programme, Healthy School and Drugs, LST, Project ALERT, School Health and Harm Reduction Project.

### **5.1.3.3 Specific intervention approaches**

Bruvold (1990) and Coggans et al (2003) reviewed the effectiveness of specific intervention approaches, the California school-based risk reduction programme and Botvin's Life Skills Training (LST) programme, respectively.

Coggan et al (2003) mainly focused on the effects of LST on illicit drug use outcomes. The authors commented that in terms of alcohol use, effects of the LST programme "can be positive if relatively modest in scale" but that completeness of delivery and fidelity were important in maximising the effects of LST. The authors also reported that there was some evidence that the positive impact of LST on alcohol and smoking could reduce likelihood of progression to illicit drug use, but that the evidence was not conclusive. The authors also reported that a well-implemented LST programme could positively affect knowledge, attitudes and behaviour with respect to alcohol use. Bruvold (1990) calculated study effect sizes for alcohol behavioural outcomes. Programmes based on rational theory were found to have a smaller effect on alcohol use behaviours than programmes based on developmental theory (effect size [ES] 0.02 vs. 0.20, respectively). However, given the small number

of developmental-based programmes included in the meta-analysis (n=2) the authors stated that this result should be interpreted with caution.

#### **5.1.3.4 Other reviews**

Two reviews examined other aspects of the effectiveness of alcohol and drug education programmes. Werch and Owen (2002) undertook a systematic analysis of published studies to determine whether iatrogenic effects occurred, and where harmful effects occurred, under what circumstances. White et al (2004) undertook a review of the role of external contributors in delivering substance use education.

Werch and Owen (2002) identified 17 studies for inclusion in their review of iatrogenic programme effects. Of these studies, 47% with negative substance outcomes were focused on the prevention of alcohol use. The alcohol prevention programmes reviewed (n=8) resulted in 19 harmful effects, or an average of 2.4 negative outcomes for every programme. The majority were non-behavioural measures (58%); examples provided by the authors included increased estimates of alcohol offers, pro-alcohol attitudes and increased expectations about drinking in the future. For all programmes overall, the greatest number of negative programme effects was associated with social-influence based programmes (59%), and the next largest harmful were programmes associated with knowledge/attitudes/values models (23%). Werch and Owen (2002) suggested that the social influence-based strategy of teaching students' resistance skills training may be the element of these studies that results in negative effects.

White et al (2004) identified evaluations on the use of 16 different types of external contributors. The authors found that there was no evidence to suggest that any particular agency or external contributor was more effective (in terms of being well received by pupils and teachers and/or leading to knowledge, attitude or behaviour change in the pupils) than any other in providing drug education. There was some evidence that the DARE programme could achieve short-term changes in knowledge, attitudes and behaviour, but that these effects were found to decay rapidly. However, the authors report that police officers could provide a valuable contribution (e.g. bringing specialist knowledge) to drug education when used in a supplementary role. Peer-delivered education, theatre in education and Life Education Centre programmes were evaluated but there was insufficient evidence to judge their effects on behaviour change. The authors reported that programmes delivered by nurses were shown to produce short-term knowledge gains, and to have effects on knowledge and alcohol use for up to 6 months.

#### **5.1.4 Summary and evidence statements**

A total of 14 systematic reviews and meta-analyses were identified for inclusion. The majority of the reviews identified examined the effectiveness of programmes targeting substance use including alcohol, and only three reviews (Foxcroft et al., 2002; Loveland-Cherry, 2003; Spoth et al., 2008) focused specifically on the prevention of alcohol use.

Foxcroft et al (2002) found that there was no consistent evidence to determine which programmes were effective over the short to medium-term, but highlighted three programmes which were effective over the longer term. These included the family-based, Strengthening Families programme, and two

school-based programmes, Botvin's LST and a culturally-focused curriculum for Native American students. Spoth et al (2008) highlighted promising evidence from six additional programmes, Keepin it REAL, the Midwest Prevention Project, Project Northland, Healthy School and Drugs, Project ALERT, and the School Health and Harm Reduction Project. Two reviews (Cuijpers, 2002; Gottfredson and Wilson, 2003) identified evidence to suggest that peer leaders strengthened the effects of school-based interventions, although Gottfredson and Wilson (2003) found that any beneficial effects of peer involvement were lost when they were combined with teacher-led activities. White et al (2004) did not find any evidence to suggest that any particular agency or external contributor was more effective than another.

#### **Evidence statement 1**

- 1 (c) There is strong evidence from two systematic reviews<sup>1</sup> to suggest that a secondary-level school-based programme, Botvin's LST, can produce long-term reductions (greater than 3 years) in alcohol use. Other promising intervention approaches include: Keepin it REAL, the Midwest Prevention Project, Project Northland, Healthy School and Drugs, Project ALERT, and the School Health and Harm Reduction Project.
- 1 (d) There is moderate evidence from two systematic reviews<sup>2</sup> to suggest that programmes delivered by peer leaders may be more beneficial than programmes delivered by teachers or other contributors. However, there is strong evidence from one systematic review<sup>3</sup> to suggest that the positive benefits of peer involvement may disappear if teachers were also involved in delivery.

<sup>1</sup> Foxcroft et al., 2002; 2003 (SR ++); Spoth et al., 2008 (SR ++)

<sup>2</sup> Gottfredson and Wilson, 2003 (SR ++); Cuijpers, 2002 (SR -)

<sup>3</sup> Gottfredson and Wilson, 2003 (SR ++)

**Table 5.1. Alcohol education: systematic reviews and meta-analyses**

Author (Year)	Design	Inclusion/exclusion	Number of studies	Findings
Bruvold 1990	SR -	Outcome evaluations of Californian programmes delivered to 4th to 8th graders	8 studies	Programmes based on rational model had more impact on knowledge (ES = 0.61) than developmental programmes (ES = 0.26); less effect on attitudinal outcomes (ES = -0.01; 0.04). Rational based programmes had less of an effect on alcohol use behaviours than developmental programmes (ES = 0.02 vs. 0.20).
Coggan et al., 2003	SR +	Evaluations of Botvin's LST programme	45 reports	The authors reported that there was some evidence that positive impact of LST on alcohol and smoking could reduce likelihood of progression, but the data were not conclusive. A well-implemented LST programme can positively affect knowledge, attitudes and behaviour with respect to smoking and alcohol use.
Cuijpers 2002	SR -	Universal school-based drug prevention aimed at tobacco, alcohol and illegal drugs	30 studies	Evidence-based quality criteria for programmes proposed, see evidence table for full details.
Dusenbury et al., 1997	SR +	Primary prevention of alcohol and/or drug use; classroom-based curricula	47 programmes	Eight programmes were shown to be effective at reducing tobacco or drug use in at least some studies. LST has been shown to have effects into young adulthood. In addition, six curricula (Alcohol Misuse Prevention Project, Growing Healthy, Know Your Body, LST, Project Northland and STAR) were shown to have intervention effects lasting for at least two years after the pretest. Project Alert and DARE did not appear to have sustained effects on drug use
Foxcroft et al., 2002, 2003	SR ++	Psychosocial and educational interventions aimed at the primary prevention of alcohol misuse by young people aged up to 25 years	56 studies	Twenty studies demonstrated evidence of ineffectiveness. No firm conclusions about the effectiveness of prevention in the short and medium-term were possible. But over the longer term (>3 years), the Strengthening Families Programme showed more promise as an effective prevention intervention.
Gottfredson & Wilson, 2003	SR ++	Interventions to reduce problem behaviours that measured effects on alcohol and other drug use	94 studies	Reported an advantage for programmes delivered to middle/junior high school students (equivalent to ages 11-15 years) compared to programmes targeting elementary or senior school age students (although the difference was not statistically significant). Neither programme length nor duration was found to be predictive of student outcomes. Positive benefit of peer involvement, but this disappeared when combined with teacher involvement.
Loveland-Cherry, 2003	SR +	Interventions that prevent alcohol use in children and adolescents.	73 studies	Overall the effects of the programmes were inconsistent, relatively small and short lived. Few studies have demonstrated long-term results. An increase in alcohol knowledge was reported by several studies.

Author (Year)	Design	Inclusion/exclusion	Number of studies	Findings
Skara and Sussman 2003	SR +	Controlled evaluations of school- and community-based prevention programmes providing at least a 2-years follow-up.	25 studies	Very little data specific to alcohol use. Two studies provided sufficient information for calculation of the % reduction in weekly alcohol use rates from baseline to follow-up; long-term reductions were 6.9 and 11.7%, respectively.
Spoth et al., 2008	SR ++	Interventions that reduce problem behaviours in children and include outcomes related to substance use	41 studies	Eight school-based or multicomponent interventions were highlighted as "most promising": Keepin it REAL, Midwest Prevention Project, Project Northland, BiCultural Competence Skills programme, Healthy School and Drugs, LST, Project ALERT, School Health and Harm Reduction Project.
Tobler 1993; Tobler et al. 1997, 2000, Black et al., 1998	SR +	School-based drug prevention programmes	207 programmes	Small, but nonsignificant difference between non-interactive and interactive programmes, in favour of interactive programmes. In a subset of high-quality programmes, the difference between non-interactive and interactive programs targeting alcohol was found to be significantly in favour of interactive programmes.
Werch and Owen 2002	SR +	Programmes aimed at either slowing onset of substances, or reducing use;	17 studies	Alcohol prevention programmes (n=8) resulted in 19 harmful effects, or an average of 2.4 negative outcomes for every programme. The majority were non-behavioural measures (58%).
White et al., 2004	SR ++	Studies that evaluated the contribution of external contributors to classroom-based interventions or targeted groups within the school context/curriculum	114 reports	No evidence to suggest that any particular agency or external contributor was more effective (in terms of being well received by pupils and teachers and/or leading to knowledge, attitude or behaviour change in the pupils) than any other.

## 5.2 Classroom-based programmes: alcohol specific

### 5.2.1 Overview of evidence identified

Twenty articles were identified for inclusion that reported on the evaluation of 12 alcohol education programmes across 15 studies. Three articles (McBride et al., 2000, 2003, 2004) examined the effectiveness of the School Health and Alcohol Harm Reduction Project (SHAHRP) across the same sample of students and were grouped together as a single study. In addition, five articles (Hansen & Graham, 1991; Donaldson et al., 1995; Donaldson et al., 2000; Palmer et al., 1998; Kreft, 1998) examined the effectiveness of the Adolescent Alcohol Prevention Trial (AAPT) curriculum across the same sample of 11,995 students. Hansen and Graham (1991) examined data from students who received the main programme in seventh grade, and two further articles (Kreft 1998; Palmer et al., 1998) reanalysed data for this sample. These three articles were grouped as one study and two articles by Donaldson et al (1995, 2000), which examined data for the whole sample of students, were grouped as a second study of the AAPT. A summary of the programme content across the 15 studies identified is presented in Table 5.2.

Eight studies were conducted in the USA, four in Australia, and one each in the UK, Germany and Norway. All 12 programmes were primarily classroom-based curriculums; two programmes, Resilient Families (Shortt et al., 2007) and an alcohol education programme (Morgenstern et al., 2009) incorporated materials and activities for parents. Teachers were the sole provider for nine programmes (Alcohol Education Package [Bagnall, 1990]; Project SAAV [Baumann, 2006]; SHAHRP [McBride et al., 2000, 2003, 2004]; two unnamed alcohol education curriculums [Morgenstern et al., 2009; Schnepf, 2002]; Resisting Pressures to Drink and Drive [Newman et al., 1992]; CLIMATE schools [Newton et al., 2009; Vogl et al., 2009]; AMPS [Shope et al., 1994; Shope et al., 1996a]; Resilient Families [Shortt et al., 2007]) and two programmes (Students Against Drink Driving [Klitzner et al., 1994]; and an unnamed alcohol education curriculum [Wilhelmsen et al., 1994]) combined teacher- and peer-led activities. One programme (AAPT [Donaldson et al., 1995, 2000; Hansen & Graham, 1991; Kreft, 1998; Palmer et al., 1998]) was delivered by external project staff.

The theoretical basis for the programme or intervention was not reported for five programmes. Two programmes, Project SAAV (Baumann, 2006) and Resisting Pressures to Drink and Drive (Newman et al., 1992) were based on a combination of theories. The most commonly applied theory across the 12 programmes was the social influence theory (n=3 programmes). Other theories applied included social learning theory and social cognitive theory.

The number of students recruited for participation across the 15 studies ranged from 45 to over 10,000 students. Evaluation of eight programmes was based on sample sizes of greater than 1,500 students: Alcohol Education Package (Bagnall, 1990); an unnamed alcohol education curriculum (Morgenstern et al., 2009); AMPS (Shope et al., 1994, 1996a); Resilient Families (Shortt et al., 2007); SHAHRP (McBride et al., 2000; 2003; 2004); Resisting Pressures to Drink and Drive (Newman et al., 1992); Students Against Drink Driving (Klitzner et al., 1994); and the AAPT (Donaldson et al., 1995, 2000; Hansen & Graham, 1991; Kreft, 1998; Palmer et al., 1998).

**Table 5.2. Summary of programme content: classroom-based (alcohol specific)**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Hansen & Graham, 1991; Kreft, 1998; Palmer et al., 1998	RCT -	USA n=3,011 <sup>a</sup> 7th grade	School	<b>AAPT</b> : One year programme; Resistance Skills Training + ICU (8 lessons); Normative Education + ICU (8 lessons); Resistance Skills Training + Normative Education (10 lessons)	Social influence theory	Project staff
Donaldson et al., 1995; 2000	RCT -	USA n=11,995 <sup>b</sup> 8th grade	School	<b>AAPT</b> : One year programme; see Hansen & Graham, 1991 for details	Social influence theory	Project staff
Bagnall, 1990	CBA -	UK n=1,560 12-13 years	School	<b>Alcohol Education Package</b> : 4 or 5 social education lessons including group work, optional role play exercises	Social influence theory	Seconded specialist teachers or regular classroom teachers
Shope et al., 1996a	CBA +	USA n=2,031 <sup>c</sup> 10th-11th grade	School	<b>AMPS</b> : 4 sessions delivered over 4 weeks in first year (5th and 6th grade classes); 3 booster sessions in second year; 5 sessions in 10th grade	Social learning theory	Teachers
Newton et al., 2009	RCT +	Australia n=944 mean 13.1 years	School	<b>CLIMATE Schools</b> : Six lessons (40 minutes each); 15-20 min computer-based lesson and classroom based activities	NR	Teachers
Vogl et al., 2009	RCT +	Australia N=1,466 mean 13 years	School	<b>CLIMATE Schools</b> : Six-lesson harm minimization course; 15–20-minute computer-based lesson and class activities.	NR	Teachers
Shope et al., 1994	RCT -	USA N=3,704 6th-8th grade	School	<b>Enhanced AMPS</b> : 8 sessions in 6th grade; 5 sessions in 7th grade; 4 sessions in 8th grade	Social learning theory	Teachers
Baumann, 2006	RCT -	USA n=256 mean 17.1 years	School	<b>Project SAAV</b> : Three sessions (50-minutes each); information and discussion, coping skills, homework assignment	Problem-behaviour theory, self-regulation theory, transtheoretical model of change	Teachers

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Shortt et al., 2007	RCT +	Australia n=2,315 mean 12.3 years	School, family	<b>Resilient Families:</b> One year programme; relationship problem solving, communication, emotional awareness, peer resistance skills, conflict resolution, quiz for parents	NR	Teachers
Newman et al., 1992	RCT -	USA n=3,500 14-15 years	School	<b>Resisting Pressures to Drink and Drive:</b> Two year programme, 10 lessons; resistance skills training, video based drama, student workbook	Problem behaviour theory, social cognitive theory, role theory, educational immunization	Teachers
McBride et al., 2000; 2003; 2004	NRCT +	Australia n=2,343 12-13 years	School	<b>SHAHRP:</b> 17 consecutive skills-based activities; 12 activities including skill rehearsal, and group decision-making and discussion in second year	Social inoculation	Teachers
Klitzner et al., 1994	CBA +	USA n=4,174 9th-12th grade	School	<b>Students Against Drink Driving:</b> Assembly, student committee, 15 session curriculum (10th grade), 'contract for life'	NR	Teachers, Peers
Morgenstern et al., 2009	RCT ++	Germany n=1,686 mean 13 years	School, family	Four class units, a student booklet and a parent booklet; addressed social influences, enhancing motivation to avoid substances, consequences of alcohol use, media/advertising literacy, resistance skills and normative beliefs	NR	Teachers
Schnepf, 2002	NRCT -	USA n=45 mean 15.2 years	School	7 sessions (40 minutes each); peer- vs. teacher-led alcohol education curriculum	NR	Teachers
Wilhelmsen et al., 1994	NRCT -	Norway 7th grade n=915	School	10 lessons over two month; highly role specific vs. less role specific; alcohol use and social traditions, norms for alcohol use, managing drinking pressures, attitudes to alcohol use	Social cognitive theory	Teachers, Peers

<sup>a</sup> Examined data from AAPT students who received the main programme in 7<sup>th</sup> grade; <sup>b</sup> Examined data for the whole sample of AAPT students; <sup>c</sup> Followed up a sample of students who had received the AMPS curriculum as 6<sup>th</sup>-8<sup>th</sup> graders and an additional five sessions in 10<sup>th</sup> grade.

Eight programmes targeted students aged 14 or younger and of these seven were taught to students aged 12-13 years. Four programmes, Resisting Pressures to Drink and Drive, Students Against Drink Driving, an unnamed alcohol education curriculum (Schnepf, 2002), and Project SAAV were targeted at older adolescents (aged >14 years) and one programme, AMPS, targeted students in the 6<sup>th</sup> to the 10<sup>th</sup> grade (11-15 years).

Four programmes were based on immediate post-test follow-up only: Alcohol Education Package, two unnamed alcohol education curriculums (Schnepf, 2002; Wilhelmsen et al., 1994) and the enhanced AMPS (Shope et al., 1994). Five studies (Shortt et al., 2007; McBride et al., 2000, 2003, 2004; Shope et al., 1996a; Hansen & Graham, 1991; Kreft, 1998; Palmer et al., 1998 Donaldson et al., 1995; 2000) reported on follow-ups greater than 12 months.

### **5.2.2 Quality assessment**

Of the 15 studies identified, nine studies were RCTs, three were non-randomised controlled trials and three were controlled before and after studies. All nine RCTs were based on cluster randomisation. Study quality was mixed across the studies. One study (Morgenstern et al., 2009), an RCT was rated good quality, six studies (Klitzner et al., 1994; McBride et al., 2004; Newton et al., 2009; Shope et al., 1996a; Shortt et al., 2007; Vogl et al., 2009) were rated moderate quality, and eight studies (Bagnall, 1990; Baumann, 2006; Donaldson et al., 2000; Hansen & Graham, 1991; Newman et al., 1992; Schnepf, 2002; Shope et al., 1994; Wilhelmsen et al., 1994) were rated poor quality. All nine RCTs were reported as randomised but only one study (Morgenstern et al., 2009) reported that allocation was concealed appropriately. Outcomes measures were reliable across most of the RCTs and NRCTs, but three studies (Hansen & Graham, 1991; Klitzner et al., 1994; Shope et al., 1996a) either did not report on the validity or reliability of the outcome measures used or this aspect of study design was poorly reported. Important and relevant outcomes were reported across all of the included studies. The baseline comparability of the intervention and control groups was poorly or not reported in eight studies (Shortt et al., 2007; Baumann, 2006; Donaldson et al., 1995, 2000; Newman et al., 1992; Shope et al., 1994; McBride et al., 2000, 2003, 2004; Wilhelmsen et al., 1994; Bagnall, 2003) and in three studies (Bagnall, 2003; Donaldson et al., 1995, 2000; Newman et al., 1992) it was not clear how many participants were assigned to intervention and control groups. Only one study (Morgenstern et al., 2009) reported that an ITT analysis had been undertaken.

### **5.2.3 Findings**

#### **5.2.3.1 Short-term results (<6 months)**

Eleven studies (Bagnall, 1990; Donaldson et al., 1995; Baumann, 2006; Klitzner et al., 1994; McBride et al., 2000, 2003, 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Shope et al., 1994; Vogl et al., 2009; Wilhelmsen et al., 1994) reported short-term follow-up data for 10 programmes: Alcohol Education Package, AAPT, Project SAAV, Students Against Drink Driving, SHAHRP, CLIMATE, the AMPS curriculum and three unnamed curricula.

### **Knowledge and understanding**

Seven studies (Bagnall, 1990; McBride et al., 2000, 2003, 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Shope et al., 1994; Vogl et al., 2009) examined short-term intervention effects on knowledge related to alcohol use. Bagnall (1990) reported that the Alcohol Education Package curriculum had no impact on knowledge, but the remaining six studies (McBride et al., 2000, 2003, 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Shope et al., 1994; Vogl et al., 2009) reported that intervention students demonstrated significantly greater alcohol-related knowledge at follow-up than control students.

### **Attitudes and values**

Eight studies (Bagnall, 1990; Baumann, 2006; McBride et al., 2000, 2003, 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Vogl et al., 2009; Wilhelmsen et al., 1994) examined short-term intervention effects on students' attitudes and values. Of five studies (Bagnall, 1990; Morgenstern et al., 2009; McBride et al., 2000, 2003, 2004; Schnepf, 2002; Wilhelmsen et al., 1994) that examined programme effects on attitudes, three studies (Bagnall, 1990; Morgenstern et al., 2009; Schnepf, 2002) reported no effects on alcohol-related attitudes. McBride et al (2000; 2003; 2004) reported that students who participated in SHAHRP showed significantly safer alcohol-related attitudes and Wilhelmsen et al (1994) found a highly-role specific prevention programme had positive impacts on students' attitudes to abstention. Two studies (Morgenstern et al., 2009; Wilhelmsen et al., 1994) examined intervention effects on students' intentions towards alcohol. Morgenstern et al (2009) reported no intervention impact, but Wilhelmsen et al (1994) found that students who participated in a highly-role specific prevention programme were more likely to report an intention to abstain from alcohol than control students. They also reported high norms to abstain. Three studies (Baumann, 2006; Newton et al., 2009; Vogl et al., 2009) examined changes in alcohol-related expectancies. Baumann (2006) reported that there were no effects of the Project SAAV programme on alcohol-related expectancies. Two studies (Newton et al., 2009; Vogl et al., 2009) which examined the Clinical Management and Treatment Education (CLIMATE) schools model, based around a computerised harm minimisation course, reported conflicting results. Vogl et al (2009) found that the increase in positive alcohol-related expectancies was significantly less for females in CLIMATE schools compared to control females ( $p < 0.001$ ), and that boys in CLIMATE schools reported a decrease on this measure compared to an increase among control males ( $p < 0.01$ ). Newton et al (2009), who reported on a cross-validation of the study by Vogl et al (2009) found no difference in alcohol-related expectancies between CLIMATE schools and control schools.

### **Personal and social skills**

One study (Klitzner et al., 1994) examined the effects of a programme designed to address drinking and driving, on drinking and driving behaviour. At post-test, Klitzner et al (1994) found that the intervention had no impact on an index of driving while intoxicated or riding with impaired drivers.

### **Health and social outcomes relating to alcohol use and sexual health**

Eleven studies (Bagnall, 1990; Donaldson et al., 1995; Baumann, 2006; Klitzner et al., 1994; McBride et al., 2000, 2003, 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Shope et al.,

1994; Vogl et al., 2009; Wilhelmsen et al., 1994) reported short-term follow-up data related to alcohol use for 10 programmes.

Six studies (Bagnall, 1990; Baumann, 2006; Donaldson et al., 1995; McBride et al., 2000, 2003, 2004; Newton et al., 2009; Wilhelmsen et al., 1994) reported on programmes that demonstrated evidence of reducing alcohol use. Students who participated in the first year of the SHAHRP programme (McBride et al., 2001, 2003, 2004) consumed significantly less alcohol overall and per occasion than students in the control groups. Intervention students who received the Alcohol Education Package (Bagnall, 1990) were significantly less likely than students in the control group to have drunk alcohol in the last 7 days, but the intervention had no impact on frequency of use. Students participating in Project SAAV (Baumann, 2006) reported drinking less frequently over time than controls. Donaldson et al (1995) reported a positive relationship between participation in a seventh grade refusal skills programme, but the relationship was only significant among students who believed it was not acceptable to drink at baseline. Among students in CLIMATE schools who participated in a computerised harm minimisation programme (Newton et al., 2009), average alcohol consumption decreased over the short-term compared to an increase among control students. However, another study of the CLIMATE schools programme by Vogl et al (2009) found no short-term effects of the programme on alcohol consumption. Students who received a highly-role specific programme (Wilhelmsen et al., 1994) reported drinking less than both control students and students who received a less-role specific programme. There were no differences observed between students who received the less-role specific programme and control students. Four studies (Klitzner et al., 1994; Morgenstern et al., 2009; Shope et al., 1994; Schnepf, 2002) reported on programmes that had no effects on alcohol use in young people.

Eight studies examined intervention effects on measures of excessive alcohol consumption. Five studies (Bagnall, 1990; Newton et al., 2009; Schnepf, 2002; Shope et al., 1994; Vogl et al., 2009) found no intervention effects of excessive and problem drinking. Baumann (2006) reported that compared to students in the control groups, students participating in Project SAAV reported binge drinking less frequently over time and SHAHRP students (McBride et al., 2000, 2003, 2004) were significantly less likely than comparison students to report consuming alcohol to harmful or hazardous levels<sup>2</sup> once a month or more. Morgenstern et al (2009) found that there was no statistically significant effect of the intervention on lifetime drunkenness, but that intervention students were significantly less likely than control students to report life-time binge drinking.

Five studies (Bagnall, 1990; Baumann, 2006; McBride et al., 2000, 2003, 2004; Newton et al., 2009; Vogl et al., 2009) examined harms resulting from alcohol use. Two studies (Newton et al., 2009; Vogl et al., 2009) that examined the impact of the CLIMATE schools programme found no intervention effects on harm associated with students' own use of alcohol. SHAHRP students reported less harm associated with their own use of alcohol over the previous 12 months compared to the comparison group (McBride et al., 2000, 2003, 2004). Bagnall (1990) found that there was no difference in the number of intervention and control students reporting that they had ever had a hangover or an

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<sup>2</sup> Defined as consuming more than 2 (for females) or 4 (for males) standard drinks (10g alcohol) per occasion.

alcohol-induced stomach upset. Baumann (2006) reported that students participating in Project SAAV had fewer alcohol-related consequences than control students.

### **5.2.3.2 Medium-term results (up to 12 months)**

Seven studies (Donaldson et al., 2000; Hansen & Graham, 1991; Klitzner et al., 1994; Morgenstern et al., 2009; Newman et al., 1992; Newton et al., 2009; Vogl et al., 2009) reported medium-term follow data for five programmes: AAPT, Students Against Drink Driving, an alcohol education intervention, Resisting Pressures to Drink and Drive, and CLIMATE schools.

#### **Knowledge and understanding**

Four studies (Morgenstern et al., 2009; Newman et al., 1992; Newton et al., 2009; Vogl et al., 2009) examined medium-term intervention effects on alcohol-related knowledge. Two studies (Morgenstern et al., 2009; Newman et al., 1992) reported positive intervention effects on knowledge, and two studies (Newton et al., 2009; Vogl et al., 2009) found that despite finding short-term effects, there were no medium-term effects on knowledge for the CLIMATE schools programme.

#### **Attitudes and values**

Three studies (Morgenstern et al., 2009; Newton et al., 2009; Vogl et al., 2009) examined medium-term intervention effects of alcohol-related attitudes and values. Morgenstern et al (2009) found that an alcohol education intervention did not impact on alcohol attitudes or intentions. Two studies (Newton et al., 2009; Vogl et al., 2009) that examined a computerised harm minimisation intervention (CLIMATE schools programme) reported conflicting medium-term results on alcohol-related expectancies. Vogl et al (2009) reported that although expectancies increased over time in both the intervention and control group, the increase among intervention females was smaller. At 12-month follow-up, both males and females in the intervention group did not report as great an increase in positive alcohol-related expectancies as did students in the control group. At 6-month follow-up, in a cross-validation of this study, Newton et al (2009) reported no intervention effects on alcohol-related expectancies.

#### **Personal and social skills**

Two studies (Klitzner et al., 1994; Newman et al., 1992) of two drink driving programmes examined intervention effects on outcomes related to drinking and driving. At the 1-year follow-up, there were no effects of the Students Against Drink Driving programme (Klitzner et al., 1994) on an index of driving while intoxicated or riding with impaired drivers. The second study, of the Resisting the Pressures to Drink and Drive curriculum (Newman et al., 1992), found that although the number of times students had ridden with a drinking driver in the last 30 days increased in both the intervention and control groups, the increase among intervention students was significantly less.

#### **Health and social outcomes relating to alcohol use and sexual health**

Seven studies (Donaldson et al., 2000; Hansen & Graham, 1991; Klitzner et al., 1994; Morgenstern et al., 2009; Newman et al., 1992; Newton et al., 2009; Vogl et al., 2009) examined medium-term intervention effects on health outcomes related to alcohol use. Three studies (Hansen & Graham

1991; Donaldson et al., 2000; Kreft 1998) reported 1-year follow-up data for the AAPT. One study (Hansen & Graham, 1991) reported that students who received normative education had lower rates of alcohol consumption, although based on analyses conducted at the classroom level (Kreft, 1998) the programme (including the normative education component) was shown to not be effective. In a second study of the AAPT (Donaldson et al., 2000), lower rates of lifetime and 30-day alcohol consumption were only found among a subgroup of public school students who received the normative education component. Three further programmes were shown to have no medium-term effects on alcohol use: Students Against Drink Driving (Klitzner et al., 1994); an alcohol education intervention (Morgenstern et al., 2009); and Resisting Pressures to Drink and Drive (Newman et al., 1992).

Inconsistent results were found for the harm minimisation intervention examined in the CLIMATE school programme (Newton et al., 2009; Vogl et al., 2009). Vogl et al (2009) reported that among females, average alcohol consumption remained relatively constant between baseline and 6-month follow-up for the intervention group and increased in the control group ( $p < 0.001$  for comparison). At 12 months, control group students reported a greater increase in average alcohol consumption compared to the intervention group ( $p < 0.05$  for comparison). For boys there were no significant differences between intervention groups. Lack of significant effects was also noted in the cross-validation study by Newton et al (2009); finding no significant difference in average weekly alcohol consumption between intervention and control groups at the 6-month follow-up.

Four studies (Donaldson et al., 2000; Morgenstern et al., 2009; Newton et al., 2009; Vogl et al., 2009) examined medium-term intervention effects on excessive alcohol consumption. Morgenstern et al (2009) found that although the alcohol education curriculum examined did not impact on lifetime drunkenness (adjusted OR 0.77 95% CI: 0.52, 1.12), intervention students were significantly less likely than control students to report lifetime binge drinking (adjusted OR 0.74; 95% CI 0.57, 0.97). Donaldson et al (2000) reported an impact of the AAPT on drunkenness; students who attended public schools and who received the normative education component of the intervention reported lower rates of drunkenness. Two studies (Vogl et al., 2009; Newton et al., 2009) of the CLIMATE schools alcohol programme examined intervention impact on harms arising from students' alcohol use. At 6-month follow-up (Vogl et al., 2009; Newton et al., 2009) there were no differences in the number of harms experienced between intervention and control students, however, at the 12-months follow-up (Vogl et al., 2009) females in the intervention group had significantly less of an increase in harm than the control students ( $p < 0.05$ ).

### **5.2.3.3 Long-term (>12 months)**

Long-term follow-up data were reported for four programmes: AAPT (Donaldson et al., 2000; Hansen & Graham, 1991; Kreft, 1998; Palmer et al., 1998); SHAHRP (McBride et al., 2000, 2003, 2004); AMPS (Shope et al., 1996a); and Resilient Families (Shortt et al., 2007).

### **Knowledge and understanding**

Two studies (McBride et al., 2004; Shope et al., 1996a) reported on long-term intervention effects on knowledge. McBride et al (2004) found that impacts on alcohol-related knowledge among students who participated in SHAHRP were not maintained 17-months later. A study based on data from a sample of students who had received the AMPS curriculum as sixth through eighth graders and additional sessions in 10<sup>th</sup> grade (Shope et al., 1996a) found that intervention students had significantly more alcohol-related knowledge than comparison students at the end of 12<sup>th</sup> grade.

### **Attitudes and values**

Positive effects of the SHAHRP programme on alcohol-related attitudes were shown to have been maintained to the end of the study, 17 months after the final phase of the intervention (McBride et al., 2004).

### **Personal and social skills**

None of the included studies examined long-term programme effects on personal and social skills.

### **Health and social outcomes relating to alcohol use and sexual health**

Shope et al (1996a) followed up high school-aged students who had received the AMPS curriculum in sixth grade. Delivery of the sixth grade curriculum had no long-term effects on alcohol use in high school, and following delivery of a tenth grade curriculum, there were no differences in alcohol use between intervention and comparison students at follow-up two years later in 12<sup>th</sup> grade. At the final follow-up of the SHAHRP programme, 17 months after delivery, McBride et al (2004) reported that the total amount of alcohol consumed by intervention and comparison students was beginning to converge (significance not reported) and the short-term effects of the intervention on alcohol use were not maintained. Palmer et al (1998) examined the long-term effects of the AAPT curriculum. Normative education was found to be more effective than information only control in terms of reducing alcohol use, two years after delivery of the programme. A second study that examined the AAPT curriculum (Donaldson et al., 2000) found that, for a sample of students attending public schools, those who received normative education reported significantly lower scores on the alcohol index measure and significantly lower rates of lifetime alcohol use in the ninth and tenth grades (2- and 3-year follow-ups, respectively) and lower rates of 30-day alcohol use in the tenth grade compared to students receiving comparison interventions. Shortt et al (2007) found that the Resilient Families intervention had no effects on alcohol use status. Three studies (Donaldson et al., 2000; McBride et al., 2004; Shope et al., 1996a) reported long-term intervention effects on measures of excessive drinking. Donaldson et al (2000) found that the normative education component of the AAPT programme was associated with lower rates of drunkenness among students attending public schools at the 2-year but not the 3-year follow-up, when students were in 10<sup>th</sup> grade. Following delivery of the AMPS tenth grade curriculum (Shope et al., 1996a), students who received the intervention reported significantly less alcohol misuse than comparison students at the end of twelfth grade. There were no long-term intervention effects of the SHAHRP programme on hazardous or harmful drinking, but intervention students reported experiencing less harm from their drinking than control students.

## **5.2.4 Summary and evidence statements**

Overall, 20 articles were identified for inclusion that reported on the evaluation of 12 alcohol education programmes across 15 studies. The majority of the included studies were conducted in the USA, but four studies were conducted in Australia and one each in the UK, Germany and Norway. All 12 programmes were primarily classroom-based curriculums, but two programmes incorporated additional materials and activities for parents. Programmes were largely teacher-led. However, two programmes, Students Against Drink Driving (Klitzner et al., 1994) and an unnamed alcohol education curriculum (Wilhelmsen et al., 1994) combined teacher- and peer-led activities, and one programme, the AAPT, (Donaldson et al., 1995, 2000; Hansen & Graham, 1991; Kreft, 1998; Palmer et al., 1998) was delivered exclusively by external project staff. The programmes identified targeted students across a range of age groups; eight programmes targeted students aged 14 or younger and four programmes were targeted at older adolescents.

### **5.2.4.1 Knowledge and understanding**

Eight studies (Bagnall, 1990; McBride et al., 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Vogl et al., 2009; Newman et al., 1992; Shope et al., 1996a) examined intervention effects on knowledge related to alcohol use. These studies demonstrated that alcohol-specific education programmes generally increased alcohol or curriculum knowledge over the short-term. Effects on medium-term knowledge were weaker across four studies (Morgenstern et al., 2009; Newman et al., 1992; Newton et al., 2009; Vogl et al., 2009) and for two studies that examined programme effects on the long-term acquisition of knowledge, for SHAHRP (McBride et al., 2004) and AMPS (Shope et al., 1996b), results were limited or inconsistent.

### **5.2.4.2 Attitudes and values**

Eight studies (Bagnall, 1990; Baumann, 2006; McBride et al., 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Vogl et al., 2009; Wilhelmsen et al., 1994) examined young people's alcohol-related attitudes and values. The majority of studies reported no significant programme effects on alcohol-related attitudes. Short-term increases in safer alcohol-related attitudes were reported by Wilhelmsen et al (1994) who examined a highly-role specific programme compared to a less-role specific alcohol programme. Improvements were also found among intervention students in the highly-role specific programme in attitudes towards alcohol abstinence and intentions to abstain from alcohol. The SHAHRP programme (McBride et al., 2004) also had positive short- and long-term effects on students' alcohol-related attitudes. Medium-term effects on attitudes and skills were also mixed. Two studies (Newton et al., 2009; Vogl et al., 2009) of the CLIMATE schools programmes reported conflicting effects on alcohol-related expectancies and another alcohol education intervention (Morgenstern et al., 2009) had no impact on attitudes and values.

### **5.2.4.3 Personal and social skills**

Two studies (Klitzner et al., 1994; Newman et al., 1992) examined short- and medium-term effects of two programmes, which primarily focused on reducing the harm from drinking and driving. There were no short- or medium-term effects of the Students Against Drink Driving programme (Klitzner et al.,

1994) on drink driving measures but a second programme, Resisting the Pressures to Drink and Drive (Newman et al., 1992) reduced the number of students who reported riding with a drinking driver at the medium-term follow-up.

#### **5.2.4.4 Health and social outcomes relating to alcohol use and sexual health**

Programme effects on alcohol consumption were examined across all studies. However a range of measures of alcohol consumption were reported across the included studies. Ten studies (Bagnall, 1990; Donaldson et al., 1995; Baumann, 2006; Klitzner et al., 1994; McBride et al., 2000; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Vogl et al., 2009; Wilhelmsen et al., 1994) that examined short-term effects on alcohol consumption, in general, reported inconsistent findings. The SHAHRP programme (McBride et al., 2004) appeared to have the most consistent effects on short-term alcohol use, and additionally had effects on hazardous/harmful drinking. Seven further studies (Bagnall, 1990; Baumann, 2006; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Shope et al., 1994; Vogl et al., 2009) examined programme impacts on heavy drinking, with two studies (Baumann, 2006; Morgenstern et al., 2009) reporting beneficial effects of Project SAAV and an unnamed alcohol education programme, respectively, on binge drinking. Medium- to long-term effects on alcohol consumption were found to be limited across nine alcohol education programmes (Donaldson et al., 2000; Palmer et al., 1998; Klitzner et al., 1994; McBride et al., 2004; Morgenstern et al., 2009; Newman et al., 1992; Newton et al., 2009; Shope et al., 1994; Shortt et al., 2007; Vogl et al., 2009). There appeared to be long-term effects of the normative education component of the AAPT programme (Donaldson et al., 2000; Palmer et al., 1998), but these findings were limited by the poor quality of the studies that examined this programme. In addition, based on additional analyses conducted using the classroom as unit of analysis, Kreft (1998) concluded the whole programme to be ineffective. Two studies of the CLIMATE schools programme (Newton et al., 2009; Vogl et al., 2009) reported conflicting medium-term effects and 17-months after delivery of the SHAHRP programme (McBride et al., 2004) the positive short-term effects appeared to be declining. Although intervention effects favoured SHAHRP, differences between intervention and control students in terms of their alcohol consumption and other measures of alcohol use including harmful/hazardous drinking were no longer significant. There were no long-term effects of a long-term version of the AMPS programme (Shope et al., 1996a) on alcohol consumption, but there did appear to be intervention effects on alcohol misuse.

#### **Evidence statement 2**

2 (f) There is strong evidence from four RCTs, two NRCTs and two CBA studies<sup>1</sup> to suggest that classroom-based alcohol specific programmes are effective at increasing alcohol-related knowledge in the short-term, but have inconsistent or mixed effects on alcohol-related knowledge in the medium- to long-term. Findings may only be partially applicable to the UK as studies were implemented within Australia, Germany and the USA and may not be generalisable beyond the populations studied.

2 (g) Overall, there is inconsistent evidence from four RCTs, three NRCTs and one CBA study<sup>2</sup> to determine the effects of alcohol specific education programmes on attitudes and values relating

to alcohol. However, there is moderate evidence from one NRCT<sup>3</sup> to suggest that programmes based on a harm reduction approach may have positive short- to long-term effects on students' alcohol-related attitudes. In addition, there is weak evidence from one NRCT<sup>4</sup> to suggest that programmes with a high level of role-specification for providers may have short-term positive impacts on attitudes and values.

- 2 (h) There is inconsistent evidence from one RCT and one CBA study<sup>5</sup> to determine the effects of programmes focusing on reducing the harm from drinking and driving on drink driving measures.
- 2 (i) There is moderate evidence from five RCTs, three NRCTs and two CBA studies<sup>6</sup> to suggest that alcohol-specific education programmes may have mixed short-term effects on health outcomes relating to alcohol use. One NRCT<sup>7</sup> of a programme focusing on harm reduction through skills-based activities (SHAHRP), showed short-term reductions in alcohol use. In particular effects were seen on risky drinking behaviours such as drunkenness and binge drinking. Findings may only be partially applicable to the UK as this study was conducted in Australia and may not be generalisable beyond the populations studied.
- 2 (j) There is moderate evidence from eight RCTs, one NRCT and one CBA study<sup>8</sup> to suggest that alcohol-specific education programmes have limited medium- to long-term effects on health outcomes related to alcohol use, such as frequency of alcohol consumption and drunkenness. Findings may only be partially applicable to the UK as studies were implemented outside the UK and may not be generalisable beyond the populations studied.

<sup>1</sup> Bagnall, 1990 (CBA -); McBride et al., 2004 (NRCT +); Morgenstern et al., 2009 (RCT ++); Newton et al., 2009 (RCT +); Schnepf, 2002 (NRCT -); Vogl et al., 2009 (RCT +); Newman et al., 1992 (RCT -); Shope et al., 1996a (CBA +)

<sup>2</sup> Bagnall, 1990 (CBA -); Baumann, 2006 (RCT -); McBride et al., 2004 (NRCT +); Morgenstern et al., 2009 (RCT ++); Newton et al., 2009 (RCT +); Schnepf, 2002 (NRCT -); Vogl et al., 2009 (RCT +); Wilhelmsen et al., 1994 (NRCT -)

<sup>3</sup> McBride et al., 2000; 2003; 2004 (NRCT +)

<sup>4</sup> Wilhelmsen et al., 1994 (NRCT -)

<sup>5</sup> Klitzner et al., 1994 (CBA +); Newman et al., 1992 (RCT -)

<sup>6</sup> Bagnall, 1990 (CBA -); Donaldson et al., 1995 (RCT -); Baumann, 2006 (RCT -); Klitzner et al., 1994 (CBA +); McBride et al., 2000 (NRCT +); Morgenstern et al., 2009 (RCT ++); Newton et al., 2009 (RCT +); Schnepf, 2002 (NRCT -); Vogl et al., 2009 (RCT +); Wilhelmsen et al., 1994 (NRCT -)

<sup>7</sup> McBride et al., 2000; 2003; 2004 (NRCT +)

<sup>8</sup> Donaldson et al., 2000 (RCT -); Palmer et al., 1998 (RCT -); Klitzner et al., 1994 (CBA +); McBride et al., 2004 (NRCT +); Morgenstern et al., 2009 (RCT ++); Newman et al., 1992 (RCT -); Newton et al., 2009 (RCT +); Shope et al., 1994 (RCT -); Shortt et al., 2007 (RCT +); Vogl et al., 2009 (RCT +)

**Table 5.3. Classroom-based alcohol education programmes: short-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Bagnall, 1990	CBA -	Alcohol Education Package n=NR	No intervention n=NR	PT (10 months) n=NR	<b>NS</b> knowledge	<b>NS</b> negative attitudes towards alcohol	-
Baumann, 2006	RCT -	Project SAAV n=144	No intervention n=112	3 months (58%)	-	<b>NS</b> alcohol-related expectancies	-
Klitzner et al., 1994	CBA +	Students Against Drink Driving n=1,900	No intervention N=2,074	PT n=NR	-	-	<b>NS</b> index of driving while intoxicated or riding with impaired driver
McBride et al., 2000; 2003; 2004	NRCT +	SHAHRP n=1,111	No intervention N=1,232	PT n=NR	↑ knowledge***	↑ safer alcohol-related attitudes**	-
Morgenstern et al., 2009	RCT ++	Alcohol education intervention n=911	Usual curriculum N=964	PT (96%)	↑ alcohol knowledge**	<b>NS</b> alcohol attitudes and intentions	-
Newton et al., 2009	RCT +	CLIMATE Schools n=513	Usual curriculum N=431	PT (69%)	↑ knowledge scale**	<b>NS</b> alcohol-related expectancies	-
Schnepf, 2002	NRCT -	Unnamed programmes Peer led, n=13 Teacher led, n=19	Religious education n=13	PT n=NR	↑ alcohol knowledge***	<b>NS</b> negative attitudes towards alcohol	-
Shope et al., 1994	RCT -	Enhanced AMPS n=840	NR n=885	6 <sup>th</sup> -8 <sup>th</sup> grade NR	↑ curriculum knowledge*	-	-
Vogl et al., 2009	RCT +	CLIMATE Schools n=611	Usual curriculum N=855	PT (77.2%)	↑ knowledge***	↓ positive alcohol-related expectancies (females***/boys**)	-
Wilhelmsen et al., 1994	NRCT -	Highly-role specific, n=279 Less-role specific, n=314	Usual curriculum n=262	PT (95%)	-	↑ attitudes to abstinence (highly role specific only)** ↑ Intention to abstain (highly role specific only)** ↑ Norms to abstain (highly role specific only)*	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.4. Classroom-based alcohol education programmes: short-term programme effects on health outcomes relating to alcohol use**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes		
					Alcohol use	Heavy alcohol use	Other
Bagnall, 1990	CBA -	Alcohol Education Package n=NR	No intervention n=NR	PT (10 months) n=NR	↓ drunk alcohol in last week* <b>NS</b> frequency of consumption	<b>NS</b> consumed >3 units alcohol	<b>NS</b> ever had a hangover <b>NS</b> alcohol-induced stomach upset
Donaldson et al., 1995	RCT -	AAPT n=NR	ICU only n=NR	PT (1 year) n=NR	↓ onset of alcohol use (believed it was not acceptable to drink; resistance skills training only*)	-	-
Baumann, 2006	RCT -	Project SAAV n=144	No intervention n=112	3 months (58%)	↓ drinking frequency**	↓ frequency of binge drinking*	↓ alcohol-related consequences*
Klitzner et al., 1994	CBA +	Students Against Drink Driving n=1,900	No intervention n=2,074	PT n=NR	<b>NS</b> drinking quantity	-	-
McBride et al., 2000; 2003; 2004	NRCT +	SHAHRP n=1,111	No intervention n=1,232	PT n=NR	↓ alcohol consumption*** ↓ alcohol per occasion*	↓ hazardous/harmful drinking*	↓ harm from own use* <b>NS</b> harm from others use
Morgenstern et al., 2009	RCT ++	Alcohol education intervention n=911	Usual curriculum n=964	PT (96%)	<b>NS</b> past alcohol month use <b>NS</b> lifetime alcohol use	<b>NS</b> lifetime drunkenness ↓ lifetime binge drinking*	-
Newton et al., 2009	RCT +	CLIMATE Schools n=513	Usual curriculum n=431	PT (69%)	↓ average consumption**	<b>NS</b> frequency of drinking to excess on a single occasion, past 3 months	<b>NS</b> harm associated with own use of alcohol
Schnepf, 2002	NRCT -	Peer led, n=13 Teacher led, n=19	Religious education n=13	PT n=NR	<b>NS</b> alcohol consumption	<b>NS</b> problem drinking	-
Shope et al., 1994	RCT -	Enhanced AMPS n=840	NR n=885	6 <sup>th</sup> -8 <sup>th</sup> grade NR	-	<b>NS</b> alcohol misuse	-
Vogl et al., 2009	RCT +	CLIMATE Schools n=611	Usual curriculum n=855	PT (77.2%)	<b>NS</b> average alcohol consumption	<b>NS</b> frequency of drinking to excess on a single occasion in the past 3 months	<b>NS</b> harms from own use of alcohol
Wilhelmsen et al., 1994	NRCT -	Highly-role specific, n=279 Less-role specific, n=314	Usual curriculum n=262	PT (95%)	↓ alcohol consumption (highly role specific only)**	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.5. Classroom-based alcohol education programmes: medium-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Klitzner et al., 1994	CBA +	Students Against Drink Driving n=1,900	No intervention n=2,074	1 year (74%)	-	-	<b>NS</b> index of driving while intoxicated or riding with impaired driver
Morgenstern et al., 2009	RCT ++	Alcohol education intervention n=911	Usual curriculum n=964	1 year (85%)	↑ alcohol knowledge*	<b>NS</b> alcohol attitudes and intentions	-
Newman et al., 1992	RCT -	Resisting Pressures to Drink and Drive n=51 classes	Usual curriculum n=36 classes	1 year n=NR	↑ knowledge***	-	↓ ridden with a drinking driver*
Newton et al., 2009	RCT +	CLIMATE Schools n=513	Usual curriculum n=431	6 months (62%)	<b>NS</b> knowledge scale	<b>NS</b> alcohol-related expectancies	-
Vogl et al., 2009	RCT +	CLIMATE Schools n=611	Usual curriculum n=855	6 month (71.5%)	<b>NS</b> knowledge	↓ positive alcohol-related expectancies (females only**)	-
				12 months (70.9%)	<b>NS</b> knowledge	↓ positive alcohol-related expectancies (females***/boys**)	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.6. Classroom-based alcohol education programmes: medium-term programme effects on health outcomes relating to alcohol use**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Donaldson et al., 2000	RCT -	AAPT n=NR	ICU only n=NR	8 <sup>th</sup> grade (1 year)	Public schools students receiving normative education only <sup>a</sup> : ↓ scores on alcohol index measure** ↓ lifetime alcohol use** ↓ 30-day alcohol use***	Public schools students receiving normative education only <sup>a</sup> : ↓ drunkenness**	-
Hansen & Graham, 1991; Kreft, 1998; Palmer et al., 1998	RCT -	AAPT Resistance skills training, n=33 classes Normative education, n=27 classes Combined, n=26 classes	Information only n=32 classes	1 year N=2,416 (80%)	<b>NS</b> composite measure of alcohol use	-	-
Klitzner et al., 1994	CBA +	Students Against Drink Driving n=1,900	No intervention n=2,074	1 year (74%)	<b>NS</b> drinking quantity	-	-
Morgenstern et al., 2009	RCT ++	Alcohol education intervention n=911	Usual curriculum n=964	1 year (85%)	<b>NS</b> past alcohol month use <b>NS</b> lifetime alcohol use	<b>NS</b> lifetime drunkenness ↓ lifetime binge drinking*	-
Newman et al., 1992	RCT -	Resisting Pressures to Drink and Drive n=51 classes	Usual curriculum n=36 classes	1 year n=NR	<b>NS</b> drinking behaviours	-	-
Newton et al., 2009	RCT +	CLIMATE Schools n=513	Usual curriculum n=431	6 months (62%)	<b>NS</b> average consumption	<b>NS</b> frequency of drinking to excess on a single occasion, past 3 months	<b>NS</b> harm associated with own use of alcohol
Vogl et al., 2009	RCT +	CLIMATE Schools n=611	Usual curriculum n=855	6 month (71.5%)	↓ average alcohol consumption (females only**)	↓ frequency of drinking to excess on a single occasion, past 3 months (females only*)	<b>NS</b> harms from own use of alcohol
				12 months (70.9%)	↓ average alcohol consumption (females only*)	↓ frequency of drinking to excess on a single occasion, past 3 months (females only**)	↓ harms from own use of alcohol (females only*)

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> For students in private schools, and those assigned to other intervention conditions all findings were **NS**

**Table 5.7. Classroom-based alcohol education programmes: long-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
McBride et al., 2000; 2003; 2004	NRCT +	SHAHRP n=1,111	No intervention n=1,232	17 months n=1,778 (76%)	<b>NS</b> knowledge	↑ safer alcohol-related attitudes*	-
Shope et al., 1996a	CBA +	AMPS n=507	NR n=530	2 years NR	↑ knowledge*	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.8. Classroom-based alcohol education programmes: long-term programme effects on health outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Donaldson et al., 2000	RCT -	AAPT n=NR	ICU only n=NR	9 <sup>th</sup> grade (2 years)	Public schools students receiving normative education only <sup>a</sup> : ↓ scores on alcohol index measure** ↓ lifetime alcohol use** <b>NS</b> 30-day alcohol use	For public schools students receiving normative education only <sup>a</sup> : ↓ drunkenness**	-
				10 <sup>th</sup> grade (3 years)	Public schools students receiving normative education only <sup>a</sup> : ↓ scores on alcohol index measure* ↓ lifetime alcohol use* ↓ 30-day alcohol use*	<b>NS</b> drunkenness	-
Palmer et al., 1998	RCT -	AAPT Resistance skills training, n=33 classes Normative education, n=27 classes Combined, n=26 classes	Information only n=32 classes	2 years (46%)	↓ composite measure of alcohol use (normative education only**)	-	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
McBride et al., 2000; 2003; 2004	NRCT +	SHAHRP n=1,111	No intervention n=1,232	17 months n=1,778 (76%)	<b>NS</b> alcohol consumption <b>NS</b> alcohol per occasion	<b>NS</b> hazardous/harmful drinking	↓ harm from own use <sup>b</sup> <b>NS</b> harm from others use
Shope et al., 1996a	CBA +	AMPS n=507	NR n=530	2 years NR	<b>NS</b> alcohol use	↓ alcohol misuse*	-
Shortt et al., 2007	RCT +	Resilient Families n=NR	Usual curriculum n=NR	14 months n=NR	<b>NS</b> alcohol use	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> For students in private schools, and those assigned to other intervention conditions all findings were NS, <sup>b</sup> p value not reported

## 5.3 Classroom-based: substances including alcohol

### 5.3.1 Overview of evidence identified

A total of 54 articles were identified that reported on evaluations of 22 classroom-based programmes targeting substance use (including alcohol) across 34 studies. Eleven articles reported on evaluations of the Drug Abuse Resistance Education (DARE) programme. Four articles by Clayton et al (1991; 1996), Bennett (1995) and Lynam et al (1999) examined the effectiveness of DARE in a cohort of sixth grade students in schools in Kentucky, USA and were grouped as a single study. Three articles reported on a cohort of students in Illinois, USA (Rosenbaum et al., 1994; Ennett et al., 1994; Rosenbaum & Hanson 1998), following students from sixth through twelfth grade. Dukes et al (1996; 1997) examined the long-term effectiveness of DARE, following a cohort of students in Colorado Springs, USA over six years and two additional studies (Ringwalt et al., 1991; Harmon 1993) examined the short-term effectiveness of DARE in two different student cohorts. Nine articles reported on evaluations of Botvin's Life Skills Training (LST) programme. Seven articles by Botvin et al (1990a, 1990b, 1995a, 1995b, 1997, 2001a, 2001b) reported on five studies of the programme. Two studies (Botvin et al., 1990a; 1990b; 1995a) focused on delivery of the LST programme among predominantly White, middle-class seventh grade students and three studies (Botvin et al., 1997, 2001a, 2001b; Griffin et al., 2003) focused on delivery of LST among populations of inner-city, minority students. Fraguera et al (2003) examined the effects of the LST programme in a Spanish school.

Thirty studies were conducted in the USA, and one each in Canada, Spain and the Netherlands. The EU-Dap study of the Unplugged programme (Faggiano et al., 2008) was conducted across seven European countries: Austria, Belgium, Germany, Greece, Italy, Spain and Sweden. Although all of the programmes were primarily classroom-based, five programmes (Unplugged, Project Alert, Coalition for Youth Quality of Life, Keepin it REAL and Be Under Your Own Influence/All Stars) combined school components with family- and/or community-based components. Two studies (Perry et al., 2003; Spoth et al., 2002, 2005, 2008) combined two originally school-based only programmes (DARE and LST, respectively) with components targeting parents. Perry et al (2003) examined the effectiveness of DARE Plus, which combined the core components of the DARE programme with a 4-session classroom-based peer-led, parental involvement programme, extracurricular activities and the formation of neighbourhood action teams. Spoth et al (2002; 2005; 2008) examined the combination of the standard LST programme (15 sessions in seventh grade) with the family-based Strengthening Families programme.

**Table 5.9. Summary of programme content: classroom-based (substance use including alcohol)**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Snow et al., 1992; 1997	CBA -	USA n=1,360 6th grade	School	<b>Adolescent Decision Making programme:</b> Decision-making, group process skills, social network utilisation	NR	NR
Fearnow-Kenney et al., 2003	RCT -	USA n=653 13-18 years	School	<b>All Stars Senior:</b> Two activities per week,; general health education programme	NR	Teachers
Shope et al., 1996b; Shope et al., 1998	CBA -	USA n=422 5th-8th grade	School	<b>Based on AMPS:</b> Tobacco and drug use in addition to alcohol; 7 lessons in 5th-6th grade; 8 lessons in 7th-8th grade	NR	Teachers
Slater et al., 2006	RCT +	USA n=4,216 mean 12.2 years	School, community	<b>Be Under Your Own Influence/All Stars:</b> Two year programme, 13 sessions first year, 7 booster sessions second year; printed media material in school, community-based participation campaign with workshops	NR	Teachers, community leaders
Dedobbeleer & Desjardins, 2001	NRCT -	Canada n=791 6th and 8th grade	School, community, family	<b>Coalition for Youth Quality of Life:</b> Three year programme; youth educational programmes (first year only), parent education programmes, alternative activities, youth mobilisation and support systems for youth in trouble.	Refusal skills	Teachers
Dukes et al., 1996; 1997	CBA -	USA n=849 5th-6th grade	School	<b>DARE (Colorado Springs):</b> DARE curriculum	NR	NR
Ennett et al., 1994; Rosenbaum et al., 1994; Rosenbaum & Hanson, 1998	NRCT +	USA n=1,803 10-11 years	School	<b>DARE (Illinois):</b> standard 16 week DARE curriculum	Social influence theory	Police
Clayton et al., 1991	RCT -	USA n=2,091 11-12 years	School	<b>DARE (Kentucky):</b> 16 weeks; DARE curriculum	Social influence theory	External, police
Clayton et al., 1996	See Clayton et al., 1991	USA n=2,071 6th grade	School	<b>DARE (Kentucky):</b> 16 weeks; DARE curriculum	NR	External, police

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Bennett, 1995	See Clayton et al., 1991	USA n=1,801 6th grade	School	<b>DARE (Kentucky):</b> DARE curriculum		External, police
Lynam et al., 1999	See Clayton et al., 1991	USA n=1,002 11-12 years	School	<b>DARE (Kentucky):</b> DARE curriculum	NR	Police
Ringwalt et al., 1991	RCT -	USA n=1,402 mean 10.4 years	School	<b>DARE (North Carolina):</b> 17 sessions; core DARE curriculum	Social influence theory	Police
Harmon, 1993	CBA +	USA n=708 mean 10.3 years	School	<b>DARE (South Carolina):</b> DARE curriculum	NR	Police
Perry et al., 2003	RCT +	USA n=6,237 7th grade	School, family	<b>DARE vs. DARE Plus:</b> 10 session, core DARE curriculum; or DARE Plus, 10 session DARE curriculum + 4 session, peer-led, parental involvement programme, extracurricular activities over two school years, neighbourhood action teams	Social influence theory	Police, teachers, peers
Simons-Morton et al., 2005	RCT +	USA n=2,651 6th grade	School	<b>Going Places:</b> Three year programme, 18 sessions 6th grade, 12 sessions 7th grade, 6 sessions 8th grade; social skills curriculum, parent education, school environment change	Social skills training, social development theory, social cognitive theory	Teachers
Cuijpers et al., 2001; Smit et al., 2003	NRCT +	The Netherlands n=1,930 mean 12.4 years	School	<b>Healthy School and Drugs Project:</b> Three year programme, three lessons per year; educational lessons, activities, videos and brochures, refusal skills, increasing self-esteem	Behaviour change theory	Teachers
Brewer, 1991	RCT +	USA n=54 10th grade	School	<b>Here's Looking at You 2000:</b> 9 sessions (40-minute duration); social skills training curriculum, videos.	Problem behaviour theory, social learning theory	Certified school psychologist
Hecht et al., 2003; Gosin et al., 2003; Kulis et al., 2005 <sup>a</sup> ; Kulis et al., 2007 <sup>b</sup>	RCT -	USA n=6,035 mean 12.5 years	School, community	<b>Keepin it REAL:</b> 10 lessons (7th grade), booster sessions (8th grade); resistance and avoidance skills, classroom videos and televised PSAs	Social learning theory, communication competence theory	Teachers

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Warren et al., 2006	RCT +	USA n=4,734 7th grade	School	<b>Keepin it REAL:</b> see other Keepin it REAL	Social learning theory, communication competence theory	Teachers
Botvin et al., 1990a; Botvin et al., 1995a	RCT +	USA n=4,466 7th grade	School	<b>LST:</b> 15 sessions; booster sessions in grade 8 and 9; demonstration, behavioural rehearsal, feedback and reinforcement, homework assignments	Cognitive-behavioural theory, social influence theory	Teachers
Botvin et al., 1990b	RCT +	USA n=1,311 7th grade	School	<b>LST:</b> 20 sessions in 7th grade, with and without booster sessions; LST curriculum	NR	Teachers, Peers
Botvin et al., 1995b	RCT +	USA n=757 7th grade	School	<b>LST:</b> Two sessions per week (40-minutes duration); demonstration, behavioural rehearsal, feedback and reinforcement, homework assignments; peer-led storytelling, videos and demonstrations	NR	Teachers, Peers
Botvin et al., 1997	NRCT -	USA n=833 11-15 years	School	<b>LST:</b> 15 sessions; group discussion, demonstration, group modelling, behavioural rehearsal, feedback and reinforcement, and homework	NR	Teachers
Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003	RCT +	USA n=3,621 mean 12.9 years	School	<b>LST:</b> 15 sessions, 10 booster sessions in 8th grade; group discussion, demonstration, modelling, behavioural rehearsal, feedback and reinforcement, homework	NR	Teachers
Fraguela et al., 2003	NRCT -	Spain n=1,029 14.3 years	School	<b>LST:</b> 16 sessions; LST curriculum + component focusing on leisure activities	NR	Teacher or research staff
Smith et al., 2004; Vicary et al., 2004	RCT +	USA n=732 7th grade	School	<b>LST vs. Infused-LST:</b> LST: 15 sessions 7th grade, booster sessions 8th grade and 9th grade; standard LST curriculum I-LST: LST core components taught across different subject areas	NR	Teachers

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Spoth et al., 2002; 2005; 2008	RCT +	USA n=1,673 7th grade	School, family	<b>LST vs. LST + SFP 10-14</b> LST: 15 sessions 7th grade, booster sessions 8th grade; standard LST curriculum. LST + SFP 10-14: as above + 7 sessions SFP; discussions, skill-building activities, videotapes, games	SPF: biopsychosocial model LST: social learning theory, problem behaviour theory	SPF: facilitators LST: Teachers
Eisen et al., 2002	RCT +	USA n=7,426 11-14 years	School	<b>Lions Quest Skills for Adolescence:</b> One year programme, 40 sessions (35-45 minutes each); social competency and refusal skills training	NR	External
Lennox & Cecchini, 2008	NRCT +	USA n=995 12-20 years	School	<b>NARCONON™ drug education curriculum:</b> Eight modules; health motivation, social skills, social influence recognition, knowledge development.	NR	Other
Caplan et al., 1992	NRCT -	USA n=282 11-14 years	School	<b>Positive Youth Development Programme:</b> Six classes over 15 weeks (50-minutes each); curriculum covered stress management, self-esteem, problem solving, substance use and health information, promotion of social and personal competence.	Social skills training, social competence	Health educators, Teachers
Bell et al., 1993; Ellickson & Bell, 1990	RCT +	USA n=6,527 7th-8th grade	School, family	<b>Project ALERT:</b> 11 lessons (8 in 7th grade; 3 in 8th grade); reinforcement of group norms, role-play, skills rehearsal	Social influence theory, health belief model, social learning theory self-efficacy theory	Teachers, Peers
Ellickson et al., 2003	RCT +	USA n=4,689 7th-8th grade	School, family	<b>Revised Project ALERT:</b> Two year programme, 14 lessons (11 in 7th grade, 3 in 8th grade); normative education, social influence programme, resistance skills training	Social influence model, health belief model, social learning model, self-efficacy theory	Teachers
Graham et al., 1990	RCT +	USA n=5,070 12 years	School	<b>Project SMART:</b> 12 sessions; social skills programme, or affect management programme	NR	Health educators
Sussman et al., 1998; Sun et al., 2006	RCT +	USA n=1,578 mean 16.8 years	School (continuation high schools)	<b>Project TND:</b> Nine sessions; listening skills, alternative coping skills, making non-drug choices	NR	Health staff educators

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Dent et al., 2001	RCT -	USA n=1,208 14-17 years	School (general high school)	<b>Project TND:</b> Three week programme (9 sessions); drug abuse prevention, skills to change, effective listening skills, effective communication skills, self control, myths about drug use, nature and consequences of drug use, effects of drug use on others, decision making skills.	Decision skills	Teachers
Sussman et al., 2003	RCT +	USA n=1,037 mean 16.7 years	School	<b>Project TND:</b> 12 sessions (45 minutes each); cognitive misperception correction activities, social skills, listening skills, decision making skills	NR	Health educators (assisted self instruction)
Faggiano et al., 2008	RCT +	7 European countries n=7,079 12-14 years	School, family	<b>Unplugged:</b> 12 one-hour units. Delivered in three formats: basic curriculum, or with the addition of (1) peer activities or (2) parent activities (three interactive workshops).	Social influence theory	Teachers, peers
<p><sup>a</sup> Reported data on a subsample of students who reported their race or ethnicity as Mexican American, Mexican or Chicano; <sup>b</sup> Reported data on a subsample of students who reported current substance use at baseline</p>						

Ten programmes, All Stars Senior, Be Under Your Own Influence/All Stars, a curriculum based on the original AMPS, Coalition for Youth Quality of Life, Going Places, Healthy School and Drugs Project, Keepin it REAL, Lions Quest Skills for Adolescence, Project Alert and Project Towards No Drug Abuse (Project TND), were delivered solely by teachers. Project Alert and the Unplugged curriculum were taught primarily by teachers, with or without assistance from peer leaders, and versions of the Life Skills Training programme were designed to be delivered by teachers or peer leaders. The provider of the Adolescent Decision Making programme (Snow et al., 1992, 1997) was not reported and external facilitators including health educators (Project SAVE, Positive Youth Development programme), the police (DARE), and certified school psychologists (Here's Looking at You, 2000) were utilised as providers in the remaining programmes.

The theoretical framework was not reported for nine programmes (Adolescent Decision Making programme; All Stars Senior; a curriculum based on the original AMPS; Be Under Your Own Influence/All Stars; Coalition for Youth Quality of Life; Lions Quest Skills for Adolescence; NARCONON drug education curriculum; Positive Youth Development Programme; and Project SAVE. Six programmes (Going Places, Healthy School and Drugs Project, Here's Looking at You 2000, Keepin it REAL, LST, and Project ALERT) were based on a combination of theories. The most commonly applied theory was social influence theory (n=5 programmes).

The overall number of students recruited to participate in the included studies ranged from 54 to over 6,000 students. Evaluation of ten programmes (DARE, Project TND, Healthy School and Drugs Project, Going Places, Be Under Your Own Influence/All Stars, Project ALERT, Keepin it REAL, Project SAVE, Unplugged and Lion's Quest Skills for Adolescence) were based on sample sizes of more than 1,500 students.

The majority of programmes targeted students aged 14 or younger. Three programmes, All Star Seniors, Healthy School and Drugs Project and the NARCONON drug education curriculum targeted students over a broad range of ages, and two programmes, Project TND and Here's Looking at You 2000 targeted older adolescents.

Evaluations of two programmes were based on immediate post-test follow-up only: All Stars Senior and the Healthy School and Drugs Project. The Healthy School and Drugs Project was a 3-year programme but follow-up data were not reported beyond the final year of the programme. Long-term follow-up data were reported for nine programmes: DARE, LST, Keepin' it REAL, Project ALERT, Project TND, Adolescent Decision Making programme, a substance use prevention curriculum based on AMPS, Be Under Your Own Influence/All Stars, and the Coalition for Youth Quality of Life.

### **5.3.2 Quality assessment**

Of the 34 studies, 23 were based on RCT designs, seven were non-randomised controlled trials and four were CBA studies. Twenty-two of the 23 RCTs were based on cluster randomisation. All RCTs were reported to have been based on random assignment but in the majority of studies the methods of randomisation and whether an adequate concealment method was used were not reported. Seven studies (Botvin et al., 1990b, 1995b; Brewer, 1991; Hecht et al., 2003; Warren et al., 2006; Caplan et

al., 1992; Ennett et al., 1994) did not report how many participants were lost to follow-up. Losses to follow-up greater than 20% were reported in seven studies (Bell et al., 1993; Botvin et al., 1990a; Clayton et al., 1991; Simons-Morton et al., 2005; Slater et al., 2006; Cuijpers et al., 2001; Dedobbeleer & Desjardins, 2001). Outcomes measures were reported as reliable across the majority of RCTs and NRCTs, but six studies (Clayton et al., 1991; Eisen et al., 2002; Ellickson et al., 2003; Hecht et al., 2003; Ennett et al., 1994; Fraguera et al., 2003) either did not report on the validity or reliability of the outcome measures used or this aspect of study design was poorly reported. Baseline comparability was poorly reported or not reported on in seven studies (Clayton et al., 1991; Fearnow-Kenney et al., 2003; Graham et al., 1990; Hecht et al., 2003; Simons-Morton et al., 2005; Sussman et al., 2003; Cuijpers et al., 2001) and in some studies it was not clear how many participants were assigned to intervention and control groups. Five studies (Bell et al., 1993; Brewer, 1991; Ellickson et al., 2003; Faggiano et al., 2008; Slater et al., 2006) reported that all participants had been analysed in intention to treat analyses. The quality of the four CBA studies was generally poor, but one study (Harmon, 1993) was rated moderate quality. None of the studies clearly examined baseline comparability between intervention and control groups and only one study (Harmon, 1993) reported on the follow-up of study participants.

### **5.3.3 Findings**

#### **5.3.3.1 Short-term results (<6 months)**

Short-term follow-up data was presented for ten programmes: DARE (Bennett, 1995; Clayton et al., 1991; Ennett et al., 1994; Rosenbaum et al., 1994; Harmon, 1993; Ringwalt et al., 1991); LST (Botvin et al., 1990a; Botvin et al., 1995a; Botvin et al., 1997; Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003; Fraguera et al., 2003); infused LST (Smith et al., 2004; Vicary et al., 2004); Project ALERT (Ellickson & Bell, 1990; Bell et al., 1993); All Stars Senior (Fearnow-Kenney et al., 2003); a substance use curriculum based on AMPS (Shope et al., 1996b; Shope et al., 1998); Lions Quest Skills for Adolescence (Eisen et al., 2002), the Healthy School and Drugs Project (Cuijpers et al., 2001; Smit et al., 2003), the Positive Youth Development Programme (Caplan et al., 1992), and the Unplugged curriculum (Faggiano et al., 2008).

#### **Knowledge and understanding**

Short-term effects on knowledge were examined for three programmes, LST (Botvin et al., 1990a; 2001a), a programme based on the original AMPS curriculum (Shope et al., 1996b), and the Healthy School and Drugs Project (Cuijpers et al., 2001). Botvin et al (1990a) reported that drinking knowledge was significantly higher in students who had received at least 60% of the LST programme relative to the control group ( $p < 0.001$ ). Botvin et al (2001a) found that delivery of the LST programme to inner-city minority students was associated with greater drinking knowledge among intervention students compared to controls ( $p < 0.05$ ). Shope et al (1996b) found that delivery of a substance use prevention programme based on the AMPS curriculum had a significant effect on substance-related knowledge but not knowledge of pressures to use substances or skills knowledge. Cuijpers et al

(2001) reported that significant intervention effects of the Healthy School and Drugs programme were found on alcohol knowledge at both the end of the programme and at the mid-programme follow-up.

### **Attitudes and values**

Short-term effects on attitudes and values were examined across four programmes, DARE (Bennett, 1995; Clayton et al., 1991; Ennett et al., 1994; Rosenbaum et al., 1994; Harmon, 1993; Ringwalt et al., 1991), LST (Botvin et al., 1990a; 1997; 2001a), the Healthy School and Drugs Project (Cuijpers et al., 2001) and the Positive Youth Development Programme (Caplan et al., 1992). Two studies of the delivery of DARE in Kentucky (Clayton et al., 1991; Bennett, 1995) found that students in the DARE group reported a significant increase in negative attitudes towards alcohol compared to students in the control group ( $p < 0.01$ ). Clayton et al (1991) also found that there were no effects of DARE on self-esteem or peer-pressure resistance. Ennett et al (1994) found that DARE had a significant, positive effect on participant's self-esteem, but no effects on any of the other variables measuring students' attitudes towards drugs. Rosenbaum et al (1994) reported that the only significant effect of DARE on attitudes and beliefs was a significant effect on the perceived media influence on beer drinking. Harmon (1993) found that DARE students reported higher levels of belief in prosocial norms ( $p < 0.01$ ), reported less association with drug using peers ( $p < 0.01$ ), had more negative attitudes towards substances ( $p < 0.01$ ). They found no difference between DARE and control students on commitment and attachment to school or self-esteem. Ringwalt et al (1991) found that compared with control students, DARE students perceived alcohol costs to be higher, and the media's portrayal of beer drinking to be more favourable. Botvin et al (1990a) found that among students who had received at least 60% of the LST programme there was no difference in drinking attitudes compared to control students. Based on a study among inner-city minority students, Botvin et al (1997) reported that future intentions to drink beer or wine within the next year were lower in the intervention group compared to the control group ( $p < 0.01$ ). There were no intervention effects on intentions to drink liquor. Intervention students reported significantly lower normative expectations for adult and peer drinking ( $p < 0.01$  and  $p < 0.001$ , respectively). There was no difference between intervention and control students in terms of anti-drinking attitudes. Botvin et al (2001a) found LST students had lower peer and adult normative expectations for drinking (both  $p < 0.05$ ). Significant intervention effects were found for the Healthy School and Drugs Project (Cuijpers et al., 2001) on measures of attitudes towards alcohol at end of the second year of the three-year programme. However, findings were not significant at the end of the first year of the programme or at the end of the programme (three years from baseline). Measures of self-efficacy towards alcohol use showed significant intervention effects at the end of the first programme year, but not at the second or third years. Caplan et al (1992) found that relative to intervention students, the intentions of control students increased significantly with respect to beer and hard liquor (both  $p < 0.05$ ).

### **Personal and social skills**

Short-term effects on personal and social skills were examined for DARE (Ennett et al., 1994; Harmon, 1993; Ringwalt et al., 1991) and LST (Botvin et al., 1997). Ennett et al (1994) found that there were no effects of DARE on social skills. Two studies (Ringwalt et al., 1991; Harmon, 1993) found that

compared to control students, students who participated in DARE had higher levels of assertiveness. Harmon (1993) also reported that DARE students had more positive or prosocial peer associations than control, but there were no differences between DARE and control students' use of coping strategies or social integration. Botvin et al (1997) found that inner-city minority students who participated in the LST programme were more likely than controls to report use of refusal skills ( $p < 0.05$ ). However, there was no difference between groups in terms of skills in relation to decision-making, anxiety reduction, communication and social assertiveness.

### **Health and social outcomes relating to alcohol use and sexual health**

Short-term effects on health outcomes related to alcohol use were examined for ten programmes: DARE (Bennett, 1995; Clayton et al., 1991; Ennett et al., 1994; Rosenbaum et al., 1994; Harmon, 1993; Ringwalt et al., 1991), LST (Botvin et al., 1990a, 1995a, 1997, 2001a, 2001b; Fraguera et al., 2003); infused LST (Smith et al., 2004; Vicary et al., 2004), Project ALERT (Ellickson & Bell, 1990; Bell et al., 1993; Ellickson et al., 2003), Healthy School and Drugs Project (Cuijpers et al., 2001); All Stars Seniors (Fearnow-Kenney et al., 2003), a substance use prevention programme based on AMPS (Shope et al., 1996b, 1998), Lions Quest Skills for Adolescence (Eisen et al., 2002), the Positive Youth Development Programme (Caplan et al., 1992), and the Unplugged curriculum (Faggiano et al., 2008).

There were no short-term effects of All Stars Seniors (Fearnow-Kenney et al., 2003) or the Lions Quest Skills for Adolescence programme (Eisen et al., 2002; 2003) on alcohol use, and the short-term effects of the DARE programme on alcohol use were mixed. Five studies (Clayton et al., 1991; Bennett, 1995; Ennett et al., 1994; Rosenbaum et al., 1994; Ringwalt et al., 1991) found that there were no effects of the programme on alcohol use. Rosenbaum et al (1994) also found that DARE exposure had no effects on the initiation of alcohol use. Harmon (1993) found that DARE students reported less alcohol use in the last year compared to control students ( $p < 0.05$ ), but that students did not differ in terms of their alcohol use in the past month. Two studies (Botvin et al., 1990a; Fraguera et al., 2003) of LST found no effects of the intervention on alcohol use. Botvin et al (1990a) found that delivery of the LST programme over three years did not have significant effects on drinking frequency or amount in a high fidelity sample. The study by Fraguera et al (2003) replicated the LST programme with a sample of Spanish students, finding no impact of the intervention on alcohol use. Two studies reported positive intervention effects. Botvin et al (1997) found that compared to control students, inner-city minority students who received a 15-session LST programme reported drinking alcohol less often ( $p < 0.01$ ) and consumed significantly less alcohol ( $p < 0.001$ ). Among seventh grade inner-city students who participated in LST (Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003), mean scores for drinking frequency and drinking quantity were significantly lower in the intervention group than the control group (both  $p < 0.05$ ). However, when the intracluster correlations were taken into account these differences in alcohol use became non-significant. Smith et al (2004) found that at the end of seventh grade (immediate post-test), neither LST nor infused LST had significant effects on alcohol use in male students. In addition, for females a significant reduction in the frequency of alcohol use was observed in the LST condition only. Short-term follow-up results of the original

Project ALERT (Ellickson & Bell, 1990; Bell et al., 1993) were reported at the end of the seventh grade, midway through the two-year programme, and at the beginning and end of eighth grade (before and immediately after delivery of the second year of the curriculum). At the end of seventh grade, compared to control students, baseline non-drinkers were less likely to have initiated drinking in the subsequent 3-months ( $p < 0.05$ ) and were less likely to report drinking monthly ( $p < 0.05$ ). However, at the end of eighth grade follow-up (immediate post-test), there was no difference between intervention and control students on any measure of alcohol use, with the exceptions of students in the teen leader condition who reported more alcohol use in the past month than controls at the beginning of the eighth grade, although the difference was not significant. Ellickson et al (2003) found that there were no significant effects on initial or current drinking behaviours, but students who received the revised Project ALERT programme reported lower overall alcohol misuse scores ( $p < 0.05$ ) and fewer negative consequences arising from their alcohol use ( $p < 0.05$ ). Further analysis of the sample revealed that effects were greatest among students who had tried alcohol three or more times in the past month. Compared to students who had not received a substance abuse prevention programme based on AMPS (Shope et al., 1996b; Shope et al., 1998), intervention students reported significantly less use of alcohol ( $p < 0.001$ ). Cuijpers et al (2001) reported significant effects of the three-year Healthy School and Drugs programme on measures of alcohol use at all follow ups (1, 2 and 3 years from baseline, respectively). At the 2-year follow-up, after the delivery of the alcohol specific intervention components, significant positive effects were found for the proportion of students who drank, however none of the other outcomes relating to use of alcohol showed significant effects of the intervention. At the 3-year follow-up, when all intervention components had been delivered, the authors reported significant positive effects of the intervention on the proportion of weekly users of alcohol and measures of the number of drinks per week consumed and drinks per occasion, as well as the proportion of participants who reported drinking. Relative to control students, Caplan et al (1992) reported that intervention students who participated in the Positive Youth Development Programme significantly reduced their frequency of having three or more drinks on a single occasion ( $p < 0.05$ ), and the amount of beer, wine, or liquor they usually consumed on one occasion ( $p < 0.05$ ).

Three studies (Botvin et al., 1990a; 1997; 2001a) that examined the LST programme found positive intervention effects on drunkenness. Among students who were exposed to 60% or more of the curriculum, compared to control students, those who taught the programme by teachers who received training by video reported significantly fewer occasions of drunkenness ( $p < 0.05$ ). In two studies (Botvin et al., 1997; 2001a) utilising samples of inner-city students, students who received the LST programme were less likely than controls to have got drunk ( $p < 0.05$  and  $p < 0.01$ , respectively). Smith et al (2004) found that for females both LST and infused LST were associated with a significant reduction in the frequency of binge drinking. Students who participated in a substance abuse prevention programme based on the AMPS curriculum reported significantly lower levels of alcohol misuse than controls. Students who received the revised Project ALERT programme (Ellickson et al., 2003) were significantly less likely to engage in drinking that resulted in negative consequences (including getting sick, getting in a physical fight, getting in trouble at home or school, or doing something they later regretted). Faggiano et al (2008) examined the effectiveness of the Unplugged

curriculum as part of the EU-Dap study. Three versions of the curriculum were examined, incorporating peer and parental components. However, the main analyses were conducted on all four intervention arms pooled together. A statistically significant effect of the Unplugged curriculum (Faggiano et al., 2008) was observed at the short-term follow-up (3 months) for any episode and for frequent episodes of drunkenness in the past 30 days. There were no effects of the Lions Quest Skills for Adolescence programme (Eisen et al., 2002) on binge drinking in the past month.

### **5.3.3.2 Medium-term results (up to 12 months)**

Medium-term follow-up data were reported for 12 programmes: DARE (Bennett, 1995; Ennett et al., 1994); LST (Botvin et al., 1990b; Botvin et al., 2001a; Fraguera et al., 2003); LST + SPF (Spath et al., 2002; 2005; 2008); infused LST (Smith et al., 2004; Vicary et al., 2004); Project TND (Sussman et al., 1998; Dent et al., 2001); a programme based on the original AMPS curriculum (Shope et al., 1996b; Shope et al., 1998); Going Places (Simons-Morton et al., 2005); Here's Looking at You 2000 (Brewer, 1991); Lions Quest Skills for Adolescence (Eisen et al., 2002); the NARCONON drug education curriculum (Lennox & Cecchini, 2008); Project Alert (Bell et al., 1993) and Project SAVE (Graham et al., 1990).

#### **Knowledge and understanding**

Medium-term effects on knowledge were examined for three programmes: LST (Botvin et al., 1990b; 2001a), a substance use prevention curriculum based on the original AMPS (Shope et al., 1996b; 1998); and the NARCONON drug education curriculum (Lennox & Cecchini, 2008). Two studies (Botvin et al., 1990b; Botvin et al., 2001a) of the LST programme among predominantly White, middle class students and inner-city students, respectively, found positive medium-term effects of the intervention on knowledge. Botvin et al (1990b) found that a 20-session version of the programme had significant effects on drinking knowledge among students in the peer-led booster and non-booster groups ( $p < 0.001$  and  $p < 0.01$ , respectively), but not among students in the teacher-led booster group. Short-term effects on knowledge of the effects of substance use were maintained at the 1-year follow-up in a study of a substance abuse prevention programme based on the AMPS curriculum ( $p < 0.05$ ; Shope et al., 1996b; Shope et al., 1998). However, as reported at PT, there were no intervention effects on knowledge of pressures to use substances or knowledge of skills. At 6-months follow-up, Lennox and Cecchini (2008) found that students who received the NARCONON drug education curriculum had a significantly better knowledge of the content of the programme than control students.

#### **Attitudes and values**

Medium-term intervention effects on attitudes and values were examined across four programmes: DARE (Bennett, 1995; Ennett et al., 1994), LST (Botvin et al., 1990b; 2001a), Lion's Quest Skills for Adolescence (Eisen et al., 2002) and the NARCONON drug education curriculum (Lennox & Cecchini, 2008). Bennett (1995) reported that participation in DARE was associated with an increase in negative attitudes towards alcohol; however this finding only reached significance among students who were average achievers. A second study of the DARE curriculum (Ennett et al., 1994) found no effects of the intervention on attitudes towards drugs (including alcohol) or self-esteem. Among a

predominantly white sample of students, Botvin et al (1990b) found that participation in LST was associated with an increase in drinking attitudes (i.e. more negative attitudes towards alcohol) among those who received peer-led booster and non-booster sessions. Students who were assigned to the teacher-led booster condition reported more positive attitudes towards alcohol at the medium-term follow-up. A study based on a sample of inner-city students who participated in the LST programme (Botvin et al., 2000a, 2001b), found that the intervention reduced intentions to drink alcohol ( $p < 0.05$ ), increased negative attitudes towards alcohol ( $p < 0.01$ ) and decreased peer and adult normative expectations ( $p < 0.01$  and  $p < 0.05$ , respectively). The Lion's Quest Skills for Adolescence programme (Eisen et al., 2002; 2003) did not impact on students' attitudes and beliefs in terms of self-efficacy, intentions, or perceived peer use. Lennox and Cecchini (2008) reported that after controlling for baseline differences, control group students reported a greater tendency to plan to get drunk in the next year compared with the intervention group ( $p < 0.01$ ).

### **Personal and social skills**

One study (Ennett et al., 1994) reported on the medium-term impact of the DARE curriculum on social skills, finding no impact of the intervention on this measure.

### **Health and social outcomes relating to alcohol use and sexual health**

Medium-term intervention effects on alcohol use were reported for 11 programmes: DARE (Bennett, 1995; Ennett et al., 1994); LST (Botvin et al., 1990b; 2001a; Fraguera et al., 2003); LST vs. LST + SPF 10-14 (Spoth et al., 2002); LST vs. I-LST (Smith et al., 2004; Vicary et al., 2004); Project TND (Sussman et al., 1998; Dent et al., 2001); a substance abuse prevention curriculum based on AMPS (Shope et al., 1996b; Shope et al., 1998); Going Places (Simons-Morton et al., 2005); Here's Looking at You 2000 (Brewer, 1991); Lions Quest SFA (Eisen et al., 2002; 2003); NARCONON drug education curriculum (Lennox et al., 2008); and Project SAVE (Graham et al., 1990).

Seven programmes, infused-LST (Smith et al., 2004), a substance abuse prevention curriculum based on AMPS (Shope et al., 1996b; Shope et al., 1998), Going Places (Simons-Morton et al., 2005), Here's Looking at You 2000 (Brewer, 1991), Lions Quest SFA (Eisen et al., 2002; 2003), the NARCONON drug education curriculum (Lennox et al., 2008), and Project Alert (Bell et al., 1993) were found to have no medium-term impact on alcohol use. The effects of DARE were weak; Bennett (1995) reported that intervention students who received the DARE curriculum reported lower rates of past year alcohol use, however this finding only reached significance among low achieving students only, and a second study of the medium-term effects of DARE (Ennett et al., 1994) reported no intervention impacts. Among predominantly white, middle class students, Botvin et al (1990b) found that LST had significant positive effects on weekly and monthly drinking, and drinking frequency at the 1-year follow-up. In addition, students in the peer booster condition reported consuming less alcohol per occasion than students in the control group ( $p < 0.05$ ). However, students in the teacher booster condition reported higher levels of both weekly and monthly drinking than control students (both  $p < 0.001$ ), and drank more frequently ( $p < 0.001$ ). Inner-city students who received the LST programme in seventh grade (Botvin et al., 2001a) reported drinking less frequently and consuming less alcohol than control students (both  $p < 0.01$ ) at the 1-year follow-up. These findings remained significant when

adjusted to account for clustering. Fraguela et al (2003) found that students who were taught the LST programme by members of their research team reported significantly lower consumption of beer (but not spirits) than control students at the 1-year follow-up. However, the significance of these findings was not reported. Spoth et al (2002; 2005) examined the combination of LST with the Strengthening Families Programme (SFP). Significantly fewer students in the LST + SFP group were 'new users' at the 1-year follow-up relative to the control and LST only groups (both  $p < 0.05$ ), but there were no statistically significant effects on regular alcohol use in either intervention group. Sussman et al (1998) found no effects of Project TND on alcohol use for the whole sample of students, however, further analyses based on baseline alcohol use showed that at the 1-year follow-up, continuation school students in the classroom-only group who reported higher levels of alcohol use at baseline had significantly lower alcohol use than control students ( $p < 0.01$ ). There were no effects of the programme in baseline nonusers. Dent et al (2001) examined the effects of Project TND in a general high school sample. They also found no effect of the curriculum on alcohol use among baseline nonusers and students reporting lower levels of alcohol use in a general high school sample. Among students who reported higher levels of baseline alcohol use, intervention students reported significantly lower alcohol use at the 1-year follow-up compared to the control students. The Project SMART programme (Graham et al., 1990) had significant effects on the alcohol use index ( $p = 0.03$ ) at 1-year follow-up.

Inner-city students who participated in LST (Botvin et al., 2001a; 2001b) reported getting drunk less frequently and significantly fewer occasions of binge drinking than controls (both  $p < 0.05$ ). Smith et al (2004) found no effects of LST or an infused-LST curriculum on binge drinking or drunkenness at the 1-year follow-up in this study. There were also no intervention effects for three further programmes: a substance use prevention programme based on AMPS (Shope et al., 1996; 1998), Lions Quest Skills for Adolescence (Eisen et al., 2002; 2003) and the NARCONON drug prevention curriculum (Lennox et al., 2008).

### **5.3.3.3 Long-term results (>12 months)**

Long-term follow-up results were reported for 11 programmes: DARE (Bennett, 1995; Clayton et al., 1996; Dukes et al., 1996; 1997; Ennett et al., 1994; Rosenbaum & Hanson, 1998; Lynam et al., 1999); DARE Plus (Perry et al., 2003); LST (Botvin et al., 1990a; Botvin et al., 1995a; Botvin et al., 1995b; Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003; Fraguela et al., 2003); infused LST (Spoth et al., 2002; 2005; 2008); Keepin It REAL (Hecht et al., 2003; Gosin et al., 2003; Kulis et al., 2005, 2007; Warren et al., 2006); Project ALERT (Ellickson et al., 1993); Project TND (Sussman et al., 1998; Sun et al., 2006; Sussman et al., 2003); Adolescent Decision Making programme (Snow et al., 1992; 1997); a programme based on the original AMPS curriculum (Shope et al., 1996b; Shope et al., 1998); Be Under Your Own Influence/All Stars (Slater et al., 2006); and the Coalition for Youth Quality of Life (Dedobbeleer & Desjardins, 2001).

### Knowledge and understanding

Two studies (Botvin et al., 2001a; Shope et al., 1996b) reported long-term intervention effects on knowledge for two programmes, LST, and a substance use curriculum based on AMPS. Neither programme had long-term impacts on knowledge, 2- and up to 6-years after intervention, respectively.

### Attitudes and values

Long-term intervention effects on attitudes and values related to alcohol use were examined across five programmes: DARE (Bennett, 1995; Clayton et al., 1996; Dukes et al., 1996; 1997; Ennett et al., 1994; Lynam et al., 1999); DARE Plus (Perry et al., 2003); LST (Botvin et al., 1995b; Botvin et al., 2001a); Keepin it REAL (Hecht et al., 2003; Gosin et al., 2003; Kulis et al., 2005); and the Coalition for Youth Quality of Life (Dedobbeleer & Desjardins, 2001).

The long-term effects of DARE on attitudes were equivocal. Three studies (Bennett, 1995; Dukes et al., 1996; 1997; Ennett et al., 1994) found that DARE had no long-term effects on attitudes, but Clayton et al (1996) found that students who participated in DARE had more negative general and specific drug attitudes. Clayton et al (1996) also reported that the DARE curriculum had a long-term positive effect on capability to resist peer pressure and peer norms for drug use. However, two studies (Dukes et al., 1996, 1997; Lynam et al., 1999) reported no long-term effects on resistance to peer pressure, and there were no long-term effects of DARE on self-esteem (Ennett et al., 1994; Lynam et al., 1999). Perry et al (2003) examined the effectiveness of an enhanced version of the DARE programme, DARE Plus. At the 18-month follow-up, males who received the DARE Plus programme were less likely than those in the control group to show increases in alcohol intentions ( $p < 0.05$ ). There were no differences between intervention and control females. Botvin et al (1995b) found that minority students who received the LST programme reported significantly lower intentions to use beer or wine, or hard liquor in the future compared to the information only control group ( $p < 0.01$  and  $p < 0.05$ , respectively). Students who received a culturally focused intervention reported significantly lower intentions to use beer or wine relative to the information only control ( $p < 0.01$ ), but only marginally fewer intentions to use hard liquor ( $p = 0.06$ ). At 2-years follow-up, Botvin et al (2001a) found that there were no effects of LST on drinking attitudes or peer drinking norms. Among students who participated in Keepin it REAL (Hecht et al., 2003; Gosin et al., 2003), significant intervention effects were on positive expectancies and descriptive norms. There were no intervention effects on alcohol resistance strategies, intentions, self-efficacy or norms. Among a subsample of students who reported their race or ethnicity as Mexican American, Mexican or Chicano, Kulis et al (2005) found that the intervention had no effects on attitudes and belief measures. Sixth grade students who participated in the Coalition for Youth Quality of Life project reported significantly greater change scores on the measure of self-esteem at the 10-month follow-up ( $p < 0.05$ ) (Dedobbeleer & Desjardins, 2001). However, there were no intervention effects on awareness of drug and alcohol problems, intentions to become involved in prevention activities, or enabling factors at either the 10- or 30-month follow-up.

### **Personal and social skills**

Two studies (Ennett et al., 1994; Dedobbeleer & Desjardins, 2001) examined long-term programme effects on personal and social skills for two programmes, DARE and the Coalition for Youth Quality of Life, respectively. Ennett et al (1994) found that DARE had no long-term impact on students' social skills. Students who participated in the Coalition for Youth Quality of Life (Dedobbeleer & Desjardins, 2001) reported an increase in relationship quality with their fathers at the 18-month follow-up, but this effect was not sustained at the 30-month follow-up. There was no impact of the intervention on students' relationships with their mothers.

### **Health and social outcomes relating to alcohol use and sexual health**

Long-term intervention effects on alcohol use were examined across 11 programmes and the following programmes were shown to have no long-term effects on alcohol use: DARE (Bennett, 1995; Clayton et al., 1996; Dukes et al., 1996; 1997; Ennett et al., 1994; Rosenbaum & Hanson, 1998; Lynam et al., 1999); Project ALERT (Ellickson et al., 1993); Project TND (Sussman et al., 1998; Sun et al., 2006; Sussman et al., 2003); Based on AMPS (Shope et al., 1996b; Shope et al., 1998); and the Coalition for Youth Quality of Life (Dedobbeleer & Desjardins, 2001). One programme, the Adolescent Decision Making Programme (Snow et al., 1992; 1997) was shown to have negative effects, with a higher proportion of intervention students than control students reporting alcohol use at the 2-year follow-up.

Five studies reported long-term follow-up data on Botvin's LST programme. Intervention with ethnic minority students produced reductions in drinking frequency and amount at 2 years (Botvin et al., 1995b). However, three studies, including two studies by other research groups (Botvin et al., 1990b; Fraguera et al., 2003; Smith et al., 2004) in Spain and the USA, respectively, found that LST did not have long-term positive effects indicating that there may be issues with the transferability of the programme to other settings. There were no long-term effects of LST or LST + SPF 10-14 on alcohol use (Spath et al., 2005; 2008). Hecht et al (2003) reported that use of alcohol was found to have increased over time in both the intervention and control groups. However, the increase was significantly less in intervention students. Analysis of the Mexican American, Black/White, and Multicultural versions of 'Keepin' it REAL' revealed that students in each intervention condition reported increased alcohol use over the course of the study. However, increases were significantly smaller in each of the intervention conditions compared to control with regards to alcohol use at 14-months. Perry et al (2003) examined the effectiveness of an enhanced version of the DARE programme, DARE Plus. At the 18-month follow-up, boys who received the DARE Plus programme were less likely than those in the control group to show increases in past year and past month alcohol use ( $p < 0.05$ ). There were no differences between intervention and control conditions among girls.

Seven studies (Perry et al., 2003; Botvin et al., 1995a, 2001a; Spoth et al., 2002, 2005; Smith et al., 2004; Shope et al., 1996b, 1998) examined long-term intervention effects on excessive drinking across three programmes, DARE Plus, LST and a curriculum based on AMPS. There were no long-term effects of the AMPS-based curriculum on alcohol misuse and positive effects of the LST + SPF 10-14 curriculum on drunkenness were only significant at 2-year follow-up. At 18-month follow-up,

females who received the DARE Plus curriculum were less likely to report increases in ever having been drunk, compared with girls in DARE only schools ( $p < 0.05$ ). However, there were no other differences between conditions among girls. Three studies of LST (Botvin 1990a, 1995a, 2001a) examined intervention effects on excessive drinking. All three studies found significant, positive intervention effects on drunkenness and one study (Botvin et al., 2003) reported reduced rates of binge drinking among intervention students compared to control students, two years after intervention.

### **5.3.4 Summary and evidence statements**

A total of 52 articles were identified that examined 17 classroom-based programmes aiming to prevent substance use (including alcohol) across 37 studies.

#### **5.3.4.1 Knowledge and understanding**

Overall, four studies (Botvin et al., 1990a; Botvin et al., 2001a; Shope et al., 1996b; Cuijpers et al., 2001), including evaluations of LST, AMPS, DARE, and the Healthy School and Drugs Project, respectively, examined programme effects on alcohol-related knowledge. Overall both short and medium-term increases in alcohol knowledge were reported but these were not sustained long-term.

#### **5.3.4.2 Attitudes and values**

Twenty-one studies reported outcomes relating to alcohol or substance use attitudes and behavioural intentions across the following programmes: DARE (Bennett, 1995; Clayton et al., 1991; Dukes et al., 1996; Ennett et al., 1994; Lynam et al., 1999; Rosenbaum et al., 1994; Harmon, 1993; Ringwalt et al., 1991), DARE Plus (Perry et al., 2003); LST (Botvin et al., 1990a; 1990b; 1995b; 1997; 2001a), the Healthy School and Drugs Project (Cuijpers et al., 2001), Lions Quest Skills for Adolescence (Eisen et al., 2002); Positive Youth Development programme (Caplan et al., 1992), NARCONON drug education curriculum (Lennox et al., 2008), the Coalition for Youth Quality of Life (Dedobbeleer & Desjardins, 2001) and Keepin' It REAL (Hecht et al., 2003; Kulis et al., 2005).

The majority of studies of the DARE programme found increases in negative views towards alcohol in the short-term (Bennett, 1995; Clayton et al., 1991; Ennett et al., 1994; Harmon, 1993; Ringwalt et al., 1991) but these effects were not consistently sustained in the medium to long-term (Bennett, 1995; Clayton et al., 1996; Dukes et al., 1996, 1997; Ennett et al., 1994). Studies of the LST programme showed primarily no programme effects on attitudes towards alcohol use in the short-term (Botvin et al., 1990a; 1997), but did show medium-term effects (Botvin et al., 1990b; 2001a), although these were not sustained long-term (Botvin et al., 2001a). No other studies demonstrated long-term effects on attitudes toward alcohol use (Caplan et al., 1992; Cuijpers et al., 2001).

Eight studies (Botvin et al., 1995b; 1997; 2001a; Caplan et al., 1992; Eisen et al., 2002; Lennox & Cecchini, 2008; Perry et al., 2003; Hecht et al., 2003) also examined programme impacts on behavioural intentions to drink (or use substances). With all but one study, of the Keepin it REAL programme (Hecht et al., 2003), showing a decrease in intentions to drink or get drunk. Findings relating to perceived peer norms regarding alcohol or substances were reported for evaluations of DARE (Harmon, 1993; Ringwalt et al., 1991; Clayton et al., 1996), LST (Botvin et al., 1997; 2001a), Lion's Quest Skills for Adolescence (Eisen et al., 2002) and Keepin it REAL (Hecht et al., 2003; Kulis

et al., 2005). There was no effect of Lion's Quest Skills for Adolescence or Keepin it REAL on peer norms for alcohol or substance use. DARE participants showed decreases in beliefs of positive peer views relating to drug use in the short-term, but these were not sustained long-term. Similarly studies evaluating LST showed only short-term effects on attitudes towards peer norms.

#### **5.3.4.3 Personal and social skills**

Five studies (Ennett et al., 1994; Harmon, 1993; Ringwalt et al., 1991; Botvin et al., 1997; Dedobbeleer & Desjardins, 2001), including evaluations of DARE, LST and the Coalition for Youth Quality of Life, reported on personal and social skills related to alcohol. There were no effects of DARE on social skills over the short-, medium- or longer term (Ennett et al., 1994), but there were short-term positive impacts of the programme on assertiveness and prosocial peer associations (Ringwalt et al., 1991; Harmon, 1993). There were also short-term impacts of LST on refusal skills (Botvin et al., 1997), but not on other skills relating to decision-making, anxiety reduction, communication and social assertiveness. One study (Dedobbeleer & Desjardins, 2001) examined programme effects of the Coalition for Youth Quality of Life on student's relationship quality with their parents, finding a long-term programme effect on relationship quality with fathers but not mothers.

#### **5.3.4.4 Health and social outcomes relating to alcohol use and sexual health**

Four programmes, the Positive Youth Development Programme, the Unplugged programme, a revised version of Project Alert, and the Healthy School and Drug Project had positive short-term programme effects on alcohol use. However, the findings of Positive Youth Development Programme (Caplan et al., 1992) were limited by the poor quality of the study. The study of the Healthy School and Drugs Project (Cuijpers et al., 2002) was good quality and significant effects on weekly drinking, and quantity per week and per occasion at the end of the three-year programme were reported. Statistically significant effects of the Unplugged curriculum (Faggiano et al., 2008) were found in relation to drunkenness, but the impact of the programme on other measures of alcohol use was not explored in the study. Effects on alcohol misuse were also found for a revised version of Project Alert (Ellickson et al., 2003) but the programme had no effects on initiation of, or current, alcohol consumption. Positive longer term effects were demonstrated for two programmes, Keepin It REAL (Hecht et al., 2003 and Be Under Your Own Influence/All Stars (Slater et al., 2006), which combined school and media intervention components. The two-year programme had significant, positive effects on alcohol use across all three versions of the programme, but effects were largest for the multicultural version of the curriculum. The strongest evidence of effectiveness came from a series of studies which examined Botvin's LST (Botvin et al., 1990a; 1990b; 1995b; 1997; 2001a; Fraguela et al., 2003). Two studies (Botvin et al., 1997; 2001a) found positive short- and medium-term effects on drinking frequency and binge-drinking, and these were sustained long-term (Botvin et al., 1995b; 2001a). However, replication of this study in a Spanish cohort of students (Fraguela et al., 2003) did not demonstrate that the programme was effective.

Eight programmes had inconsistent or no effects on alcohol use: DARE, Going Places, Here's Looking at You 2000, Lion's Quest SFA, All Stars Senior, Project Alert, Project SMART, Project TND,

NARCONON drug education curriculum. In addition, one programme, the Adolescent Decision Making programme (Snow et al., 1992; 1997) had potentially harmful long-term effects.

### Evidence statement 3

- 3 (g) There is moderate evidence from two RCTs, one NRCT and one CBA study<sup>1</sup> to suggest that classroom-based substance use programmes are effective at improving knowledge relating to substance use and its effects in the short- to medium-term, but that these effects are not sustained in the long-term. Findings may only be partially applicable to the UK as studies were conducted outside the UK and may not be generalisable beyond the populations studied.
- 3 (h) There is moderate evidence from 12 RCTs, seven NRCTs and two CBA studies<sup>2</sup> to suggest that classroom-based substance use programmes may have mixed effects on students' substance use-related attitudes and values. There is moderate evidence from seven RCTs, four NRCTs and two CBA studies<sup>3</sup> to suggest that these programmes may impact on attitudes to substance use in the short- to medium-term, and further evidence from five RCTs and three NRCTs<sup>4</sup> to suggest that they may have a positive impact on long-term behavioural intentions. There is weak evidence from six RCTs, one NRCT and one CBA study<sup>5</sup> to suggest that classroom-based substance use programmes have no medium- to long-term effects on peer norms. Findings may only be partially applicable to the UK as studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 3 (i) There is weak and inconsistent evidence from one RCT, three NRCTs and one CBA study<sup>6</sup> to determine the effects of classroom-based substance use programmes on young peoples' personal and social skills.
- 3 (j) There is moderate evidence from 14 RCTs, two NRCTs and two CBA studies<sup>7</sup> to suggest that the following classroom-based substance use programmes may have inconsistent or no effects on alcohol use: DARE, Going Places, Lion's Quest SFA, All Stars Senior, Project Alert, Project SMART, Project TND, NARCONON drug education curriculum. In addition, there is weak evidence from one CBA study<sup>8</sup> to suggest that the Adolescent Decision Making Programme may have potentially harmful long-term effects on alcohol consumption.
- 3 (k) There is weak evidence from two RCTs and one NRCT<sup>9</sup> to suggest that programmes which combine school-based curriculums with additional components may have positive effects on alcohol consumption. The Healthy School and Drugs Project, a three-year programme, which included a nine lesson teacher-led curriculum, formulation of school policy on substance use and involvement of parents, had short-term effects on alcohol use, but longer term effects of the programme have not been examined. Positive longer term effects were demonstrated for two programmes, Keepin It REAL and Be Under Your Own Influence/All Stars, which both combined school-based curriculums with media intervention components. Findings may only be partially applicable to the UK as studies were conducted in the Netherlands and the USA and may not be generalisable beyond the populations studied.

3 (l) There is moderate evidence from three RCTs<sup>10</sup> to suggest that Life Skills Training has positive short-, medium- and long-term effects on drinking frequency and binge drinking. However, there is moderate evidence from three RCTs and one NRCT<sup>11</sup> to suggest that there may be issues with the transferability of LST to other settings. Findings may only be partially applicable to the UK as studies were conducted in Spain and the USA and may not be generalisable beyond the populations studied.

<sup>1</sup> Botvin et al., 1990a (RCT +); Botvin et al., 2001a (RCT +); Shope et al., 1996b (CBA -); Cuijpers et al., 2001 (NRCT +)

<sup>2</sup> Bennett, 1995 (RCT -); Clayton et al., 1991 (RCT -); Dukes et al, 1996, 1997 (CBA -); Ennett et al., 1994 (NRCT +); Lynam et al., 1999 (RCT -); Rosenbaum et al., 1994 (NRCT +); Harmon, 1993 (CBA +); Ringwalt et al., 1991 (RCT -); Perry et al., 2003 (RCT +); Botvin et al., 1990a (RCT +); Botvin et al., 1990b (RCT +); Botvin et al., 1995b (RCT +); Botvin et al., 1997 (NRCT -); Botvin et al., 2001a (RCT +); Cuijpers et al., 2001 (NRCT +); Eisen et al., 2002 (RCT +); Caplan et al., 1992 (NRCT -); Lennox & Cecchini, 2008 (NRCT +); Dedobbeleer & Desjardins, 2001 (NRCT -); Hecht et al., 2003 (RCT -); Kulis et al., 2005 (RCT -)

<sup>3</sup> Bennett, 1995 (RCT -); Clayton et al., 1991 (RCT -); Clayton et al., 1991 (RCT -); Dukes et al, 1996, 1997 (CBA -); Ennett et al., 1994 (NRCT +); Harmon, 1993 (CBA +); Ringwalt et al., 1991 (RCT -); Botvin et al., 1990a (RCT +); Botvin et al., 1990b (RCT +); Botvin et al., 1997 (NRCT -); Botvin et al., 2001a (RCT +); Cuijpers et al., 2001 (NRCT +); Caplan et al., 1992 (NRCT -)

<sup>4</sup> Botvin et al., 1995b (RCT +); Botvin et al., 1997 (NRCT -); Botvin et al., 2001a (RCT +); Caplan et al., 1992 (NRCT -); Eisen et al., 2002 (RCT +); Lennox & Cecchini, 2008 (NRCT +); Perry et al., 2003 (RCT +); Hecht et al., 2003 (RCT -)

<sup>5</sup> Harmon, 1993 (CBA +); Ringwalt et al., 1991 (RCT -); Clayton et al., 1996 (RCT -); Botvin et al., 1997 (NRCT -); Botvin et al., 2001a (RCT +); Eisen et al., 2002 (RCT +); Hecht et al., 2003 (RCT -); Kulis et al., 2005 (RCT -)

<sup>6</sup> Ennett et al., 1994 (NRCT +); Harmon, 1993 (CBA +); Ringwalt et al., 1991 (RCT -); Botvin et al., 1997 (NRCT -); Dedobbeleer & Desjardins, 2001 (NRCT -)

<sup>7</sup> Bennett et al., 1995 (RCT -); Lynam et al., 1999 (RCT -); Dukes et al., 1996; 1997 (CBA -); Ennett et al., 1994 (NRCT +); Clayton et al., 1991, 1996 (RCT -); Ringwalt et al., 1991 (RCT -); Harmon, 1993 (CBA +); Eisen et al., 2002 (RCT +); Fearnow-Kenney et al., 2003 (RCT -); Bell et al., 1993 (RCT +); Ellickson et al., 2003 (RCT +); Graham et al., 1990 (RCT +); Simons-Morton et al., 2005 (RCT +); Brewer, 1991 (RCT +); Sussman et al., 1998 (RCT +); Sussman et al., 2003 (RCT +) Dent et al., 2001 (RCT -); Lennox & Cecchini, 2008 (NRCT +)

<sup>8</sup> Snow et al., 1992; 1997 (CBA -)

<sup>9</sup> Cuijpers et al., 2002 (NRCT +); Hecht et al., 2003; Kulis et al., 2005, 2007 (all RCT -); Slater et al., 2006 (RCT +)

<sup>10</sup> Botvin et al., 1990a (RCT+); Botvin et al., 1995b (RCT +); Botvin et al., 2001a (RCT +)

<sup>11</sup> Botvin et al., 1990b (RCT +); Fraguera et al., 2003 (NRCT -); Smith et al., 2004 (RCT +); Spoth et al., 2005; 2008 (RCT +)

**Table 5.10. Classroom-based substance use prevention programmes: short-term programme effects on knowledge, skills and attitudes**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Bennett, 1995	RCT -	DARE n=NR	Drugs unit only n=NR	PT n=NR	-	↑ negative attitudes towards alcohol*	-
Botvin et al., 1990a; Botvin et al., 1995a	RCT +	LST 1-day teacher workshops or teacher training by video n=NR	NR n=NR	PT n=3,684 <sup>a</sup> (83%)	↑ drinking knowledge***	NS drinking attitudes ↑ interpersonal skills knowledge <sup>NR</sup> NS communication skills knowledge NS personality variables	-
Botvin et al., 1997	NRCT -	LST n=NR	Usual curriculum n=NR	PT n=721 (87%)	-	↓ future intentions to drink beer or wine** NS future intentions to drink liquor ↓ normative expectations, peers** ↓ normative expectations, adults*** NS anti-drinking attitudes NS advertising	↑ refusal skills* NS anxiety reduction NS communication NS social assertiveness NS decision-making
Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003	RCT +	LST n=2,144	Usual curriculum n=1,477	end of 7 <sup>th</sup> grade n=NR	↑ drinking knowledge*	↓ normative expectations, peers* ↓ normative expectations, adults*	-
Caplan et al., 1992	NRCT -	Positive Youth Development Programme n=109	No intervention n=173	PT NR	-	NS attitudes ↓ intentions to use beer* ↓ intentions to use hard liquor*	-
Clayton et al., 1991	RCT - (cluster)	DARE n=1,438	Drugs unit only n=487	PT (4 months) n=NR	-	↑ negative attitudes towards alcohol** NS self-esteem NS peer pressure resistance	-
Cuijpers et al., 2001; Smit et al., 2003	NRCT +	Healthy School and Drugs Project n=1,156	No intervention n=774	1 year <sup>d</sup> n=1,405 (74%)	NS knowledge	NS attitudes ↑ self-efficacy*	-
Cuijpers et al., 2001; Smit et al., 2003	NRCT +	Healthy School and Drugs Project n=1,156	No intervention n=774	2 years <sup>d</sup> n=1,405 (74%)	↑ knowledge***	↓ pro attitudes* NS self-efficacy	-

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Cuijpers et al., 2001;	NRCT +	Healthy School and Drugs Project n=1,156	No intervention n=774	3 years <sup>b</sup> n=1,405 (74%)	↑ knowledge***	<b>NS</b> attitudes <b>NS</b> self-efficacy	-
Ennett et al., 1994	NRCT +	DARE n=18 schools	No intervention n=18 schools	PT n=NR	-	<b>NS</b> attitudes towards drugs ↑ self-esteem*	<b>NS</b> social skills
Harmon, 1993	CBA +	DARE n=341	No intervention n=367	20 weeks n=602 (85%)	-	↑ belief in prosocial norms** ↓ association with drug using peers** ↑ negative attitudes towards substances** <b>NS</b> commitment and attachment to school <b>NS</b> rebellious behaviour <b>NS</b> self-esteem	↑ assertiveness* ↑ positive or prosocial peer associations* <b>NS</b> coping strategies <b>NS</b> social integration
Ringwalt et al., 1991	RCT -	DARE n=685	Delayed intervention n=585	PT n=1270 (91%)	-	↑ perceived alcohol costs to be higher** ↑ negative attitudes towards drugs** ↓ belief in positive peer attitudes toward drug use*** <b>NS</b> self-esteem	↑ assertiveness
Rosenbaum et al., 1994	NRCT +	DARE n=18 schools	No intervention n=18 schools	PT n=NR	-	↑ perceived media influence on beer drinking* <b>NS</b> other attitudes/beliefs	-
Shope et al., 1996b; Shope et al., 1998	CBA -	Based on AMPS n=308	No intervention n=134	PT n=442 (23%)	↑ effects of substance use* <b>NS</b> pressures to use substances <b>NS</b> skills	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> High fidelity sample (students exposed to >60% or more of the programme; 62% of the original sample); <sup>b</sup> Follow-up from baseline

**Table 5.11. Classroom-based substance use prevention programmes: short-term programme effects on health and social outcomes**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Bennett, 1995	RCT -	DARE n=NR	Drugs unit only n=NR	PT	<b>NS</b> past year alcohol use	-	-
Clayton et al., 1991	RCT -	DARE n=1,438	Drugs unit only n=487	PT (4 months) n=NR	<b>NS</b> alcohol use	-	-
Ennett et al., 1994	NRCT +	DARE n=18 schools	No intervention n=18 schools	PT n=NR	<b>NS</b> alcohol use (rural students only)	-	-
Rosenbaum et al., 1994	NRCT +	DARE n=18 schools	No intervention n=18 schools	PT n=NR	<b>NS</b> initiation of alcohol use <b>NS</b> increased use of alcohol <b>NS</b> quitting behaviour	-	-
Harmon, 1993	CBA +	DARE n=341	No intervention n=367	20 weeks n=602 (85%)	↓ past year alcohol use* <b>NS</b> frequency alcohol use in past month	-	-
Ringwalt et al., 1991	RCT -	DARE n=685	Delayed intervention n=585	PT n=1270 (91%)	<b>NS</b> current alcohol use <b>NS</b> lifetime alcohol use	-	-
Botvin et al., 1990a; Botvin et al., 1995a	RCT +	LST 1-day teacher workshops or teacher training by video n=NR	NR n=NR	PT n=3,684 <sup>a</sup> (83%)	<b>NS</b> drinking frequency <b>NS</b> drinking amount	↓ drunkenness (training by video only*)	-
Botvin et al., 1997	NRCT -	LST n=NR	Usual curriculum n=NR	PT n=721 (87%)	↓ drinking index** ↓ drinking amount***	↓ drunkenness*	-
Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003	RCT +	LST n=2,144	Usual curriculum n=1,477	end of 7 <sup>th</sup> grade NR	↓ drinking frequency* <sup>c</sup> ↓ drinking quantity* <sup>c</sup>	↓ drunkenness frequency**	-
Fraguela et al., 2003	NRCT -	LST; researcher- (n=235) or teacher-led (n=309)	No intervention n=485	PT 80-90%	<b>NS</b> alcohol use	-	-
Smith et al., 2004; Vicary et al., 2004	RCT +	LST (n=234); I-LST (n=297)	No intervention n=201	end of 7 <sup>th</sup> grade n=704 (96%)	↓ frequency (LST, females only)*	↓ binge drinking* (females only) <b>NS</b> drunkenness	-

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Ellickson & Bell, 1990	RCT +	Project ALERT Adult health educator, n=10 schools Adult health educator + peer leaders, n=10 schools	Usual curriculum n=10 schools	3 months <sup>b</sup> n=3,852 (60%)	Non-users: ↓ initiation (peer leader only*) ↓ current (peer leader only*) Experimenters + users: ↓ current (users, adult health educators only**)	-	-
				12 months <sup>b</sup> n=3,852 (60%)	Non-users: NS initiation NS current Experimenters + users: ↓ past month (experimenters, peer leader only*)		
				15 months <sup>b</sup> n=3,852 (60%)	Non-users: NS initiation NS current Experimenters + users: NS current NS monthly <sup>d</sup> NS weekly <sup>e</sup>		
Ellickson et al., 2003	RCT +	Project ALERT (revised) n=2,553	Usual curriculum n=1,723	18 months <sup>b</sup> n=4,276 (79%)	-	↓ overall alcohol misuse score* NS high risk drinking	↓ negative consequences*
Fearnow-Kenney et al., 2003	RCT -	All Stars Senior n=406	NR n=247	PT (~80%)	NS alcohol use	-	-
Shope et al., 1996b; Shope et al., 1998	CBA -	Based on AMPS n=308	No intervention n=134	PT n=442 (23%)	↓ alcohol use***	-	-
Cuijpers et al., 2001; Smit et al., 2003	NRCT +	Healthy School and Drugs Project n=1,156	No intervention n=774	1 year <sup>b</sup> n=1,405 (74%)	↓ proportion who drink* NS proportion weekly drinkers NS drinks/week ↓ drinks/occasion*** ↓ lifetime alcohol prevalence*	-	-

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Cuijpers et al., 2001; Smit et al., 2003	NRCT +	Healthy School and Drugs Project n=1,156	No intervention n=774	2 years <sup>b</sup> n=1,405 (74%)	↓ proportion who drink** <b>NS</b> proportion weekly drinkers <b>NS</b> drinks/week <b>NS</b> drinks/occasion ↓ lifetime alcohol prevalence**	-	-
Cuijpers et al., 2001; Smit et al., 2003	NRCT +	Healthy School and Drugs Project n=1,156	No intervention n=774	3 years <sup>b</sup> n=1,405 (74%)	↓ proportion who drink** ↓ proportion weekly drinkers* ↓ drinks/week*** ↓ drinks/occasion*** ↓ lifetime alcohol prevalence*	-	-
Eisen et al., 2002; 2003	RCT +	Lions Quest Skills for Adolescence n=NR	Usual curriculum n=NR	PT n=6,239 (84%)	<b>NS</b> alcohol use prevalence <b>NS</b> lifetime alcohol use <b>NS</b> 30-day alcohol use	<b>NS</b> 30-day binge drinking	-
Caplan et al., 1992	NRCT -	Positive Youth Development Programme n=109	No intervention n=173	PT NR	↓ alcohol per occasion*	↓ frequency of heavy drinking*	-
Faggiano et al., 2008	RCT +	Unplugged Basic, n=1,190 Parent, n=1,164 Peer, n=1,193	No intervention n=3,532	3 months n=6,370 (90%)	-	↓ any drunkenness, past 30 days* ↓ frequent drunkenness, past 30 days*	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> High fidelity sample (students exposed to >60% or more of the programme; 62% of the original sample); <sup>b</sup> Follow-up from baseline; <sup>c</sup> NS, when intraclass correlations were taken into account; <sup>d</sup> Eleven or more times in the past year or three or more days in the past month; <sup>e</sup> 6+ days in past month

**Table 5.12. Classroom-based substance use prevention programmes: medium-term programme effects on knowledge, attitudes and skills**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Bennett, 1995	RCT -	DARE n=NR	Drugs unit only n=NR	7 <sup>th</sup> grade	-	↑ negative attitudes towards alcohol (average achieving students only)*	-
Ennett et al., 1994	NRCT +	DARE n=18 schools	No intervention n=18 schools	1 year	-	<b>NS</b> attitudes towards drugs <b>NS</b> self-esteem	<b>NS</b> social skills
Botvin et al., 1990b	RCT +	LST Teacher; peer; teacher + booster; peer + booster n=NR	NR n=NR	1 year n=998 (76%)	↑ drinking knowledge (peer + booster***/non-booster**)	↑ drinking attitudes** ↓ locus of control (peer + booster only**)  <i>Teacher + booster vs. control:</i> ↑ pro drinking attitudes*	-
Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003	RCT +	LST n=2,144	Usual curriculum n=1,477	1 year NR	↑ drinking knowledge*	↓ intentions to drink alcohol* ↑ negative attitudes towards alcohol** ↓ normative expectations, peers** ↓ normative expectations, adults*	-
Shope et al., 1996b; Shope et al., 1998	CBA -	Based on AMPS n=507	No intervention n=530	1 year N=442 (23%)	↑ effects of substance use* <b>NS</b> pressures to use substances <b>NS</b> skills	-	-
Eisen et al., 2002	RCT +	Lions Quest Skills for Adolescence n=NR	Usual curriculum n=NR	1 year n=5,691 (77%)	-	<b>NS</b> self-efficacy <b>NS</b> intentions to drink alcohol <b>NS</b> perceived harm <b>NS</b> refusal efficacy <b>NS</b> perceived peer use	-

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Lennox & Cecchini, 2008	NRCT +	NARCONON™ drug education curriculum n=464	Delayed control n=531	6 months n=726 (73%)	↑ programme content***	↑ people risk harming themselves by having one or two drinks nearly every day* <b>NS</b> people risk harming themselves by having five or more drinks ↓ intentions to get drunk** ↑ wrong to drink regularly***	-
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported							

**Table 5.13. Classroom-based substance use prevention programmes: medium-term programme effects on health and social outcomes**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Bennett, 1995	RCT -	DARE n=NR	Drugs unit only n=NR	7 <sup>th</sup> grade n=NR	↓ past year alcohol use (low achieving students only*)	-	-
Ennett et al., 1994	NRCT +	DARE n=18 schools	No intervention n=18 schools	1 year n=NR	<b>NS</b> alcohol use	-	-
Botvin et al., 1990b	RCT +	LST Teacher; peer; teacher + booster; peer + booster n=NR	NR n=NR	1 year n=998 (76%)	↓ weekly alcohol use*** ↓ monthly alcohol use*** ↓ drinking frequency** ↓ alcohol per occasion (peer + booster only*) <i>Teacher + booster vs. control:</i> ↑ weekly alcohol use*** ↑ monthly alcohol use*** ↑ drinking frequency***	-	-
Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003	RCT +	LST n=2,144	Usual curriculum n=1,477	1 year NR	↓ drinking frequency** ↓ drinking quantity**	↓ drunkenness frequency* ↓ binge drinking*	-

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Fraguela et al., 2003	NRCT -	LST; researcher- (n=235) or teacher-led (n=309)	No intervention n=485	1 year NR	↓ consumption of beer (research-led only**) ↓ consumption of spirits (teacher-led only*)	-	-
Smith et al., 2004; Vicary et al., 2004	RCT +	LST (n=234); I-LST (n=297)	No intervention n=201	end of 8 <sup>th</sup> grade n=659 (90%)	NS frequency	NS drunkenness NS binge drinking	-
Spoth et al., 2002; 2005; 2008	RCT +	LST, n=621; or LST + SFP 10-14, n=549	Four leaflets mailed to families n=494	1 year N=1,361 (82%)	↓ 'new users' (LST + SPF only*) NS regular alcohol use	-	-
Sussman et al., 1998	RCT +	Project TND Classroom, n=7 schools Classroom + school as community, n=7 schools	Usual curriculum n=7 schools	1 year n=1,074 (67%)	↓ alcohol use (high baseline users only**)	-	-
Dent et al., 2001	RCT -	Project TND n=13 classes	No intervention n=13 classes	1 year n=679 (63%)	↓ alcohol use (high baseline users only**)	-	-
Bell et al., 1993	RCT +	Project ALERT Adult health educator, n=10 schools Adult health educator + peer leaders, n=10 schools	Usual curriculum n=10 schools	12 months n=4,837 (74%)	NS initiation NS past month NS past year NS monthly NS weekly NS daily	-	-
Shope et al., 1996b; Shope et al., 1998	CBA -	Based on AMPS n=507	No intervention n=530	1 year N=442 (23%)	NS alcohol use	NS alcohol misuse	
Simons-Morton et al., 2005	RCT +	Going Places n=692	No intervention n=628	up to 1 year n=1,320 (50%)	NS drinking stage	-	-
Brewer, 1991	RCT +	Here's Looking at You 2000 n=18	Videotape or no intervention n=36	6 months	NS alcohol use	-	-

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Eisen et al., 2002; 2003	RCT +	Lions Quest Skills for Adolescence n=NR	Usual curriculum n=NR	1 year n=5,691 (77%)	<b>NS</b> lifetime alcohol use <b>NS</b> 30-day alcohol use	<b>NS</b> 30-day binge drinking	-
Lennox & Cecchini, 2008	NRCT +	NARCONON™ drug education curriculum n=464	Delayed control n=531	6 months n=726 (73%)	<b>NS</b> alcohol use	<b>NS</b> drunkenness	-
Graham et al., 1990	RCT +	Project SAVE Social skills programme, n=6 schools; Affect management programme, n=6 schools	Usual curriculum n=12 schools	1 year (70%)	↓ alcohol use*	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.14. Classroom-based substance use prevention programmes: long-term programme effects on knowledge, attitudes and skills**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Bennett, 1995	RCT -	DARE n=NR	Drug unit only n=NR	8 <sup>th</sup> grade	-	<b>NS</b> negative attitudes towards alcohol	-
				9 <sup>th</sup> grade	-	<b>NS</b> negative attitudes towards alcohol	-
Clayton et al., 1996	RCT - (cluster)	DARE n=23 schools	Other drug education programmes n=8 schools	up to 5 years	-	↑ general and specific drug attitudes* ↑ capability to resist peer pressure* ↑ peer norms for drug use*	-
Dukes et al., 1996; 1997	CBA -	DARE n=497	Delayed intervention n=352	Up to 6 years n=NR	-	<b>NS</b> pro drug use attitudes <b>NS</b> resistance to peer pressure	-
Ennett et al., 1994	NRCT +	DARE n=18 schools	No intervention n=18 schools	2 years n=NR		<b>NS</b> attitudes towards drugs <b>NS</b> self-esteem	<b>NS</b> social skills

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Lynam et al., 1999	RCT -	DARE n=762	NR n=240	10 years n=NR	-	<b>NS</b> peer pressure resistance <b>NS</b> self-esteem	-
Perry et al., 2003	RCT +	DARE, n=2,226; DARE Plus, n=2,221	Delayed intervention n=1,790	Up to 18 months (84%)	-	↓ change in alcohol behaviour and intentions (DARE Plus, boys only*)	-
Botvin et al., 1995b	RCT +	LST, n=NR Culturally focused intervention (CFI), n=NR	Information only n=NR	2 years n=456 (60%)		↓ intentions to use beer or wine** ↓ intentions to use hard liquor (LST only*)	-
Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003	RCT +	LST n=2,144	Usual curriculum n=1,477	2 years NR	<b>NS</b> drinking knowledge	<b>NS</b> pro-drinking attitudes <b>NS</b> peer drinking norms	-
Hecht et al., 2003; Gosin et al., 2003	RCT -	Keepin it REAL n=25 schools	Usual curriculum n=10 schools	up to 14 months (84%)	-	↓ positive expectancies* ↑ descriptive norms* <b>NS</b> alcohol resistance strategies <b>NS</b> self-efficacy <b>NS</b> intentions <b>NS</b> norms	-
Kulis et al., 2005	RCT -	Keepin it REAL n=2,397	Usual curriculum n=1,005	14 months NR	-	<b>NS</b> refusal confidence <b>NS</b> intent to accept <b>NS</b> positive expectancies <b>NS</b> norms	-
Shope et al., 1996b; Shope et al., 1998	CBA -	Based on AMPS n=308	No intervention n=134	up to 6 years	<b>NS</b> knowledge	-	-
Dedobbeleer & Desjardins, 2001	NRCT -	Coalition for Youth Quality of Life n=4 schools	No intervention n=6 schools	18 months NR	-	<b>NS</b> intentions to become involved in prevention activities ↑ self-esteem*	↑ relationship with father* <b>NS</b> relationship with mother
				30 months n=320 (40%)	-	<b>NS</b> drug and alcohol problems <b>NS</b> intentions to become involved in prevention activities <b>NS</b> self-esteem	<b>NS</b> relationship with father/mother

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.15. Classroom-based substance use prevention programmes: long-term programme effects on health and social outcomes**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Bennett, 1995	RCT -	DARE n=NR	NR n=NR	8 <sup>th</sup> grade	NS past year alcohol use	-	-
				9 <sup>th</sup> grade	NS past year alcohol use	-	-
Clayton et al., 1996	RCT - (cluster)	DARE n=23 schools	Other drug education programmes n=8 schools	up to 5 years	NS alcohol use	-	-
Dukes et al., 1996; 1997	CBA -	DARE n=399	Delayed intervention n=271	Up to 6 years	NS alcohol use	-	-
Ennett et al., 1994	NRCT +	DARE n=6 schools	No intervention n=6 schools	2 years	NS alcohol use		-
Rosenbaum & Hanson, 1998	NRCT +	DARE n=975	No intervention n=823	up to 6 years	NS lifetime alcohol use NS last month alcohol use	-	-
Lynam et al., 1999	RCT -	DARE n=762	NR n=240	10 years	NS alcohol use	-	-
Perry et al., 2003	RCT +	DARE, n=2,226; DARE Plus, n=2,221	Delayed intervention n=1,790	Up to 18 months (84%)	NS alcohol use ↓ change in past year alcohol use (DARE Plus, boys only*) ↓ change in past month alcohol use (DARE Plus, boys only*)	↓ change in drunkenness (DARE Plus, girls only*)	-
Botvin et al., 1990a; Botvin et al., 1995a	RCT +	LST 1-day teacher workshops or teacher training by video n=NR	NR n=NR	3 years n=3,597 (81%)	NS weekly alcohol use NS monthly alcohol use	NS 3+ drinks per occasion ↓ drunkenness (workshops*/training by video**)	-
Botvin et al., 1995b	RCT +	LST, n=NR Culturally focused intervention (CFI), n=NR	Information only n=NR	2 years n=456 (60%)	↓ drinking frequency*** ↓ drinking amount***	↓ drunkenness***	-

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Botvin et al., 1995b	RCT +	Culturally focused intervention (CFI) n=NR	LST n=NR	2 years (60%)	↓ drinking frequency** ↓ drinking amount*	↓ drunkenness*	-
Botvin et al., 2001a; Botvin et al., 2001b; Griffin et al., 2003	RCT +	LST n=2,144	Usual curriculum n=1,477	2 years NR	-	↓ binge drinking**	-
Fraguela et al., 2003	NRCT -	LST; researcher-led n=235 teacher-led n=309	No intervention n=485	2-3 years 40-36%	NS alcohol use	-	-
Spath et al., 2002; 2005; 2008	RCT +	LST, n=621; LST + SFP 10-14, n=549	Four leaflets mailed to families n=494	2 years n=1,198 (73%)	NS regular alcohol use	↓ weekly drunkenness (LST + SPF only*)	-
				5 years n=1,237 (74%)	NS 'new users'	NS drunkenness	-
Hecht et al., 2003; Gosin et al., 2003	RCT -	Keepin it REAL n=25 schools	Usual curriculum n=10 schools	up to 14 months (84%)	↓ change in alcohol use***	-	-
Kulis et al., 2005	RCT -	Keepin it REAL n=2,397	Usual curriculum n=1,005	14 months NR	↓ change in alcohol use**	-	-
Kulis et al., 2007	RCT -	Keepin it REAL n=1050	NR n=314	up to 14 months	↑ reduced or recently discontinued alcohol use*** ↑ transition to reduced alcohol use*	-	-
Warren et al., 2006	RCT +	Keepin it REAL n=3314	Usual curriculum n=1420	14 months NR	NS alcohol use	-	-
Sussman et al., 1998; Sun et al., 2006	RCT +	Project TND Classroom, n=7 schools Classroom + school as community, n=7 schools	Usual curriculum n=7 schools	up to 5 years	NS alcohol use	-	-
Sussman et al., 2003	RCT +	Project TND n=NR	Usual curriculum n=NR	2 years n=NR	NS alcohol use	-	-

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Ellickson et al., 1993	RCT +	Project ALERT n=3,247	Usual curriculum n=2,165	up to 12 <sup>th</sup> grade	<b>NS</b> alcohol use	-	-
Snow et al., 1992; 1997	CBA -	Adolescent Decision Making programme n=680	NR n=680	2 years (79%)	↑ alcohol use*	-	-
Shope et al., 1996b; Shope et al., 1998	CBA -	Based on AMPS n=507	No intervention n=530	up to 6 years (25%)	<b>NS</b> alcohol use	<b>NS</b> alcohol misuse	-
Slater et al., 2006	RCT +	Be Under Your Own Influence/All Stars In-school media + All Stars; In-school media only; All Stars only n=NR	No intervention n=NR	2 years (69%)	↓ alcohol use (in-school media**/All Stars*** <sup>a</sup> )	-	-
Dedobbeleer & Desjardins, 2001	NRCT -	Coalition for Youth Quality of Life n=4 schools	No intervention n=6 schools	18 months n=NR	<b>NS</b> alcohol drinking frequency <b>NS</b> alcohol consumed per typical occasion	<b>NS</b> drug and alcohol problems	-
				30 months n=320 (40%)	<b>NS</b> alcohol drinking frequency <b>NS</b> alcohol consumed per typical occasion		-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> Based on school as level of analysis

## 5.4 Brief behavioural or single session interventions

### 5.4.1 Overview of evidence identified

A total of 15 articles (Argentos, 1991; Dempster et al., 2006; Werch et al., 1996a, 1996b, 1998, 2000a, 2000b, 2001, 2003a, 2003b, 2005a, 2005b, 2005c, 2008a, 2008b) were identified that reported on evaluations of seven brief behavioural or single session intervention approaches across 13 studies. For the purposes of this review, brief behavioural and single session intervention approaches were defined as short (i.e. lasting no longer than one hour) or single session interventions, which were delivered outside of the lesson format or wider curriculum. Eight articles examined the STARS (Start Taking Alcohol Risks Seriously) for Families programme developed by Werch et al. Three articles (Werch et al., 2000a; 2001; 2003a) reported on a two-year version of the STARS programme and were grouped together as a single study.

Twelve of the studies were conducted in the USA and one study was conducted in the UK (Dempster et al., 2006). All thirteen studies were primarily school-based but six studies (Werch et al., 1998, 2000a, 2000b, 2003b, 2005a, 2008b) examined interventions which incorporated materials targeting parents. A range of providers were utilised across the included studies. Eight studies (Werch et al., 1996a, 1996b, 1998, 2000a, 2000b, 2003b, 2005a, 2005b) examined interventions delivered by school nurses, of which three studies (Werch et al., 1996a, 2003b, 2005b) combined delivery with a physician, teacher or fitness professional. Two studies (Werch et al., 2008a, 2008b) were based on mailed intervention materials and therefore did not involve a provider in the delivery. The remaining three studies (Dempster et al., 2006; Werch et al., 2005c; Argentos, 1991) were delivered by a consultant, trained research staff and a motivational speaker, respectively.

The theoretical framework for intervention was not reported for one study (Werch et al., 2005c). For studies that did report the theoretical framework, all but one study (Argentos, 1991) was based on multiple theories.

The sample sizes in the included studies ranged from 104 to 704 students. The programmes examined targeted students across a range of ages. Five studies (Werch et al., 1996a, 1996b, 1998, 2000a, 2005a) of the STAR for Families programmes and one study (Werch et al., 2003b) of the Project SPORT intervention targeted students aged 14 years or younger. Werch et al (2000b) examined a version of the STAR for Families programme which targeted students in junior high, aged 12-15 years. The six remaining studies (Argentos, 1991; Dempster et al., 2006; Werch et al., 2005b, 2005c, 2008a, 2008b) examined programmes that targeted studies aged over 14 years, up to the age of 18. The length of follow-up across the included studies ranged from PT to 12 months. No studies reported on the long-term follow-up of brief behavioural or single session programmes.

**Table 5.16. Alcohol education: brief behavioural or single session interventions**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Dempster et al., 2006	NRCT -	UK n=182 15-16 years	School	Single session (20 minutes) to communicate to young people the dangers of binge drinking	Theory of planned behaviour	Consultant
Werch et al., 1996a	RCT +	USA n=104 mean 13.8 years	School	<b>STARS for Families:</b> Self-instructional module and audiotape, brief health consultation with nurse or doctor, follow-up consultation with trained peers between PT and follow-up	Transtheoretical model of change, health belief model, social learning theory, behavioural self-control	Physician, School nurse
Werch et al., 1996b	RCT ++	USA N= 138 Mean age 12.2 years	School	<b>STARS for Families:</b> 6 focused weekly follow-up consultations; brief health consultation with nurse	Multi-component motivational stages prevention model, health belief model, social learning theory, behavioural self-control	School nurse
Werch et al., 1998	RCT +	USA n=211 mean 12.1 years	School, family	<b>STARS for Families:</b> Brief health consultation with nurse; letter to parents; up to 9 family-based prevention lessons	Multi-component motivational stages prevention model, health belief model, social learning theory, behavioural self-control	School nurse
Werch et al., 2000a; 2001; 2003a	RCT +	USA N=650 mean 12.1 years	School, family	<b>STARS for Families:</b> Brief health consultation with nurse; up to 10 prevention postcards sent to parents; follow-up consultation in second year; four family take-home lessons	Transtheoretical model of change, multi-component motivational stages prevention model,	School nurse
Werch et al., 2000b	RCT +	USA n=178 7th-9th grade	School, family	<b>STARS for Families:</b> Telephone-based nurse consultation; 10 prevention postcards sent to parents	Multi-component motivational stages prevention model, social cognitive theory	School nurse
Werch et al., 2003b	RCT ++	USA n=454 mean 13.2 years	School, family	<b>Project SPORT</b> Sport Plus: Health fitness screen and health consultation with a nurse, plus alcohol preventive consultation with a nurse Sport Plus Parent: As above, plus five parental cards mailed once a week	Social cognitive theory, multi-component motivational stages prevention model	School nurse, Teacher
Werch et al., 2005a	RCT +	USA N= 448 Mean 13.4 years	School, family	<b>STARS for Families:</b> Single vs. multiple drug prevention, brief health consultation with nurse, eight prevention postcards sent to parents	Health belief model, social cognitive theory, behavioural self control	School nurse

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Werch et al., 2005b	RCT ++	USA n=604 mean 15.2 years	School	<b>Project SPORT:</b> Health behaviour screen; brief health consultation; take-home fitness prescription and prevention flyer	Integrative Behaviour-Image Model	Nurse, fitness professionals
Werch et al., 2005c	RCT +	USA N= 232 mean 17 years	School	<b>Alcohol beverage tailored programme:</b> Brief screening instrument; brief alcohol risk reduction consultation; tip sheet reinforcing key messages	NR	Trained research staff
Argentos, 1991	CBA -	USA n=350 9th-10th grade	School	<b>Programme Kickoff:</b> 36 hours over one week; motivational speaker, prevention curriculum, group discussion and role play, t-shirts promoting drug free lifestyles	Social learning theory	Motivational speaker
Werch et al., 2008a	RCT +	USA n=375 mean 17 years	School	<b>Plan for Success:</b> printed text and scripted messages; health promotion and avoidance of health risks. Three interventions: (1) Plan for Success goal clarification survey; (2) goal clarification + goal planning; (3) goal clarification + career consultation.	Behaviour-image model, prospect theory and message framing.	NA
Werch et al., 2008b	RCT +	USA n=704 mean 15.2 years	School, family	<b>Brief image-based messages:</b> Three parent/ caregiver postcards, read and talk about each of four health and fitness facts found on the card with their teen	Prospect theory	NA

## 5.4.2 Quality assessment

Eleven studies (Werch et al., 1996a, 1996b, 1998, 2000a, 2000b, 2003b, 2005a, 2005b, 2005c, 2008a, 2008b) were based on RCT designs, and involved the randomisation of individual students to intervention and control groups. However, two studies by Werch et al (2003b, 2008a) involved randomisation to three intervention arms and did not utilise a control group for comparison. The study by Dempster et al (2006) was based on an NRCT design and Argentos et al (1991) reported on a CBA study. All 11 RCTs were rated good or moderate quality. Although detail on the methods of allocation were lacking in some studies, outcomes were reported to be valid and reliable across all of these studies and attrition rates were generally low. The study by Dempster et al (2006) was rated as poor quality because information was lacking on allocation and the baseline comparability between intervention and control students. In addition, although outcomes were generally well reported the scope of the analyses was lacking. The CBA study by Argentos (1991) was also rated poorly. Details of the study methodology were poorly reported, and it was not clear if the intervention and control groups were balanced at baseline as little information on the demographics of participants were reported.

## 5.4.3 Findings

### 5.4.3.1 Short-term results (<6 months)

Twelve studies (Argentos, 1991; Dempster et al., 2006; Werch et al., 1996a, 1996b, 1998, 2000a, 2003b, 2005a, 2005b, 2005c, 2008a, 2008b) reported on the short-term effects of brief behavioural and single session interventions.

#### Knowledge and understanding

None of studies examined short-term intervention effects on knowledge and understanding.

#### Attitudes and values

Ten studies (Argentos, 1991; Dempster et al., 2006; Werch et al., 1996a; 1996b; 2000a; 2003b; 2005a; 2005b; 2005c; 2008a) examined intervention effects on a range of measures related to attitudes and values in relation to alcohol use. Compared to students in the control group, students who participated in the one week Programme “Kickoff” (Argentos, 1991) reported an increased belief that their alcohol (and other drug) use might result in serious consequences ( $p < 0.01$ ). They also demonstrated significantly higher levels of understanding about popular myths regarding alcohol use and other drugs. Dempster et al (2006) reported that one month after receiving a single session on the dangers of binge drinking<sup>3</sup>, intervention students appraised binge drinking behaviour more negatively and believed more strongly that they could control their binge drinking behaviour compared to the control group ( $p < 0.001$  and  $p < 0.01$ , respectively). Intervention students also tended to show a stronger intention to stop binge drinking than the control group, but this finding did not reach significance. Four studies (Werch et al., 1996a; 1996b; 2000a; 2005a) examined the short-term

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<sup>3</sup> Defined by the authors as drinking half the recommended maximum weekly consumption of alcohol in a single session.

effects of the STARS for Families programme. Werch et al (1996a) reported that 10 weeks after participating the programme, intervention students reported significantly fewer peer expectations to drink alcohol, less intention to use alcohol in the future, and less intention to try alcohol compared to students who received an alcohol education booklet (all  $p < 0.05$ ). Werch et al (1996b) found that compared to a no intervention control, STARS for Families had no effects on students' perceptions of drinking consequences or their intentions for future alcohol use. Werch et al (2005a) examined STARS for Families (alcohol only) versus a multiple substance intervention (STARS Plus), compared a post-card only control. There were no short-term effects of either intervention on perceived peer alcohol use, but students who received the alcohol only programme reported less susceptibility to peer alcohol use and greater levels of alcohol incompatibility than controls (both  $p < 0.05$ ). Evaluation of two-year version of the STARS for Families programmes (Werch et al., 2000a; 2001) revealed inconsistent effects of the intervention of risk factors for alcohol use. Following the first year of the programme there were no differences in alcohol risk factors between intervention and control students. However, at the end of the programme, students in commuter schools reported fewer expectancy beliefs, greater motivations to avoid alcohol use and an overall lower number of alcohol risk factors (all  $p < 0.05$ ). There was no difference on any of these measures among students in (inner-city) community schools. Two studies (Werch et al., 2003b; 2005b) examined effects of the Project SPORT intervention. Werch et al (2003b) reported that students who received the Sport Plus Parent programme had greater increases in negative expectancy beliefs and self-control over time than students in the Sport or Sport Plus groups. At 3 months, compared to a no intervention control (Werch et al., 2005b), Project SPORT youth reported significantly greater negative alcohol expectancy beliefs (indicating greater protection against alcohol use) ( $p < 0.05$ ), behavioural capability ( $p < 0.01$ ), perceived susceptibility ( $p < 0.05$ ), parental monitoring ( $p < 0.05$ ), and parent/child communication ( $p < 0.05$ ). There were no intervention effects on resistance self-efficacy, self-control, value incompatibility or positive parent/child relationship. SPORT participants showed less risk for alcohol use compared to control participants, on measures of intentions to drink in the future ( $p < 0.01$ ), alcohol attitudes ( $p < 0.05$ ), and 'influenceability' ( $p < 0.01$ ). No effects on positive expectancy beliefs, subjective norms or perceived peer prevalence of alcohol were found. An alcohol beverage tailored intervention (Werch et al., 2005c) had significant, positive effects (all  $p < 0.05$ ) on the following alcohol risk factors: 'influenceability' for beer, wine, distilled spirits, and malt liquor consumption; perceived peer prevalence for wine, flavoured coolers, and fortified wine consumption; perceived susceptibility for beer and wine consumption; and perceived severity for beer, wine and distilled spirit consumption. A brief behavioural intervention strategy addressing positive images, delivered alone or in combination with either goal setting or career consultation, was associated with reductions in intentions to use alcohol and increases in the belief that alcohol interferes with other behaviours (Werch et al., 2008a).

### **Personal and social skills**

Two studies (Werch et al., 2003b; 2005b) examined the short-term effects of the Project SPORT intervention on personal and social skills. Students who received the SPORT intervention plus parental cards reported improvements in self-control following intervention, compared to no change

across the other versions of the programme examined. Compared to no intervention, there were no effects of Project SPORT on self-control or parent-child relationships.

### **Health and social outcomes relating to alcohol use and sexual health**

Twelve studies examined short-term intervention effects on alcohol use. Six studies (Argentos, 1991; Dempster et al., 2006; Werch et al., 1996b; Werch et al., 1998; Werch et al., 2003b; Werch et al., 2005c) found that the brief behavioural or single session intervention examined were not effective in reducing alcohol use.

Two studies (Werch et al., 1996a; 2001) demonstrated positive short-term effects of the STARS for Families intervention. Werch et al (1996a) reported that the STARS intervention had significant effects on 30-day quantity and frequency of alcohol use at 10 weeks follow-up (after delivery of the peer follow-up consultation), and STARS students reported using less alcohol than control students. However, there was no difference between intervention and control students who received an alcohol education booklet on the measure of recent alcohol use. Comparing community and specialist schools at the end of the first year of a two year intervention, Werch et al (2001) found intervention associated reductions in last week and last month drinking in STARS students in community schools (both  $p < 0.05$ ) but not in their specialist school counterparts. At the end of the two-year programme (Werch et al., 2000a) however, there was no difference between intervention and control students in community schools on any of the measures of alcohol use. Conversely, intervention students in specialist schools were more likely than control students to report that they did not drink and were less likely to reported heavy alcohol use (both  $p < 0.05$ ). There was no difference between intervention and control students in commuter schools on the measures of 7- or 30-day alcohol use.

Werch et al (2003b) found that there were reductions in alcohol use across all participants who received a sport consultation. Significant reductions were reported on 3 of 6 alcohol use measures: 30-day heavy drinking, alcohol problems and alcohol use initiation. However, there was no difference between groups (Sport, Sport Plus, or Sport Plus Parent). At 3-months follow up, students who received the Project SPORT intervention (Werch et al., 2005b) reported significantly less alcohol frequency, quantity and heavy use in the last 30 days compared to no intervention control students (all  $p < 0.001$ ). More students were in an earlier stage of alcohol initiation<sup>4</sup> ( $p < 0.001$ ) and length ( $p < 0.01$ ) of alcohol initiation was also less. Intervention based on brief behavioural intervention messages to parents which prompted them to discuss health and fitness with their children was associated with reduced alcohol use frequency compared to students who received fitness flyers ( $p < 0.05$ ).

Werch et al (2008a) examined the Plan for Success intervention, with and without a goal setting or career consultation component. There was no control arm included in the study. Across all three intervention arms there was a reduction in the length of time students had been drinking alcohol but no impact on quantity or frequency. For students whose parents received brief image-based

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<sup>4</sup> This measure reflected student's stage of alcohol initiation ranging from a strong precontemplation stage (will never try alcohol) to a maintenance stage (drinking for longer than 6 months).

messages (Werch et al., 2008b) there was a reduction in alcohol use frequency and problems, four-months after intervention, compared to control students who received fitness flyers.

#### **5.4.3.2 Medium-term results (up to 12 months)**

Four studies (Werch et al., 1998; 2000b; 2003a; 2005b) examined medium-term intervention effects of three versions of the STARS for Families intervention and the Project SPORT intervention, respectively.

##### **Knowledge and understanding**

None of the included studies examined medium-term intervention effects on knowledge.

##### **Attitudes and values**

Three studies (Werch et al., 2000b; 2003a; 2005b) examined medium-term impacts on attitudes and values. Werch et al (2000b) examined the effects of the STARS programme among students attending sports physical examinations. At the 6-months post-test fewer intervention than control students from suburban and rural schools, but not urban schools, reported that they intended to use alcohol in next 6 months. At 12 months follow-up, after a two-year STARS intervention, Werch et al (2003a) reported that compared to control students, intervention students in specialist schools (but not community schools) were less likely to report intentions to use alcohol, had significantly greater motivations to avoid alcohol and an overall lower alcohol risk score (all  $p < 0.01$ ). There were no differences between intervention and control students in community or commuter schools on the measures of influenceability, peer prevalence or expectancy beliefs. At 12 months follow-up, Project SPORT participants reported significantly more protective factors and fewer risk factors for alcohol use. Further analyses showed that Project SPORT participants had significantly better parent/child communication ( $p < 0.01$ ), and marginally more positive parent/child relationships ( $p = 0.05$ ), compared to controls who received generic alcohol prevention and health promotion materials, but less protection on perceived susceptibility ( $p < 0.05$ ). There was no significant difference between intervention and control students in intentions to drink in the next 6 months.

##### **Personal and social skills**

None of the included studies examined medium-term intervention effects on personal and social skills.

##### **Health and social outcomes relating to alcohol use and sexual health**

One study (Werch et al., 2000b) examined the effect of the STARS programme at 6-months in a sample of students recruited from sports physical examinations. Compared to control students who received no intervention, fewer intervention students reported drinking during the previous month ( $p < 0.05$ ) and drinking heavily ( $p < 0.05$ ). There were no significant effects on drinking in the last 7 days. Two studies (Werch et al., 1998; Werch et al., 2003a) examined the effectiveness of the STARS for Families programme at 1 year. Neither version of the programme examined had significant effects on alcohol use behaviours in the medium-term, compared to an alcohol education booklet control. However, the analyses of 30-day heavy use showed an effect in favour of the 2-year version of the STARS for Families programme (Werch et al., 2003). The short-term effects of the Project SPORT programme had declined by the 1-year follow-up (Werch et al., 2005b), although the effects still

favoured the intervention, and intervention students reported using alcohol for a briefer period of time than control students ( $p < 0.05$ ).

#### **5.4.3.3 Long-term results (>12 months)**

None of the included studies reported long-term follow-up data.

#### **5.4.4 Summary and evidence statements**

Thirteen studies (Argentos, 1991; Dempster et al., 2006; Werch et al., 1996a; 1996b; 1998; 2000a; 2000b; 2003b; 2005a; 2005b; 2005c; 2008a; 2008b) were identified that examined seven brief behavioural or single session intervention approaches relevant to alcohol education. Eight studies (Werch et al., 1996a, 1996b, 1998, 2000a, 2000b, 2003b, 2005a, 2005b) examined interventions delivered by school nurses, of which three studies (Werch et al., 1996a, 2003b, 2005b) combined delivery with a physician, teacher or fitness professional. Three further studies (Dempster et al., 2006; Werch et al., 2005c; Argentos, 1991) were delivered by a consultant, trained research staff and a motivational speaker, respectively, and two studies (Werch et al., 2008a; 2008b) were based on mailed intervention materials.

##### **5.4.4.1 Knowledge and understanding**

None of the studies examined intervention effects on knowledge or understanding.

##### **5.4.4.2 Attitudes and values**

Eleven studies (Argentos, 1991; Dempster et al., 2006; Werch et al., 1996a; 1996b; 2000a; 2003b; 2005a; 2005b; 2005c; 2008a) examined intervention effects on students' attitudes and values. Short-term increases in negative views of alcohol and/or its consequences were found in six studies, which included evaluations of the one week Programme 'Kickoff' (Argentos, 1991), a single session on the dangers of binge drinking (Dempster et al., 2006), Project SPORT (Werch et al., 2003b; 2005b), an alcohol beverage tailored programme (Werch et al., 2005c), and a brief behavioural intervention strategy addressing positive images (Werch et al., 2008a). Furthermore, a decrease in students' alcohol expectancies (their own or their views of their peers') was found for two studies of Project SPORT (Werch et al., 2003b; 2005b) and among students who attended specialist schools in one study of STARS for families (Werch et al., 2000a). Brief behavioural or single session intervention approaches appeared to have inconsistent short- and medium-term effects on student's intentions to drink. Across five studies (Werch et al., 1996a; 2000b; 2003a; 2005b; 2008a), which examined a range of brief behavioural intervention approaches, there were decreases in students' intentions to drink alcohol. However, two studies (Dempster et al., 2006; Werch et al., 1996b) reported no effects on intentions to stop binge drinking or drinking alcohol respectively.

##### **5.4.4.3 Personal and social skills**

Short-term intervention effects of the Project SPORT intervention on personal and social skills were examined in two studies (Werch et al., 2003b; 2005b). There was no impact of the intervention on self-control or parent-child relationships compared to no intervention, but relative to other versions of the programme, students who received additional parental components reported greater self-control.

#### **5.4.4.4 Health and social outcomes relating to alcohol use and sexual health**

Six studies (Werch et al., 1996a; 1996b; 1998; 2000a; 2000b; 2005a) reported on the short- to medium-term effectiveness of various versions of the STARS for Families programme. The programme had inconsistent effects on the quantity and frequency of alcohol use, and alcohol use in the last 7- or 30-days in both the short- and medium-term. However, STARS for Families did have a positive effect on heavy drinking in the past month, and analyses of 30-day heavy use showed an effect in favour of the 2-year version of the STARS for Families programme (Werch et al., 2000a; 2001; 2003a). Two studies (Werch et al., 2003b; 2005b) reported on the short-term effects of two sport-based brief behavioural intervention programmes. There were no differential intervention effects for a sports consultation when students received an additional preventive consultation on alcohol (Werch et al., 2003b), but compared to no intervention (Werch et al., 2005b), Project SPORT was shown to have short-term effects on frequency and quantity of alcohol use, and heavy alcohol use in the past month. By the 1-year follow-up, programme effects had declined although the direction of effect still favoured the intervention. An intervention based on brief image-based messages for adolescents and their parents had positive, short-term effects on alcohol use frequency and problems (Werch et al., 2008b). An alcohol tailored beverage programme (Werch et al., 2005c) and a brief behavioural intervention founded on the Behaviour-Image Model (Werch et al., 2008a) had inconsistent effects on alcohol use, and two further programmes, a single session on the dangers of binge drinking (Dempster et al., 2006), and the one week Programme “Kickoff” (Argentos, 1991), had no effects on alcohol use.

#### **Evidence statement 4**

4 (d) There is moderate evidence from nine RCTs, one NRCT and one CBA study<sup>1</sup> to suggest that brief behavioural or single session intervention approaches relating to alcohol use may have mixed effects on attitudes and values relating to alcohol use. There is moderate evidence from four RCTs, one NRCT and one CBA study<sup>2</sup> to suggest that these programmes may have positive short-term effects on how student’s view alcohol use and its consequences and further evidence from five RCTs and one NRCT<sup>3</sup> to suggest that brief behavioural intervention approaches have mixed or inconsistent effects on intentions to drink. Findings may only be partially applicable to the UK as the majority of studies were implemented in the USA and may not be generalisable beyond the populations studied. In addition, the emphasis of the STARS for Families and Project SPORT interventions on abstinence may be of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

4 (e) There is inconsistent evidence from two studies<sup>4</sup> to determine the effects of brief behavioural and single session intervention approaches on personal and social skills.

4 (f) There is moderate evidence from five RCTs<sup>5</sup> to suggest that brief behavioural intervention approaches based on nurse-led consultations, such as the STARS for Families and Project SPORT programmes, can produce short-term reductions in alcohol use, but further moderate evidence from three RCTs<sup>6</sup> to suggest that these effects may not be sustained in the medium-term. There is weak evidence from two RCTs, one NRCT and one CBA study<sup>7</sup> to suggest that

other brief behavioural and single session intervention approaches may have a limited impact on alcohol consumption. These findings may only be partially applicable to the UK as the majority of studies were implemented in the USA and may not be generalisable beyond the populations studied. In addition, the emphasis of the STARS programme on abstinence may be of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

<sup>1</sup> Argentos, 1991 (CBA -); Dempster et al., 2006 (NRCT -); Werch et al., 1996a (RCT +); Werch et al., 1996b (RCT ++); Werch et al., 2000a (RCT +); Werch et al., 2000b (RCT +); Werch et al., 2003b (RCT ++); Werch et al., 2005a (RCT +); Werch et al., 2005b (RCT ++); Werch et al., 2005c (RCT +); Werch et al., 2008a (RCT +)

<sup>2</sup> Argentos, 1991 (CBA -); Dempster et al., 2006 (NRCT -); Werch et al., 2003b (RCT ++); Werch et al., 2005b (RCT ++); Werch et al., 2005c (RCT +); Werch et al., 2008a (RCT +)

<sup>3</sup> Dempster et al., 2006 (NRCT -); Werch et al., 1996a (RCT +); Werch et al., 1996b (RCT ++); Werch et al., 2000b (RCT +); Werch et al., 2003a (RCT +); Werch et al., 2005b (RCT ++); Werch et al., 2008a (RCT +)

<sup>4</sup> Werch et al., 2003b (RCT ++); Werch et al., 2005b (RCT ++)

<sup>5</sup> Werch et al., 1996a (RCT +); Werch et al., 1996b (RCT ++); Werch et al., 2000a; 2001; (RCT +); Werch et al., 2005a (RCT +); Werch et al., 2005b (RCT ++)

<sup>6</sup> Werch et al., 1998 (RCT +); Werch et al., 2003a (RCT +); Werch et al., 2005b (RCT ++)

<sup>7</sup> Argentos, 1991 (CBA -); Dempster et al., 2006 (NRCT -); Werch et al., 2005c (RCT +); Werch et al., 2008a (RCT +);

**Table 5.17. Brief behavioural and single session interventions: short-term programme effects on knowledge skills and attitudes**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Argentos, 1991	CBA -	Programme Kickoff n=280	No intervention n=70	PT NR	-	↑ belief that their alcohol (and other drug) use might result in serious consequences** ↑ understanding of popular myths regarding alcohol use and other drugs	-
Dempster et al., 2006	NRCT -	Alcohol brief intervention n=133	No intervention n=49	1 month n=NR	-	↑ negative appraisal binge drinking** ↑ belief could control binge drinking behaviours* NS intentions to stop binge drinking	-
Werch et al., 1996a	RCT +	STARS for Families n=52	Alcohol education booklet n=52	PT NR	-	↑ intentions to stop or reduce drinking* ↑ perceived susceptibility to alcohol-related health problems (likely to get sick if drunk)* NS resistance self-efficacy NS perceived prevalence of drinking among peers or adults	-
				10 weeks n=101 (97%)	-	↓ perceived prevalence of drinking among adults** NS perceived prevalence of drinking among peers ↑ perceived susceptibility to alcohol-related health problems (likely to become addicted by drinking often)* NS resistance self-efficacy	-
Werch et al., 1996b	RCT ++	STARS for Families n=68	No intervention n=70	3 months n=124 (90%)	-	NS drinking consequences NS intentions for alcohol use	-
Werch et al., 2000a; 2001	RCT +	STARS for Families Community n=107 Specialist n=174	Alcohol education booklet Community n=109 Specialist n=175	end of 6 <sup>th</sup> grade n=569 (88%)	-	NS alcohol risk factor measures (influenceability, peer prevalence, expectancy beliefs, motivations to avoid)	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Werch et al., 2000a; 2001	RCT +	STARS for Families Community, n=97 Specialist, n=157	Alcohol education booklet Community, n=100 Specialist, n=161	end of 7 <sup>th</sup> grade n=515 (79%)	-	<p><b>NS</b> influenceability  <b>NS</b> peer prevalence                      ↓ expectancy beliefs (specialist schools only*)                      ↑ motivations to avoid alcohol use (specialist schools only**)                      ↓ total alcohol risk (specialist schools only*)</p>	-
Werch et al., 2005a	RCT +	STARS for families, n=150 STARS Plus, n=149	Postcards only n=149	3 months n=433 (97%)	-	<p><b>NS</b> peer alcohol use                      ↓ peer alcohol susceptibility (STARS only*)                      ↓ alcohol incompatibility (STARS only*)</p>	-
Werch et al., 2003b	RCT ++	Project SPORT Sport, n=152 Sport Plus, n=150 Sport Plus Parent, n=152	NA	3 months n=444 (98%)	-	<p>↑ negative expectancy beliefs (Sport Plus Parent)*                      ↓ peer prevalence (control only*)</p>	↑ self-control (Sport Plus Parent*)
Werch et al., 2005b	RCT ++	Project SPORT n=302	No intervention n=302	3 months n=584 (97%)	-	<p>↑ negative expectancy beliefs*                      ↑ behavioural capability**                      ↑ perceived susceptibility*                      ↑ parental monitoring*                      ↑ parent/child communication*  <b>NS</b> resistance self-efficacy  <b>NS</b> value incompatibility                      ↓ intentions to drink in the future**                      ↓ pro alcohol attitudes*                      ↓ influenceability**  <b>NS</b> expectancy beliefs  <b>NS</b> subjective norms  <b>NS</b> perceived peer prevalence</p>	<p><b>NS</b> positive parent child relationship  <b>NS</b> self-control</p>

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Werch et al., 2005c	RCT +	Alcohol beverage tailored programme n=115	Alcohol education booklet n=117	PT n=201 (87%)	-	↓ influenceability for beer, wine, distilled spirits and malt liquor* ↓ perceived peer prevalence for wine, flavoured coolers, and fortified wine* ↑ perceived susceptibility for beer and wine consumption* ↑ perceived severity for beer, wine and distilled spirits*	-
Werch et al., 2008a	RCT +	Plan for Success (1) Planning, n=113; (2) planning + goal setting, n=113; (3) planning + career consultation, n=109	NA	PT n=335 (93%)	-	↓ intention to use alcohol** ↑ belief alcohol interferes with other behaviours**	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> Adjusted for baseline substance use; <sup>b</sup> 30-day heavy drinking, alcohol problems, alcohol use initiation declined over time in intervention and control groups; <sup>c</sup> Adjusted for baseline alcohol use

**Table 5.18. Brief behavioural and single session interventions: short-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Alcohol use	Heavy alcohol use	Other
Argentos, 1991	CBA -	Programme Kickoff n=280	No intervention n=70	PT n=NR	<b>NS</b> alcohol use	-	-
Dempster et al., 2006	NRCT -	Alcohol brief intervention n=133	No intervention n=49	1 month n=NR	-	<b>NS</b> binge drinking	<b>NS</b> number of units of alcohol consumed in a single session
Werch et al., 1996a	RCT +	STARS for Families n=52	Alcohol education booklet n=52	PT n=NR	<b>NS</b> alcohol quantity last month <b>NS</b> 30-day alcohol frequency <b>NS</b> recent alcohol use	<b>NS</b> heavy drinking	-

Study	Rating	Intervention	Comparator	Follow-up	Alcohol use	Heavy alcohol use	Other
Werch et al., 1996a	RCT +	STARS for Families n=52	Alcohol education booklet n=52	10 weeks n=101 (97%)	↓ alcohol quantity last month* ↓ 30-day alcohol frequency* NS recent alcohol use	NS heavy drinking	-
Werch et al., 1996b	RCT ++	STARS for Families n=68	No intervention n=70	3 months n=124 (90%)	NS 7-day use NS 30-day use	↓ 30-day heavy use*	-
Werch et al., 1998	RCT +	STARS for Families n=106	Alcohol education booklet n=105	PT n=187 (89%)	NS 30-day use NS 7-day use NS alcohol frequency NS alcohol quantity	NS 30-day heavy use NS heavy alcohol use	-
Werch et al., 2001; 2000a	RCT +	STARS for Families Community, n=107 Specialist, n=174	Alcohol education booklet Community, n=109 Specialist, n=175	end of 6 <sup>th</sup> grade n=569 (88%)	↓ initiation (community schools only*) ↓ 7-day use (community schools only*) ↓ 30-day use (community schools only*)	↓ 30-day heavy use (community schools only**)	-
		STARS for Families Community, n=97 Specialist, n=157	Alcohol education booklet Community, n=100 Specialist, n=161	end of 7 <sup>th</sup> grade n=515 (79%)	↓ initiation (commuter schools only*) NS 7-day use NS 30-day use	↓ 30-day heavy use (commuter schools only*)	-
Werch et al., 2005a	RCT +	STARS for families, n=150 STARS Plus, n=149	Postcards only n=149	3 months n=433 (97%)	NS 30-day quantity ↓ 30-day frequency <sup>c</sup> (STARS only*)	NS heavy alcohol use	↓ alcohol-related use problems*
Werch et al., 2003b	RCT ++	Project SPORT Sport, n=152 Sport Plus, n=150 Sport Plus Parent, n=152	NA	3 months n=444 (98%)	NS alcohol use measures <sup>b</sup>	-	-
Werch et al., 2005b	RCT ++	Project SPORT n=302	No intervention n=302	3 months n=584 (97%)	↓ 30-day frequency*** ↓ 30-day quantity*** ↓ length of alcohol use** ↓ stage of alcohol initiation***	↓ 3-day heavy use***	NS alcohol problems
Werch et al., 2005c	RCT +	Alcohol beverage tailored programme n=115	Alcohol education booklet n=117	PT n=201 (87%)	NS 30-day frequency NS 30-day quantity	NS 30-day heavy use	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Werch et al., 2008a	RCT +	Plan for Success (1) Planning, n=113; (2) planning + goal setting, n=113; (3) planning + career consultation, n=109	NA	PT n=335 (93%)	↓ length of alcohol use* <b>NS</b> 30-day alcohol frequency <b>NS</b> 30-alcohol use quantity	-	-
Werch et al., 2008b	RCT +	Brief image based messages n=182	Fitness flyers n=202	4 months n=NR (94%)	↓ alcohol use frequency*	-	↓ alcohol use problems*

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> Adjusted for baseline substance use; <sup>b</sup> 30-day heavy drinking, alcohol problems, alcohol use initiation declined over time in intervention and control groups; <sup>c</sup> Adjusted for baseline alcohol use

**Table 5.19. Brief behavioural and single session interventions: medium-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Werch et al., 2000b	RCT +	STARS for Families n=NR	No intervention n=NR	6 months n=163 (92%)	-	↓ intentions to use alcohol in next 6 months (suburban and rural only*)	-
Werch et al., 2003a	RCT +	STARS for Families n=325	Alcohol education booklet n=325	1 year n=507 (78%)	-	<b>NS</b> influenceability <b>NS</b> peer prevalence <b>NS</b> expectancy beliefs ↓ intentions to use alcohol (commuter schools only**) ↑ motivations to avoid alcohol use (commuter schools only**) ↓ total alcohol risk (commuter schools only**)	-
Werch et al., 2005b	RCT ++	Project SPORT n=302	No intervention n=302	12 months n=514 (85%)	-	↑ alcohol protective factors** ↓ alcohol risk factors*	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.20. Brief behavioural and single session interventions: medium-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Werch et al., 1998	RCT +	STARS for Families n=106	Alcohol education booklet n=105	1 year n=147 (70%)	<b>NS</b> 7-day use <b>NS</b> 30-day use <b>NS</b> alcohol frequency	<b>NS</b> 30-day heavy use	<b>NS</b> alcohol quantity <b>NS</b> heavy alcohol use
Werch et al., 2000b	RCT +	STARS for Families n=NR	No intervention n=NR	6 months n=163 (92%)	<b>NS</b> 7-day use ↓ 30-day use*	↓ 30-day heavy use *	-
Werch et al., 2003a	RCT +	STARS for Families n=325	Alcohol education booklet n=325	1 year n=507 (78%)	<b>NS</b> lifetime alcohol use <b>NS</b> 30-day alcohol use <b>NS</b> length of drinking	<b>NS</b> 7-day alcohol use	-
Werch et al., 2005b	RCT ++	Project SPORT n=302	No intervention n=302	1 year n=514 (85%)	<b>NS</b> 30-day frequency <b>NS</b> 30-day quantity ↓ length of alcohol use* <b>NS</b> stage of alcohol initiation	<b>NS</b> 30-day heavy use	<b>NS</b> alcohol problems

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

## **5.5 Multicomponent school- and community-based programmes**

### **5.5.1 Overview of evidence identified**

Nine studies (Perry et al., 1996; Komro et al., 1999; 2001; 2008; Perry et al., 2002; Williams et al., 1995; Toomey et al., 1996; Johnson et al., 1990; Chou et al., 1998) were identified that examined two multicomponent, school- and community-based programmes: Project Northland and the Midwest Prevention Project. Both programmes were based in communities in the USA and combined comprehensive school-based curriculums, with community-based activities and parental involvement components. A variety of stakeholders were involved in delivery of both programmes.

The theoretical framework for the intervention was not reported for the Midwest Prevention project, but Project Northland was reported to be based on the theory of triadic influence, and Perry's planning model for adolescent health promotion. The sample size for both programmes exceeded 1,500 students and both programme primarily targeted students in the sixth to the eighth grade. A second phase of the Project Northland programme targeted students in 11<sup>th</sup> and 12<sup>th</sup> grade. Both studies were delivered over a three year period but follow-up results were only reported at the end of the programme and medium and long-term follow-up results were not available for either study.

### **5.5.2 Quality assessment**

All nine studies identified for inclusion were based on an RCT design. On the whole the quality of the studies was generally judged to be of moderate quality. Only one study (Chou et al., 1998) was rated poor quality, and this was because there were differences between intervention and control participants at baseline and the study suffered from a high level of attrition with almost 60% of participants failing to provide complete data at all follow-ups. Of the studies rated moderate quality, details were lacking regarding the method of randomisation and the authors did not always sufficiently report on baseline differences between intervention and control students.

**Table 5.21. Alcohol education: multicomponent school and community programmes**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Perry et al., 1996; Komro et al., 2001	RCT +	USA n=2,351 6th-8th grade	School, community, family	<b>Project Northland (Phase I):</b> Three year programme; parental involvement/educational curriculum, behavioural curricula, peer participation, community task force activities	NR	Peers, teachers, adult volunteers
Perry et al., 2002	RCT +	USA n=2953 11-12 <sup>th</sup> grade	School, community, family	<b>Project Northland (Phase II):</b> interim curriculum (9 <sup>th</sup> grade); classroom curriculum (11 <sup>th</sup> grade), 11 postcards for parents, print media campaign, peer action teams, community action teams	NR	Teachers, Peers
Williams et al., 1995	RCT +	USA n=2,351 6 <sup>th</sup> grade	School, community, family	<b>Project Northland (Slick Tracey Home Team):</b> 4 weekly sessions; activity story books, small group discussion, family fun night.	NR	Teachers, Peers
Toomey et al., 1996	RCT +	USA n=1,028 7 <sup>th</sup> grade	School, community, family	<b>Project Northland (Amazing Alternatives!):</b> kickoff session for parent; 8-week peer led classroom curriculum; peer participation programme to create alcohol free alternative activities; home programme booklets mailed to parents; information for parents	NR	Teachers, Peers
Komro et al., 1999	RCT +	USA n=1,236 6 <sup>th</sup> grade	School, community, family	<b>Project Northland:</b> peer leadership activities during Phase I	NR	Teachers, Peers
Komro et al., 2008	RCT +	USA N=4,259 6 <sup>th</sup> grade	School, community, family	<b>Project Northland (Chicago):</b> Three year programme. See Perry et al., 1996 for details	Theory of triadic influence, Perry's planning model for adolescent health promotion	Teachers, peers
Johnson et al., 1990	RCT +	USA n=1,607 age NR	School, community	<b>Midwest Prevention Project (Kansas City):</b> 10 sessions; drug resistance skills, parent organisation programme, training for community leaders, mass media	NR	NR
Chou et al., 1998	RCT -	USA n=3,412 7th grade	School, community, family	<b>Midwest Prevention Project (Indianapolis):</b> see Johnson et al., 1990 for details	NR	Teachers

### 5.5.3 Findings

#### 5.5.3.1 Short-term results (<6 months)

All nine studies (Perry et al., 1996; Komro et al., 1999, 2001, 2008; Perry et al., 2002; Williams et al., 1995; Toomey et al., 1996; Johnson et al., 1990; Chou et al., 1998) reported on the short-term effects of two long-term comprehensive multicomponent programmes.

#### Knowledge and understanding

None of the studies examined short-term intervention effects on knowledge.

#### Attitudes and values

Perry et al (1996) reported that students in the intervention district during Phase I of Project Northland had significantly lower scores on the peer influence scale at the end of the 8th grade compared to students in comparison districts. However, there were no significant differences between intervention and control communities on the self-efficacy or perceived access to alcohol scales. Among baseline non-users, students in the intervention districts had significantly lower scores at the end of 8th grade on the peer influence scale, and greater self-efficacy to refuse alcohol, relative to students in control districts. No difference was found between intervention and control baseline users. Perry et al (2002) reported that there were no differences in the trajectories of students' perceptions of peer influence to use alcohol or their perceived access to alcohol during phase two of Project Northland. During the interim phase when students were in ninth and tenth grade, students in intervention schools were significantly more likely to experience increased perceptions of peer influence to use alcohol and to decrease their self-efficacy to refuse alcohol. Komro et al (2008) examined a replication of Project Northland study among an urban, low-income population. Compared to the usual school curriculum, there were no effects of Project Northland on any of the measures of attitudes and values, including intentions, peer norms or self-efficacy.

#### Personal and social skills

None of the studies examined short-term intervention effects on personal and social skills

#### Health and social outcomes relating to alcohol use and sexual health

Perry et al (1996) reported that significant positive effects of Project Northland were found at the end of 8th grade (end of Phase one). Students in the intervention districts had significantly lower scores ( $p < 0.05$ ) on the tendency to use alcohol scale than students in control districts. In addition, nonusers of alcohol at baseline in the intervention communities reported lower scores than nonusers in control communities at the end of 8th grade ( $p < 0.01$ ), but not at the end of 6<sup>th</sup> or 7<sup>th</sup> grade. In addition for all students, the percentages who reported alcohol use in the past month and past week were significantly lower in the intervention group at the end of 8th grade. For baseline nonusers, intervention students had significantly lower monthly and weekly alcohol use at the end of the 8th grade. The percentage of students who reported past year alcohol use were also significantly lower among baseline nonusers in the intervention districts at the end of the 7th grade ( $p < 0.05$ ) and 8<sup>th</sup> grades ( $p < 0.01$ ). Perry et al (2002) reported that students in the intervention schools were also

significantly less likely to increase their tendency to use alcohol and binge drinking during phase two of Project Northland. However, no differences were found on other measures, although intervention students were marginally less likely than control students to have increased their past month alcohol use during the 11<sup>th</sup> and 12<sup>th</sup> grades ( $p>0.05$ ). During the interim phase (9<sup>th</sup> and 10<sup>th</sup> grades), students in the intervention schools were significantly more likely than control students to increase their alcohol use on all measures. Komro et al (1999) examined the effectiveness of two peer leadership components of the 7<sup>th</sup> grade Project Northland intervention, 'Amazing Alternatives!' programme. At the end of the 7<sup>th</sup> grade, students who were elected peer leaders had higher scores on the Alcohol Use Tendency Scale<sup>5</sup> than did those who had participated as volunteer peer leaders ( $p<0.01$ ), students who did not participate as peer leaders ( $p<0.05$ ) and (although not significant) students who participated as both elected and volunteer peer leaders ( $p>0.05$ ). By the end of eighth grade no significant differences remained on the Alcohol Use Tendency Scale. Two studies examined the effects of Project Northland behavioural curricula. Williams and colleagues (1995; RCT +) found that at the end of the sixth grade the 'Slick Tracy Home Team Programme', had no significant effects on alcohol use after controlling for baseline differences between intervention and control students. Toomey et al (1996) found that the 'Amazing Alternatives! Home Programme' had no significant effects on any measure of alcohol use.

Johnson et al (1990) reported that the MPP had no significant effects on alcohol use at the 3-year follow-up when students were in ninth and tenth grade. Chou et al (1998) reported the programme showed a secondary prevention effect on decreasing alcohol use at 6 months after the intervention. The effect was also marginally significant for alcohol use at the 1.5-year follow-up with results of the logistic regression analysis indicating that the secondary prevention effect diminished over time.

### **5.5.3.2 Medium-term results (up to 12 months)**

None of the included studies reported medium-term follow-up data.

### **5.5.3.3 Long-term results (>12 months)**

None of the included studies reported long-term follow-up data.

## **5.5.4 Summary and evidence statements**

Eight studies (Perry et al., 1996; Komro et al., 2001; Perry et al., 2002; Williams et al., 1995; Toomey et al., 1996; Komro et al., 2008; Johnson et al., 1990; Chou et al., 1998) were identified that examined two multicomponent, school- and community-based programmes: Project Northland and the Midwest Prevention Project (MPP). Project Northland was a two phase community trial designed to prevent alcohol use and alcohol related problems among young adolescents. Risk factors for alcohol use were targeted through school-, home- and community-based intervention, including parental involvement/education programmes, behavioural curricula, peer leadership programmes, and community-wide task forces activities. The MPP consisted of four intervention components: (1) a 10

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<sup>5</sup> A summary of alcohol use and intentions to use alcohol based on occasions of alcohol use (lifetime, last year, and last month), intentions to use alcohol (when 21 years or older, next year, month, and week).

session school-based programme focused on drug resistance skills training, additional homework sessions encouraging involvement with parents; (2) a parent organisation programme for reviewing school prevention policies and parent training in parent-child communication skills; (3) training of community leaders in organising a drug abuse prevention taskforce; and (4) mass media coverage.

#### **5.5.4.1 Knowledge and understanding**

None of the studies examined intervention effects on knowledge or understanding.

#### **5.5.4.2 Attitudes and values**

During Phase I of Project Northland (Perry et al., 1996; Komro et al., 2001), although there was evidence of positive intervention effects on peer influence, the intervention had no impact on self-efficacy or perceived access to alcohol. In the interim phase of the project, students who participated in Project Northland were more likely than controls to experience increased perceptions of peer influence to use alcohol and to decrease their self-efficacy to refuse alcohol (Perry et al., 2002).

#### **5.5.4.3 Personal and social skills**

None of the studies examined intervention effects on personal and social skills.

#### **5.5.4.4 Health and social outcomes relating to alcohol use and sexual health**

Project Northland significantly reduced growth in binge drinking and tendency to use alcohol during Phase I and II of the programme (Perry et al., 1996; 2002; Komro et al., 2001), however, during the interim phase of the programme the growth in alcohol use was greater among intervention students than control students. The three-year MPP (Johnson et al., 1990; Chou et al., 1998) did not have significant effects on alcohol use in one cohort of ninth/tenth grade students, but a short-term secondary prevention effect was reported in a second cohort.

#### **Evidence statement 5**

- 5 (d) There is no evidence from eight RCTs<sup>1</sup> to determine the impact of multicomponent, school- and community-based programmes on knowledge, or personal and social skills.
- 5 (e) There is moderate evidence from three RCTs<sup>2</sup> to suggest that Project Northland, a long-term multicomponent, school- and community-based programme, has no effects on attitudes and values related to alcohol consumption.
- 5 (f) There is moderate evidence from two RCTs<sup>3</sup> to suggest that the Midwest Prevention Project has no effects on alcohol consumption and inconsistent evidence from five RCTs<sup>4</sup> to suggest that Project Northland may have mixed effects on alcohol consumption. Two RCTs<sup>5</sup> showed reductions in alcohol consumption in a rural population, particularly among younger adolescents, but replication of the programme among an urban sample<sup>6</sup> showed that the programme was not effective. Findings may only be partially applicable to the UK as studies were implemented in the USA and may not be generalisable beyond the populations studied.

<sup>1</sup> Perry et al., 1996; Komro et al., 2001 (both RCT +); Perry et al., 2002 (RCT +); Williams et al., 1995 (RCT +); Toomey et al., 1996 (RCT +); Komro et al., 2008 (RCT +); Johnson et al., 1990 (RCT +); Chou et al., 1998 (RCT -)

<sup>2</sup> Perry et al., 1996; Komro et al., 2001 (both RCT +); Perry et al., 2002 (RCT +); Komro et al., 2008 (RCT ++)

<sup>3</sup> Johnson et al., 1990 (RCT +); Chou et al., 1998 (RCT -)

<sup>4</sup> Perry et al., 1996; Komro et al., 2001 (both RCT +); Perry et al., 2002 (RCT +); Williams et al., 1995 (RCT +); Toomey et al., 1996 (RCT +); Komro et al., 2008 (RCT +)

<sup>5</sup> Perry et al., 1996; Komro et al., 2001 (both RCT +); Perry et al., 2002 (RCT +)

<sup>6</sup> Komro et al., 2008 (RCT ++)

**Table 5.22. Multicomponent programmes: short-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Perry et al., 1996; Komro et al., 2001	RCT +	Project Northland (Phase 1) n=NR	Usual curriculum n=NR	up to end of 8 <sup>th</sup> grade (81%)	-	↓ peer influence* NS self-efficacy NS perceived access to alcohol	-
Perry et al., 2002	RCT +	Project Northland (Phase 2) n=NR	Usual curriculum n=NR	up to end of 12 <sup>th</sup> grade (85%)	-	NS peer influence NS self-efficacy NS perceived access to alcohol	-
Komro et al., 2008	RCT ++	Project Northland (Chicago) n=29 schools	Usual curriculum n=32 schools	up to end of 8 <sup>th</sup> grade n=3,802 (95%)	-	NS alcohol intentions NS norms supportive of use NS perceived outcomes of supportive use NS resistance self-efficacy NS access to alcohol	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

**Table 5.23. Multicomponent programmes: short-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Perry et al., 1996; Komro et al., 2001	RCT +	Project Northland (Phase 1) n=NR	Usual curriculum n=NR	up to end of 8 <sup>th</sup> grade (81%)	↓ weekly alcohol use* ↓ monthly weekly use*	-	↓ tendency to use alcohol*
Perry et al., 2002	RCT +	Project Northland (Phase 2) n=NR	Usual curriculum n=NR	up to end of 12 <sup>th</sup> grade (85%)	NS growth rate: weekly use NS growth rate: monthly use	↓ growth rate: binge drinking*	↓ growth rate: tendency to use alcohol*
Williams et al., 1995	RCT +	Project Northland (Slick Tracey Home Team) n=NR	Usual curriculum n=NR	end of 6 <sup>th</sup> grade n=2,201 (94%)	NS alcohol use	-	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Toomey et al., 1996	RCT +	Project Northland (Amazing Alternatives) n=521	No intervention n=507	up to end of 8 <sup>th</sup> grade (83%)	<b>NS</b> alcohol use	-	-
Komro et al., 1999	RCT +	Project Northland Peer leadership (elected or voluntary) n=NR	Project Northland No peer leadership n=NR	end of 7 <sup>th</sup> grade n=NR	-	-	↑ tendency to use alcohol (elected peer leaders*)
				end of 8 <sup>th</sup> grade (78%)	-	-	<b>NS</b> tendency to use alcohol
Komro et al., 2008	RCT ++	Project Northland (Chicago) n=29 schools	Usual curriculum n=32 schools	up to end of 8 <sup>th</sup> grade n=3,802 (95%)	<b>NS</b> alcohol use	-	-
Johnson et al., 1990	RCT +	MMP (Kansas City) n=NR	Community components only n=NR	PT (3 years) (84%)	<b>NS</b> alcohol use	-	-
Chou et al., 1998	RCT -	MMP (Indianapolis) n=1,904	Usual curriculum n=1,508	PT (6 months) NR	↓ alcohol use (baseline users***)	-	-
				PT (1.5 years) NR	↓ alcohol use (baseline users**)	-	-
				2.5 years NR	<b>NS</b> alcohol use	-	-
				3.5 years NR	<b>NS</b> alcohol use	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

## 5.6 Peer support and counselling programmes

### 5.6.1 Overview of evidence identified

Five studies (Colnes, 2001; Padget et al., 2005; Webster et al., 2002; Bremberg & Arborelius, 1994; Valentine et al., 1998) examined five peer support and counselling programmes for students. Three studies (Colnes, 2001; Padget et al., 2005; Webster et al., 2002) examined peer support programmes. Colnes (2001) examined the effects of a four-day residential training retreat for peer leaders and Padget et al (2005) examined the impact of peer leadership training on high school students who taught the Protecting You/Protecting Me (PY/PM) curriculum to elementary students<sup>6</sup>. Webster et al (2002) examined the effects of participation in a peer support programme for year 7 students, who were supported by peers in year 11. Two studies (Bremberg & Arborelius, 1994; Valentine et al., 1998) examined counselling programmes, both of which included individual and group counselling sessions.

Three studies were conducted in the USA, and one each in Australia and Sweden. All five programmes were school-based only and the provider for three peer support programmes (Colnes, 2001; Padget et al., 2005; Webster et al., 2002) was peers alone. The two counselling programmes (Bremberg & Arborelius, 1994; Valentine et al., 1998) were delivered by health counsellors or educational psychology students, respectively. Only one study (Bremberg & Arborelius, 1994) reported the theoretical framework for intervention and was based on multiple theories (coping behaviour theory, self-efficacy theory, and social modelling). The sample size recruited across the included studies ranged from 76 to 428 and four of the five studies targeted older adolescents. Follow-up ranged from immediate post-test to a maximum of 6 months.

### 5.6.2 Quality assessment

Of the five studies identified for inclusion, one study (Colnes, 2001) was based on an RCT design; two studies (Padget et al., 2005; Valentine et al., 1998) were NRCTs; and two studies (Bremberg & Arborelius, 1994; Webster et al., 2002) were based on CBA designs. The RCT by Colnes (2000) appeared to have been adequately conducted, but the sample size for the study was small and the reported method of randomisation was inadequate. The two NRCTs differed in quality. Adequate details of the study methodology were reported for the study by Padget et al (2005) and overall the study was rated moderate quality, but there were differences in ethnicity and baseline alcohol use between intervention and comparison groups in the study by Valentine et al (1998). In addition, no data was reported on attrition of subjects and few methodological details were reported and the study was rated poorly. Neither CBA study (Bremberg & Arborelius, 1994; Webster et al., 2002) was of high quality nor was sufficient detail reported to adequately assess the methodological quality. Both studies were consequently rated poorly.

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<sup>6</sup> The impact of this programme on its elementary school participants is discussed in Jones et al (2009).

**Table 5.24. Alcohol education: peer support and counselling programmes**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Colnes, 2001	RCT +	USA n=76 mean 15.4 years	School	<b>Super Leaders:</b> Four day residential training; after school peer leadership programme and activities	Social skills training	Peers
Padget et al., 2005	NRCT +	USA n=401 High school	School	<b>PYPM:</b> One lesson per week for 8 weeks over 5 years; peer leader training	NR	Peers
Webster et al., 2002	CBA -	Australia n=428 mean 12 years	School	10-16 sessions (45 minutes each); peer support programme, confidence and individuality development	NR	Peers
Bremberg & Arborelius, 1994	CBA -	Sweden n=124 15-16 years	School	<b>It's Your Decision:</b> Six sessions; group discussions and individual counselling	Coping behaviour, self-efficacy theory, social modelling	Health counsellor (teacher, school social worker, or school nurse)
Valentine et al., 1998	NRCT -	USA n=336 mean 13; 15 years	School	<b>Urban Youth Connection:</b> Individual, paired or group counselling	NR	Educational psychology students

### 5.6.3 Findings

#### 5.6.3.1 Short-term results (<6 months)

##### Knowledge and understanding

One study (Padget et al., 2005) examined the effects of a peer support prevention programme, which focused on reducing the dangers associated with drink driving. Students who taught the PY/PM programme to elementary school students demonstrated an increase in knowledge relating to the effects of alcohol ( $p < 0.001$ ) and the risks of high levels of alcohol use ( $p < 0.05$ ).

##### Attitudes and values

Two studies reported short-term intervention effects of two peer leadership programmes on attitudes and values. Colnes (2000) found that both intervention and control students had negative attitudes towards substance use at baseline and follow-up. There was no difference between intervention students who taught the PY/PM programme and controls (Padget et al., 2005) on any of the measures of attitudes and values including intentions or self-efficacy. At 4 months post baseline, intervention students who participated in the Its Your Decision counselling programme (Bremberg & Arborelius, 1994) reported a greater reduction in self attributed psychological problems related to alcohol ( $p < 0.05$ ). There was no difference in accidents related to alcohol, peer problems related to alcohol, parental problems related to alcohol or perceived lack of control of drinking.

##### Personal and social skills

Padget et al (2005) examined the effects of a peer support programme on the dangers of drinking and driving. There was no evidence that the programme affected changes in riding with impaired drivers or driving after drinking.

##### Health and social outcomes relating to alcohol use and sexual health

Two studies reported short-term intervention effects of two peer support programmes on alcohol use. Colnes (2000) reported that there was no significant change in frequency of alcohol use in either peer leaders who participated in the Super Leaders programme or the control students between baseline and 4-months follow-up. Means for both the intervention and control groups at pre and post test indicated that students in both groups were largely abstinent from alcohol at baseline and follow-up. Padget et al (2005) found that students who taught the PY/PM programme reported lower levels of binge drinking at post-test relative to control students ( $p < 0.05$ ). However, there was no significant difference in the number of students reporting recent alcohol use at post-test.

There were no short-term effects of the It's Your Decision counselling programme (Bremberg & Arborelius, 1994) on any measure of alcohol consumption (quantity, frequency, frequency of getting drunk) and Valentine et al (1998) found that there was no difference in use of different alcohol drinks in middle school students between intervention and comparison students. Among high school students, there was a greater proportion of users of liquor, beer, wine, and 'alcopops' in the intervention group than the control group.

### **5.6.3.2 Medium-term results (up to 12 months)**

#### **Knowledge and understanding**

None of the included studies examined medium-term intervention effects on knowledge and understanding.

#### **Attitudes and values**

None of the included studies examined medium-term intervention effects on attitudes and values.

#### **Personal and social skills**

None of the included studies examined medium-term intervention effects on personal and social skills.

#### **Health and social outcomes relating to alcohol use and sexual health**

One study (Webster et al., 2002) reported on the medium-term effects of a peer support programme on alcohol use. Webster et al (2002) found that the programme had no effects on the alcohol use. Over 6 months of follow-up, participants in both intervention and comparison schools showed an increase in the enjoyment and use of alcohol and there was no difference in the pattern of change between groups.

### **5.6.3.3 Long-term results (>12 months)**

None of the included studies examined the long-term intervention effects of peer and counselling support programmes.

## **5.6.4 Summary and evidence statements**

Five studies (Colnes, 2001; Padget et al., 2005; Webster et al., 2002; Bremberg & Arborelius, 1994; Valentine et al., 1998) examined peer support and counselling programmes for students. Three studies (Colnes, 2001; Padget et al., 2005; Webster et al., 2002) examined peer leadership or support programmes and two studies (Bremberg & Arborelius, 1994; Valentine et al., 1998) examined counselling programmes, both of which included individual and group counselling sessions.

### **5.6.4.1 Knowledge and understanding**

None of the studies examined intervention effects on knowledge or understanding.

### **5.6.4.2 Attitudes and values**

Three studies (Colnes, 2001; Padget et al., 2005; Bremberg & Arborelius, 1994) examined short-term intervention effects on attitudes and values. For two peer leadership programmes there appeared to be modest impacts on attitudes to alcohol. One study of peer leadership training (Colnes, 2001) found that both intervention and control students maintained negative attitudes towards substance use, but a second study (Padget et al., 2005) found positive intervention effects among students who taught the PY/PM programme on attitudes about the effects of alcohol use and the risks of high levels of alcohol use. One study of a counselling programme found that the programme had a positive impact on the number of psychological problems that students' attributed to their alcohol use (Bremberg & Arborelius, 1994).

### **5.6.4.3 Personal and social skills**

None of the studies examined intervention effects on personal and social skills.

### **5.6.4.4 Health and social outcomes relating to alcohol use and sexual health**

Two studies (Bremberg & Arborelius, 1994; Valentine et al., 1998) reported on the short-term effects of in-school counselling programmes. Neither programme was shown to be consistently effective. In addition, one programme had potentially harmful effects on high school students' alcohol consumption. Three studies reported short-term data on the effectiveness of peer support programmes. Two of the programmes examined were shown to have no effects on the alcohol use of participants (Colnes, 2000; Webster et al., 2002). However, peer leaders who taught the PY/PM programme reported lower levels of binge drinking (Padget et al., 2005).

#### **Evidence statement 6**

There is inconsistent evidence from one RCT, two NRCTs and two CBA studies<sup>1</sup> to determine the effectiveness of counselling and peer support on attitudinal and behavioural outcomes related to alcohol use. Findings may only be partially applicable to the UK as studies were implemented in the USA and may not be generalisable beyond the populations studied.

<sup>1</sup> Colnes, 2001 (RCT +); Padget et al., 2005 (NRCT +); Webster et al., 2002 (CBA -); Bremberg & Arborelius, 1994 (CBA -); Valentine et al., 1998 (NRCT -)

**Table 5.25. Peer support and counselling programmes: short-term programme effects on knowledge, attitudes and skills**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes	Skills
Colnes, 2001	RCT +	Super Leaders n=38	No intervention n=38	PT n=66 (87%)		<b>NS</b> attitudes	
Padget et al., 2005	NRCT +	PY/PM n=218	PAL only n=183	PT n=329 (82%)	↑ effects of alcohol*** ↑ risks of high levels of alcohol use* <b>NS</b> risks of low levels of alcohol use	<b>NS</b> future intentions <b>NS</b> self-efficacy <b>NS</b> sources of alcohol	<b>NS</b> riding with an impaired driver <b>NS</b> driving after drinking
Bremberg & Arborelius, 1994	CBA -	It's Your Decision n=65	No intervention n=59	up to 2 months 87%	-	<b>NS</b> problems perceived to be related to alcohol use	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.26. Peer support and counselling programmes: short-term programme effects on health and social outcomes**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Colnes, 2001	RCT +	Super Leaders n=38	No intervention n=38	PT n=66 (87%)	<b>NS</b> frequency of alcohol use	-	-
Padget et al., 2005	NRCT +	PY/PM n=218	PAL only n=183	PT n=329 (82%)	<b>NS</b> recent alcohol use	↓ binge drinking*	-
Bremberg & Arborelius, 1994	CBA -	It's Your Decision n=65	No intervention n=59	up to 2 months 87%	<b>NS</b> alcohol consumption	-	-
Valentine et al., 1998	NRCT -	Urban Youth Connection n=187	No intervention n=149	PT NR	↓ 30-day beer use (high programme participation only) ↑ 30-day wine use (all students)	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.27. Peer support and counselling programmes: medium-term programme effects on health and social outcomes**

Author	Study design	Intervention	Comparator	Follow-up	Outcomes		
					Alcohol use	Heavy alcohol use	Other
Webster et al., 2002	CBA -	Peer support n=235	Not reported n=193	up to 6 months n=326	<b>NS</b> alcohol use	-	-
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported							

## 5.7 Review of published economic evaluations

Two studies (Swisher et al., 2004; Pentz, 1998) were identified that met the criteria for inclusion in the review of published economic evaluations. Swisher et al (2004) assessed the cost-effectiveness of the standard Life Skills Training programme and infused Life Skills Training and Pentz (1998) assessed the costs, benefits and cost-effectiveness of the Midwestern Prevention Project.

### 5.7.1 Review of Swisher et al (2004)

#### 5.7.1.1 Overview

Swisher et al (2004) assessed the cost-effectiveness of the standard Life Skills Training programme and infused Life Skills Training. The study was conducted alongside the cluster RCT reported on by Smith and colleagues (2004) (see Section 5.3). The aim of the economic evaluation was to compare the costs and effects of Infused Life Skill Training (I-LST) with those of Life Skill Training (LST).

#### 5.7.1.2 Summary of effectiveness data

Details of the effectiveness of LST and I-LST (Smith et al., 2004) are discussed in Section 5.3. Briefly, the study examined the standard LST curriculum compared to an infused approach to the curriculum, which had no set number of lessons and was incorporated across subject areas. Nine middle schools were randomly assigned to three conditions: LST; I-LST; or control. The setting for the study was schools of lower socio economic status in rural communities in Pennsylvania, USA. Effectiveness data was not clearly presented in the economic study.

#### 5.7.1.3 Summary of resource utilisation and cost data

The authors only included additional costs required to implement either I-LST or LST. Therefore the cost elements included in the analysis broadly covered the costs of teacher training, lesson development and programme time and, student and teacher materials. The authors did not report how the cost data were obtained or the year in which costs were expressed. Total cost elements and associated cost data are presented for the programme in Table 5.28.

**Table 5.28. Cost elements (reproduced from Swisher et al., 2004)**

Cost elements	Infused LST	Standard LST	Difference
<b>7<sup>th</sup> grade</b>			
Total 7 <sup>th</sup> grade	\$ 51384.32	\$ 32041.25	19343.07
Total 7 <sup>th</sup> grade by Student	\$ 129.11	\$ 95.65	33.46
<b>8<sup>th</sup> grade</b>			
Total 8 <sup>th</sup> grade	\$ 46442.11	\$ 20822.01	25620.10
Total 8 <sup>th</sup> grade by Student	\$ 116.69	\$ 62.16	54.33
<b>Total both grade</b>	<b>\$ 97826.43</b>	<b>\$ 52863.26</b>	<b>44963.18</b>
<b>Total both grades by Student</b>	<b>\$ 245.80</b>	<b>\$ 157.80</b>	<b>87.99</b>

#### **5.7.1.4 Summary of cost-effectiveness data**

The authors describe a CEA with calculations of incremental costs of the LST and I-LST programmes per year per student. After one year, the authors reported that the standard LST programme was more cost-effective than I-LST by \$33.46 per student. In the second year, the authors reported that LST had no effects and cost \$62.16 per student, but that whereas I-LST was more costly at \$116.69 per student, it reduced smoking among females and was therefore more cost-effective. The authors undertook an analysis of the project costs of the programme over three years. In the third year, they projected that the cost per student for delivery of the programme over two school grades would be \$91.65 for I-LST compared to \$92.63 for LST. The 3-year total costs of the two programmes were estimated at \$109,429.04 and \$93,088.17, respectively.

#### **5.7.1.5 Comments**

The description of the interventions and their effects were not clearly reported. The description of resource use and unit costs of each alternative was adequately reported but not clearly tabulated. The authors refer indirectly to the use of marginal costs, considering the costs of both interventions as incremental compared to normal practice. No discount rate appears to have been applied although the authors refer to a time horizon. The authors report that the study design used is a cost-effectiveness analysis (CEA), however no incremental cost-effective ratios (ICERs) are expressed or reported and it is unclear how costs were related to outcomes (effects). What the authors call a sensitivity analysis is in fact a continuation model projecting the results of year 2 to year 3. Given the poor methodological and reporting quality of the study, the lack of clarity as to the effects described, the setting and the considerable attrition of participants in the original trial, the results of the study are unlikely to be generalisable to a UK context.

### **5.7.2 Review of Pentz (1998)**

#### **5.7.2.1 Overview**

Pentz (1998) assessed the costs, benefits and cost-effectiveness of the Midwestern Prevention Project (MPP). Approximate costs, benefits, and cost-effectiveness were calculated from 5-year follow-up (6-year) outcome data and operational costs.

#### **5.7.2.2 Summary of effectiveness data**

As reported in the effectiveness review, the overall research design of the MPP included a quasi-experimental trial in Kansas City, Kansas and Kansas City, Missouri, followed by an experimental trial in Indianapolis. Pentz (1998) reported on the whole sample of students who received the MPP, which included students based in 107 junior or middle schools and 62 senior schools (approximately 26,000 adolescents entered the intervention each year). Follow-up was initially at 5 years but the text reports on the follow-up of a sub sample of 1,002 participants into adulthood. The programme described by Pentz (1998) consisted of five components: (1) mass media programming (31 programmes a year for the first 3 years); (2) a school programme (13 sessions in the sixth/seventh grade and 5 booster sessions the following year); (3) a parenting programme (education and coordination of parents with

school policy in years 2 and 3 and towards the end of middle school); (4) community organisation (community leader training, organisation, planning, and implementation of community prevention campaigns); and (5) local policy change in years 4 and 5<sup>7</sup>.

The effects of the MPP were reported based on a random sample of 5,055 students from most of the Kansas City area. The author reported an accumulated 3-year net reduction of 9% in the incidence of monthly drunkenness, decreasing to approximately 2.5% by year 5. The effects on alcohol consumption appeared to be maintained into adulthood.

### 5.7.2.3 Summary of resource utilisation and cost data

Approximate costs for each prevention component of the MPP for each year of delivery are shown in Table 5.29.

**Table 5.29. Approximate direct costs of the MPP by component (in thousands of dollars)**

Prevention component	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Programme development	150	250	45	180	96	90
Training	44	88	118	162	176	176
Implementation	179	316	609	667	834	865
Institutionalisation	-	22	44	44	66	88
<i>Programme subtotal</i>	<i>373</i>	<i>676</i>	<i>816</i>	<i>1053</i>	<i>1166</i>	<i>1229</i>
Research/evaluation	246	470	565	776	879	925
Total (research + programme)	768	1146	1381	1829	2045	2144
<b>Dollars per family (total)</b>	<b>102</b>	<b>51</b>	<b>37</b>	<b>36</b>	<b>34</b>	<b>30</b>

However, the author estimated that costs of delivering the MPP as a “packaged product” would be less than those presented. Therefore, the yearly cost of the MPP was estimated at \$31 per family (year of costs was not reported) in a large city of over 1 million, although start-up costs were estimated to be more than treble this figure. However, the author cautions that this may be a conservative estimate of cost as it does not take into account constant development costs and the “ownership” of the programme by the community, which may impose further change on the design and content of the intervention.

### 5.7.2.4 Summary of cost-effectiveness data

The results of the cost-benefit analysis (CBA) presented by the author show a \$700 net saving per family per year resulting from a reduction in monthly drunkenness. Cost benefits ratios are also favourable (ratio to \$1 spent on prevention to saving is \$1:1.69). Costs and benefits were based on 26,000 new families being added per year to the prevention programme.

<sup>7</sup> This was an additional component not described in the study by Johnson and colleagues (1990) that was included in the review of effectiveness.

The authors also undertook a CEA. The MPP was compared to drug education “as usual”, which was estimated to cost \$6 per student. Usual drug education programmes were assumed to have no effects on alcohol or other substance use behaviours. Results of the CEA are shown in Table 5.30.

**Table 5.30. Results from the cost-effectiveness analysis of the MPP**

Variables		MPP	Traditional drug education	Extra cost ( $\Delta C$ )	Extra effect ( $\Delta E$ )
Average cost	C	\$31	\$6	\$25	-
Reduction in monthly drunkenness	E	2.5%	0	-	2.5%
Incremental analysis					
ICER	$\Delta C / \Delta E$	$\$25 / 2.5 = \$10$		-	-

Compared to “usual” drug education the ICER of the MPP was reported to be equal to the ratio of its incremental cost per incremental effects, equivalent to \$10 per net reduction in the incidence of monthly drunkenness. The authors do not report whether discount rates were applied in the analyses.

#### 5.7.2.5 Comments

The economic evaluation is based on effectiveness data presented in a conference abstract and was therefore not included in the review of effectiveness (Section 5). In addition, the authors made the assumption that “usual” drug education had little or no effect on alcohol use behaviours. However, given from the results presented that the intervention appears to be effective into adulthood, it is possible that the intervention may be exportable into a UK setting and the costs may represent value for money when compared to the benefits.

### 5.7.3 Summary and evidence statements

Two studies (Swisher et al., 2004; Pentz, 1998) were identified that met the criteria for inclusion in the review of published economic evaluations. Swisher et al (2004) assessed the cost-effectiveness of standard and infused LST, and Pentz (1998) assessed the costs, benefits and cost-effectiveness of the MPP. Evaluations of the effectiveness of these programmes were identified and included in Section 5.3.

The standard LST programme was found to be more cost effective than I-LST by \$33.46 per student after 1 year of intervention delivery. In the second year, however, standard LST had no effects and the authors conclude that I-LST is more cost-effective. The 3-year total costs of the two programmes were estimated at \$109,429.04 and \$93,088.17, respectively.

The results of the cost-benefit analysis (CBA) of the MPP demonstrated a \$700 net saving per family per year resulting from a reduction in the incidence of monthly drunkenness. Cost benefits ratios were also shown to be favourable (ratio to \$1 spent on prevention to saving is \$1:1.69). Compared to “usual” drug education the ICER of the MPP was reported to be equal to the ratio of its incremental cost per incremental effects, equivalent to \$10 per net reduction in the incidence of monthly drunkenness.

**Evidence statement 7**

There is inconsistent evidence from two economic evaluation studies<sup>1</sup> to determine the cost-effectiveness of school-based interventions that aim to prevent or reduce alcohol use in young people under 18 years old. This evidence may be of limited applicability to a UK context because cost and benefit estimates were based on data from studies conducted in the USA.

<sup>1</sup> Swisher et al., 2004 (CEA -); Pentz, 1998 (CBA/CEA +)

## 6 Sex and relationships education

A total of 75 articles met the criteria for inclusion in the review of sex and relationships education programme. Nine articles were systematic reviews and meta-analyses, 65 articles reported on evaluations of sex and relationships education interventions, and one article was an economic evaluation study.

### 6.1 Systematic reviews and meta-analyses

Nine systematic reviews and meta-analyses were identified that examined the effectiveness of sex and relationships education interventions aimed at children aged 11-19 years, including abstinence and abstinence plus safer-sex programmes, safer-sex promotion and sexuality interventions.

#### 6.1.1 Quality assessment

The reviews undertaken by Oakley et al (1995), Sales et al (2006) and Underhill et al (2007; 2008) were all rated 'SR ++'. These reviews were well conducted and included clearly reported methodology, which detailed a sufficiently rigorous search of the literature, and demonstrated how study quality was considered during analysis of the results. The quality of the meta-analysis by Franklin et al (1997) was judged to be adequate, but details around whether studies were similar enough to combine were poorly addressed by the authors and the article was rated 'SR +'. The review undertaken by Bennett and Assefi (2005) did not include a quality assessment of included studies, but the study was judged to be generally well-conducted and rated 'SR +'. Similarly, study quality was not reported by Robin et al (2004) or Pedlow and Carey (2003), but other aspects of the reviews were adequately covered and these were rated 'SR +'. The review undertaken by Kirby and colleagues (1994) was rated 'SR +'. The review addressed an appropriate and clearly focused question but did not assess quality of the included studies and the description of the literature search was not reported in sufficient detail to ascertain whether it was sufficiently rigorous.

#### 6.1.2 Findings

Nine systematic reviews evaluated abstinence only and abstinence plus safer-sex promotion programmes (Underhill et al., 2007, 2008; Bennett & Assefi, 2005), safer-sex promotion (Oakley et al., 1995; Franklin et al., 2007; Kirby et al., 1994; Pedlow and Carey, 2003; Robin et al., 2004) and sexual behaviour-focused interventions (Sales et al., 2006). Findings from three reviews that examined abstinence-only and abstinence-plus programmes (Underhill et al., 2007, 2008; Bennett and Assefi, 2005) indicated that there is no evidence that these interventions cause harmful or adverse effects on relevant behavioural outcomes such as sexual activity. Underhill et al (2007) reported that abstinence-only programmes were ineffective at reducing sexual-risk behaviour, pregnancy and STI incidence and Bennett and Assefi (2005) suggested that any positive abstinence programme effects were only modest and short-term. Regarding abstinence-plus programmes, Bennett and Assefi (2005) reported that studies that included education about contraception significantly influenced knowledge and use of contraception. Underhill et al (2008) indicated that evidence for abstinence-plus programmes reducing HIV risk behaviours was limited, but that results consistently favoured abstinence-plus groups over controls for a range of behavioural outcomes including sexual activity, number of partners, sexual

initiation and condom use and significantly improved knowledge about AIDS/HIV. Additionally, Kirby et al (1994) concluded that there was insufficient evidence to draw conclusions about the effectiveness of abstinence-only programmes on sexual or contraceptive behaviours. The suggestion therefore is that abstinence-only programmes have limited effects or are ineffective for preventing or reducing sexual risk behaviours. Oakley et al (1995) also found evidence that abstinence only education may have an adverse effect and actually increase sexual experimentation among students. For abstinence-plus programmes, which incorporate information on safer sex, there is evidence of positive effects on sexual-risk behaviours, and knowledge and use of contraceptives (Bennett & Assefi, 2005).

Franklin et al (1997) reported that pregnancy prevention interventions were more effective at impacting upon contraception use and pregnancy rates than on sexual activity and that contraception knowledge-building or distribution programmes were more effective than interventions such as abstinence programmes. Positive results of HIV prevention interventions were noted by Pedlow and Carey (2003), but effective programmes produced small effect sizes. Oakley et al (1995) reported that there is no evidence that providing young people with information or contraception results in increases in risky sexual behaviours and similarly Kirby et al (1994) reported finding no evidence that sexuality and AIDS education increases sexual activity. The implications are that evidence points towards safer-sex interventions having some limited effects for preventing unwanted behaviours, but that they do not appear to increase the risk of these behaviours occurring.

Four reviews (Kirby et al., 1994; Pedlow and Carey, 2003; Robin et al., 2004; Sales et al., 2006) identified characteristics of interventions that were effective. Evidence suggests that more effective studies were theoretically based with social cognitive theory the most successfully applied theory, (Kirby et al., 1994; Pedlow and Carey, 2003; Sales et al., 2006) and used trained adult educators (Robin et al., 2004; Sales et al., 2006), although it was recognised that trained peer providers could also be effective (Robin et al., 2004). Two reviews reported that successful interventions applied interactive strategies (Robin et al., 2004; Sales et al., 2006) and two highlighted the importance of including highly specific content focusing on reducing sexual risk behaviour such as skills about condom use or refusing sex (Kirby et al., 1994; Robin et al., 2004).

### **6.1.3 Summary and evidence statements**

Nine systematic reviews evaluated abstinence only and abstinence plus safer-sex promotion programmes (Underhill et al., 2007, 2008; Bennett & Assefi, 2005), safer-sex promotion (Oakley et al., 1995; Franklin et al., 2007; Kirby et al., 1994; Pedlow and Carey, 2003; Robin et al., 2004) and sexual behaviour-focused interventions (Sales et al., 2006). Findings from three reviews that examined abstinence-only and abstinence-plus programmes (Underhill et al., 2007, 2008; Bennett and Assefi, 2005) indicated that abstinence-only programmes have limited effects or are ineffective for preventing or reducing sexual risk behaviours. In addition, Oakley et al (1995) found evidence to suggest that abstinence only education may have an adverse effect and actually increase sexual experimentation among students. For programmes that incorporated information on safe sex and use of contraception, there was evidence from five reviews (Underhill et al., 2008; Pedlow & Carey, 2003; Franklin et al.,

1997; Kirby et al., 1994; Oakley et al., 1995) to suggest that interventions may have effects on preventing sexual risk behaviours, but that these effects tend to be modest. There was no evidence that sexuality and AIDS education increased sexual activity.

#### **Evidence statement 8**

8 (d) There is strong evidence from three systematic reviews<sup>1</sup> to suggest that abstinence-only programmes have limited effects or are ineffective for preventing or reducing sexual risk behaviours.

8 (e) There is moderate evidence from five systematic reviews<sup>2</sup> to suggest that interventions incorporating information on safer sex and contraceptive use may have positive, but limited effects on preventing sexual risk behaviours. There is no evidence that such programmes increase the occurrence of sexual activity among young people.

8 (f) There is moderate evidence from four systematic reviews<sup>3</sup> to suggest that effective characteristics of sexual risk reduction interventions include: (1) a theoretical basis; (2) use of trained adult health educators as providers; and (3) provision of highly specific content focusing on sexual risk reduction.

<sup>1</sup> Underhill et al., 2007, 2008 (both SR ++); Bennett and Assefi, 2005 (SR +); Kirby et al., 1994 (SR +); Oakley et al., 1995 (SR ++)

<sup>2</sup> Pedlow & Carey, 2003 (SR +); Franklin et al., 1997 (SR +); Kirby et al., 1994 (SR +); Oakley et al., 1995 (SR ++); Underhill et al., 2008

<sup>3</sup> Kirby et al., 1994 (SR +); Pedlow and Carey, 2003 (SR +); Robin et al., 2004 (SR +); Sales et al., 2006 (SR ++)

**Table 6.1. Sex and relationships education: systematic reviews and meta-analyses**

Author (Year)	Design	Inclusion/exclusion	Number of studies	Findings
Franklin et al., 1997	SR +	Studies with a primary focus on the primary prevention of adolescent pregnancy	32 studies	Programmes had a greater effect on contraceptive use and pregnancy rates, than on sexual activity. Contraceptive knowledge building programmes and contraceptive distribution programmes are more effective than other sex education programmes (e.g. abstinence-only programmes).
Bennett & Assefi, 2005	SR +	School-based programmes reporting intervention impact on sexual and contraceptive behaviour. USA only.	16 studies	Some abstinence-only and abstinence-plus programmes can change sexual behaviours, however effects relatively modest and only lasted short-term. No evidence that abstinence-plus programmes increased sexual activity. Programmes that offered contraceptive education significantly influenced students' knowledge and use of contraception.
Kirby et al., 1994	SR +	School-based interventions, impact on sexual or contraceptive behaviours measured	16 studies	Insufficient evidence to determine if school-based abstinence-only programmes delay the onset of intercourse or affect other sexual or contraceptive behaviours.  Two curriculums that specified delaying the onset of sexual intercourse as a clear goal - Postponing Sexual Involvement and Reducing the Risk - delayed the initiation of sex. Postponing Sexual Involvement significantly reduced the frequency of intercourse. Only two of the eight programmes (AIDS Prevention for Adolescents in School and an untitled curriculum by Schinke et al) included significantly increased contraceptive use among all experienced youths, but two additional programmes (Postponing Sexual Involvement and Reducing the Risk) increased contraceptive use among specific groups of students.
Oakley et al., 1995	SR ++	Sexual health interventions for young people aged 0-19 years	65 studies; 48 school-based	No evidence that providing practical information and contraception leads to sexual risk taking behaviour, but there is evidence that chastity education may encourage sexual experimentation.
Underhill et al., 2007	SR ++	Abstinence-only interventions with HIV prevention as stated goal	8 studies	No evidence that abstinence-only programs can effectively encourage abstinent behaviour; although programs did not appear to cause harm. Overall, programmes were ineffective for preventing or decreasing sexual activity.
Underhill et al., 2008	SR ++	Abstinence-plus programs designed to influence behaviour change on at least one outcome measure related to HIV transmission	37 studies	No evidence that abstinence-plus programmes increase HIV risk among youth participants in high-income countries and multiple evaluations found that the programmes can decrease HIV risk. No conclusive evidence that abstinence-plus programmes can reduce STI incidence and limited evidence that abstinence-plus programmes can reduce pregnancy incidence; however, direction of effects consistently favoured abstinence-plus programs. Programmes had mixed effects on sexual behaviour

Author (Year)	Design	Inclusion/exclusion	Number of studies	Findings
Sales et al., 2006	SR ++	School, community or clinic based interventions or interventions developed for special populations	39 studies; 13 school-based	Successful school-based interventions appeared to be theoretically based, implemented by trained teachers or health educators, and include a variety of skills and knowledge building didactic and interactive activities.
Pedlow & Carey, 2003	SR +	HIV risk reduction interventions targeting teenagers	22 studies	HIV risk reduction interventions have been shown to be effective but are associated with small effect sizes. Most effective studies emphasised a theoretical framework, most often Social Cognitive Theory. Interventions with multiple sessions or long doses have been no more successful than those with shorter doses.
Robin et al., 2004	SR +	Behavioural interventions targeting HIV, STD, and pregnancy for young people aged 13 years or younger	24 studies; 9 school-based	Programmes that produced positive effects: (1) used trained adult facilitators, and two other programmes with positive effects also used trained peer facilitators; (2) included content that was specific to reducing sexual risk behaviour such as refusal of unwanted sex and condom-use skills; and (3) commonly employed interactive and participatory educational strategies.

## 6.2 UK-based studies

### 6.2.1 Overview of evidence identified

Twelve UK studies, evaluating seven programmes, were identified that could be defined as predominantly sex and relationships education. Typically these programmes focused on areas of sexual health including contraception, sexually transmitted infections, sexual health services and relationships. Seven studies (Henderson et al., 2007; Mellanby et al., 1995; 2001; Stephenson et al., 2004; 2008; Tucker et al., 2007; Wight et al., 2002) reported on evaluations of three comprehensive school-based programmes, A PAUSE, RIPPLE and SHARE (Sexual Health and Relationships: Safe, Happy and Responsible). Two studies (Mellanby et al., 1995; 2001) examined the A PAUSE sex education programme. Mellanby et al (2001) conducted a follow-on study of the original controlled, repeat cross-sectional study by Mellanby et al (1995). The follow-on study (Mellanby et al., 2001) compared the effects of the peer-led elements of the programme to adult delivery of the same material. The RIPPLE study (Stephenson et al., 2004; 2008) examined the effectiveness of a peer-led sex education programme compared to teacher-led SRE. Three studies (Wight et al., 2002; Henderson et al., 2007; Tucker et al., 2007) examined the effectiveness of the SHARE programme. Two studies (Wight et al., 2002; Henderson et al., 2007) examined the medium- to long-term effects of the programme in the same sample of studies and Tucker et al (2007) undertook a replication study of the programme. Two studies (Gillies et al., 1990; Bellingham et al., 1993) reported on evaluations of the Streetwise UK AIDS education comic and Denman et al (1995) examined a theatre in education programme. Two studies (Graham et al., 2002; Magnusson et al., 2004) examined single lessons focusing on emergency contraception and contraceptive services, respectively. The majority of studies took place within normal school hours while one evaluation of the Streetwise programme (Bellingham and Gillies, 1993) was set within youth training centres (YTCs) that catered for young people who had just left school.

For 11 studies, no detail of the theory that the programme was based on was provided. The theoretical basis for the A PAUSE programme (Mellanby et al., 1995) was applied social learning theory. Teachers were the programme provider for three programmes (an emergency contraception education programme [Graham et al., 2002]; SHARE [Henderson et al., 2007; Tucker et al., 2007; Wight et al., 2002]) and one evaluation of the Streetwise programme (Gillies et al., 1990), with centre trainers providing the intervention in the second evaluation (Bellingham and Gillies, 1993).

**Table 6.2. Sex and relationships education: UK studies**

Author	Study design and rating	Setting	Baseline population	Programme components	Theory	Provider
Gillies et al., 1990	CBA -	School	n=284 students, 14 years	<b>Streetwise UK:</b> HIV comic, containing 'real life' stories about HIV transmission, quizzes, information and useful contact numbers; accompanied by teachers guide and suggestions for role play and peer group approaches	Not reported	Teachers
Bellingham & Gillies, 1993	RCT +	Youth Training Centres	n=337, 16-19 years	<b>Streetwise comic:</b> one session in youth training centres; information about HIV, AIDS, body fluids and transmission, sex and risk, sexual relationships, and social and sexual behaviour and attitudes.	Not reported	Other: trainers
Denman et al., 1995	CBA -	School	n=807 students; 13-14 years	<b>Theatre in HIV and AIDS education:</b> 30 minute play and 1.5 hour workshop; HIV/AIDS prevention	Not reported	External: theatre group
Graham et al., 2002	RCT ++	School	n=3,234 year 10 students	One two-hour lesson for pupils; in-service teacher training about emergency contraception	Not reported	Teachers
Magnusson et al., 2004	NRCT -	School	n=589 students, 13-14 years	One lesson promotion of contraceptive services; location, opening hours, service provided and confidentiality policy.	Not reported	Health professional
Mellanby et al., 1995	NRCT +	School	n=6,573 students; 15-16 years	<b>A PAUSE Program:</b> 25-30 one-hour lessons over three years; puberty, contraception, reproductive health, assertiveness training, and negotiation in relationships.	Social learning theory	Doctor, Teacher, Peer led
Mellanby et al., 2001	CBA +	School	n=1,675 year 9 students	<b>A PAUSE Program:</b> 10 sessions; puberty, contraception, reproductive health, assertiveness training, and negotiation in relationships.	Social learning theory	Other: teacher and nurse; peers
Stephenson et al., 2004; 2008	RCT ++	School	n=8,766 year 9 students, mean 13.7 years	<b>RIPPLE:</b> Three one-hour sessions; relationships, STIs, condoms, contraception, sexual health services and sexual communication	Not reported	Peer led
Wight et al., 2002	RCT ++	School	n=7,616 students, 13-15 years	<b>SHARE (Sexual Health and Relationships: Safe, Happy and Responsible):</b> 20 sessions over two years (10 in year 9, 10 in year 10) aimed at reducing unsafe sexual behaviour and unwanted pregnancy and improving the quality of relationships	Not reported	Teachers

Author	Study design and rating	Setting	Baseline population	Programme components	Theory	Provider
Henderson et al., 2007	RCT ++	School	n=4,215 female students, 13-15 years	<b>SHARE (Sexual Health and Relationships: Safe, Happy and Responsible):</b> 20 sessions over 2 years (10 in year 9, 10 in year 10) aimed at reducing unsafe sexual behaviour and unwanted pregnancy and improving the quality of relationships	Not reported	Teachers
Tucker et al., 2007	CBA -	School	n=4,324 students, median 14.5 years	<b>SHARE (Sexual Health and Relationships: Safe, Happy and Responsible):</b> Revised teaching materials, multidisciplinary staff training, planned multidisciplinary classroom delivery by teachers and nurses, and access to sexual health services at drop-in centres for pupils.	Not reported	Teachers

The RIPPLE programme (Stephenson et al., 2004; 2008) was led by peers and an intervention based on a single lesson about contraceptive services (Magnusson et al., 2004) was provided by external health professionals, while the A PAUSE programme (Mellanby et al., 1995; 2001) involved doctor-, nurse-, teacher- and peer-led sessions.

The studies varied greatly in the number of participants recruited, from 284 to 7,616, with seven of the evaluations (Graham et al., 2002; Henderson et al., 2007; Mellanby et al., 2004; Mellanby et al., 2001; Stephenson et al., 2004; 2008; Tucker et al., 2007) involving more than 1,500 participants. Six studies (Graham et al., 2002; Henderson et al., 2007; Stephenson et al., 2004; 2008; Tucker et al., 2007 and Wight et al., 2002) discussed the use of power calculations to ensure that an appropriate sample size required to detect a significant effect was selected.

Eleven studies (Denman et al., 1995; Graham et al., 2002; Magnusson et al., 2004; Henderson et al., 2007; Tucker et al., 2007; Wight et al., 2002; Gillies et al., 1990; Stephenson 2004; 2008; Mellanby et al., 1995; 2001) evaluated programmes that targeted adolescents aged between 13 and 15 years. A second evaluation of the Streetwise comic programme was set in youth training centres (YTCs) (Bellingham and Gillies, 1993) and involved older adolescents aged 16-19 years.

Length of follow-up varied greatly across studies, from immediate post-test to over four years. Evaluation of the Theatre in HIV and AIDS education programme (Denman et al., 1995), the Streetwise UK comic (Gillies et al., 1990; Bellingham & Gillies, 1993) and an intervention based on a single lesson on emergency contraception (Magnusson et al., 2004) were based on immediate post-test or short-term follow-up only. Effects of two interventions, the A PAUSE programme (Mellanby et al., 1995; 2001) and an intervention based on a single lesson on emergency contraception (Graham et al., 2002) were examined over the medium-term. Evaluation of the A PAUSE programme was based on follow-up at both immediate post-test (Mellanby et al., 2001) and 1-year (Mellanby et al., 1995). Evaluation of the RIPPLE and SHARE programmes included both medium- and long-term follow-up, at 6-, 12- and 18-months (Stephenson et al., 2004; Tucker et al., 2007), and over four years after intervention (Henderson et al., 2007; Stephenson et al., 2008). Two medium-term evaluations of SHARE (Tucker et al., 2007) and the A PAUSE programme (Mellanby et al., 1995) were based on cross-sectional surveys.

### **6.2.2 Quality assessment**

Of the 12 studies, six (Bellingham and Gillies, 1993; Graham et al., 2002; Henderson et al., 2007; Stephenson et al., 2004; 2008; Wight et al., 2002) were RCTs; two studies were based on an NRCT design (Magnusson et al., 2004; Mellanby et al., 1995) and five studies were CBA studies (Denman et al., 1995; Gillies et al., 1990; Mellanby et al., 2001; Tucker et al., 2007). All RCT and NRCTs were based on cluster randomisation conducted at the organisational level (school: Graham et al., 2002; Henderson et al., 2007; Magnusson et al., 2004; Mellanby et al., 1995; Stephenson et al., 2004; 2008; Wight et al., 2002; training centre: Bellingham & Gillies, 1993). For one study (Magnusson et al., 2004) it was not possible to determine the unit of analysis, but for six RCTs the unit of analysis was not matched to unit of randomisation. Five studies including the emergency contraception education programme (Graham et al., 2002), RIPPLE (Stephenson et al., 2004; 2008) and two evaluations of

the SHARE programme (Henderson et al., 2007; Wight et al., 2002) were rated good quality (++ rating). Graham et al (2002) and Stephenson et al (2004; 2008) provided details of randomisation, using computer generated methods so were rated good quality (++) on this criteria, whereas all other RCTs did not report details about their methods of randomisation, making it impossible to judge whether selection bias had been adequately minimised. Outcomes were generally well reported, but did not always include behavioural outcomes (Denman et al., 1995; Gillies et al., 1990; Mellanby et al., 2001). The analysis undertaken was also well reported in general although effect sizes or significance values were not able to be determined in one study (Denman et al., 1995). One RCT (Stephenson et al., 2004) reported intention to treat analysis. One study, an NRCT (Magnusson et al., 2004), was rated poor quality (- rating) because of poor analyses, short-term follow-up and a lack of details regarding the method of allocation to intervention and control groups.

### **6.2.3 Findings**

#### **6.2.3.1 Short-term results (<6 months)**

Five studies (Bellingham and Gillies, 1993; Denman et al., 1995; Gillies et al., 1990; Magnusson et al., 2004; Mellanby et al., 2001) evaluated short-term outcomes for four interventions: the Streetwise UK comic; a Theatre in HIV and AIDS education programme; an intervention based on a single lesson about contraceptive services; and the A PAUSE programme.

#### **Knowledge and understanding**

Four studies (Bellingham and Gillies, 1993; Denman et al., 1995; Gillies et al., 1990; Mellanby et al., 2001) examined short-term knowledge outcomes with generally positive results. Three studies (Bellingham and Gillies, 1993; Denman et al., 1995; Gillies et al., 1990) examined the impact of two programmes (Streetwise comic; Theatre in HIV and AIDS) on knowledge relating to HIV and AIDS. A study of a theatre in HIV and AIDS production (Denman et al., 1995), and two studies of the Streetwise comic intervention, one with young people attending YTCs (Bellingham and Gillies, 1993) and a second with school pupils (Gillies et al., 1990), reported positive intervention effects on HIV and AIDS knowledge (both  $p < 0.001$ ). The peer-led version of the A PAUSE Programme (Mellanby et al., 2001) was found to have had a lesser impact on knowledge related to STIs in comparison to the adult-led version ( $p < 0.01$ ).

#### **Attitudes and values**

All five studies evaluated outcomes relating to attitudes and results indicated that programmes were less effective at influencing participants' attitudes than knowledge. One evaluation of the Streetwise comic with young people attending YTCs (Bellingham and Gillies, 1993) measured behavioural intentions relating to contraception and reported no significant differences between the intervention and comparison groups. This evaluation of the Streetwise comic programme also found that the intervention did not influence attitudes to HIV and AIDS, although a second study of the Streetwise comic with school pupils (Gillies et al., 1990) reported that the programme positively affected attitudes to HIV prevention through only having one partner ( $p < 0.01$ ). Denman et al (1995) reported on ten measures of attitude, but only found significant positive programme effects for three outcomes relating

to risk perceptions of AIDS ( $p < 0.001$ ); children with HIV ( $p < 0.05$ ) and condom use showing people care for each other ( $p < 0.001$ ) and not for attitudes about condoms reducing the risk of HIV, condom responsibility or confidence in using condoms. An intervention based on a single lesson about contraceptive services (Magnusson et al., 2004) positively affected student's perceptions of contraception and health clinic availability ( $p < 0.001$ ). Short-term evaluation of the A PAUSE Programme (Mellanby et al., 2001), a peer- and adult-led sex education programme for Year 9 pupils, indicated positive effects of the programme on participants' beliefs about males and females who have sex, and perceptions of sexual prevalence amongst peers in the peer-led arm of the programme ( $p < 0.01$ ) in comparison to the adult-led group. However, the programme had a less of an influence on attitudes towards the benefits of having sex, with no difference between the peer- and adult-led groups in their perceptions in the beneficial effects of sex.

### **Personal and social skills**

Two studies (Bellingham and Gillies, 1993; Mellanby et al., 2001) reported on short-term outcomes relating to skills including communication and assertiveness for the Streetwise UK comic and A PAUSE programme, respectively. Bellingham and Gillies (1993) reported that the Streetwise UK comic had no significant effects on HIV communication among young people attending YTCs. Evaluation of the A PAUSE programme (Mellanby et al., 2001) revealed programme effects on assertiveness among females ( $p < 0.05$ ), but not males. However, there were no differences in assertiveness skills between students in the peer- and adult-led versions of the programme.

### **Health and social outcomes relating to alcohol use and sexual health**

Two studies (Magnusson et al., 2004, Bellingham and Gillies, 1993) reported short-term health outcomes for the intervention based on a single lesson about contraceptive services and an evaluation of the Streetwise UK comic with young people attending YTCs, respectively. Both studies reported that the interventions examined had no significant effects on condom or contraception use at last sex (Bellingham and Gillies, 1993) or in general (Magnusson et al., 2004). Bellingham and Gillies (1993) also reported that Streetwise UK comic had no effect on the participants' number of sexual partners.

#### **6.2.3.2 Medium-term results (up to 12 months)**

Five studies (Graham et al., 2002; Mellanby et al., 1995; Stephenson et al., 2004; Tucker et al., 2007; Wight et al., 2002) reported medium-term follow-up data for four interventions including a teacher-led intervention about emergency contraception (Graham et al., 2002) and three comprehensive sex education programmes, RIPPLE (Stephenson et al., 2004), SHARE (Wight et al., 2002; Tucker et al., 2007) and A PAUSE (Mellanby et al., 1995). Evaluation of the A PAUSE programme (Mellanby et al., 1995) and one study of the SHARE programme (Tucker et al., 2007) utilised a repeated cross-sectional design and followed up different cohorts of students at each survey point.

### **Knowledge and understanding**

All five studies reported on knowledge outcomes. A teacher-led intervention about emergency contraception (Graham et al., 2002) was effective at increasing knowledge about emergency

contraception, six months after delivery ( $p < 0.01$ ). The effects of the peer-led RIPPLE programme (Stephenson et al., 2004) were examined with regard to the programme's effects on students' knowledge of methods to prevent STIs, local sexual health services and of the emergency contraceptive pill. There were no significant effects of the programme on student's knowledge of emergency contraception or local health services, but compared to students who received teacher-led sex education, there was an increase in knowledge of methods to prevent STIs among intervention females, but not males. An evaluation of the effects of the RIPPLE programme on the peer-leaders themselves (Strange et al., 2002) found that they gained knowledge on emergency contraception ( $p < 0.05$ ), as well as improving their awareness of STI prevention ( $p < 0.001$ ). Two evaluations of the SHARE sex education programme found that the programme had significant and positive effects on knowledge about sexual health ( $p < 0.01$ ; Wight et al., 2002) and STIs ( $p < 0.001$ ; Tucker et al., 2007). The A PAUSE Programme (Mellanby et al., 1995) had a strong positive effect on the accuracy of participants' perceptions about sexual activity amongst their peers ( $p < 0.001$ ).

### **Attitudes and values**

Four studies (Graham et al., 2002; Mellanby et al., 1995; Stephenson et al., 2004; Tucker et al., 2007) examined medium-term intervention effects on attitudes and values for four interventions: a teacher-led intervention about emergency contraception (Graham et al., 2002), and three sex education programmes RIPPLE (Stephenson et al., 2004), SHARE (Tucker et al., 2007) and A PAUSE (Mellanby et al., 1995). Graham et al (2002) reported that there were no effects of a teacher-led intervention about emergency contraception on behavioural intentions to use emergency contraception and Stephenson et al (2004) found no significant differences between students who participated in the peer-led RIPPLE programme and control students in terms of their intentions about sex or condom use. In addition, there were no effects of the RIPPLE programme on perceptions about condom or contraceptive availability, or on peer leaders' attitudes about condoms or sex (Strange et al., 2002), although providers did gain more positive attitudes about homosexual relationships. The evaluation of the SHARE programme (Tucker et al., 2007) found positive effects on many attitudes to condom use including those concerning price ( $p < 0.05$ ); sexual enjoyment ( $p < 0.001$ ); embarrassment ( $p < 0.001$ ) and their ability to prevent AIDS ( $p < 0.001$ ); and STIs ( $p < 0.01$ ). Tucker et al (2007) also reported that the SHARE programme had positive effects on behavioural intentions to discuss condoms with a partner ( $p < 0.05$ ), intentions to own condoms ( $p < 0.001$ ), and on confidence in condom acquisition and use ( $p < 0.001$ ). There were no significant effects on of the A PAUSE programme (Mellanby et al., 1995) on students' beliefs towards sex.

### **Personal and social skills**

One study (Stephenson et al., 2004), of the RIPPLE sex education programme, examined participants' confidence in discussing contraception or sex with a partner, but found no significant intervention effects. The RIPPLE programme was reported to have a large and positive effect upon peer-leaders' confidence to deliver sex education lessons to peers (Strange et al., 2002).

### **Health and social outcomes relating to alcohol use and sexual health**

Three studies (Graham et al., 2002; Mellanby et al., 1995; Wight et al., 2002) of a teacher-led intervention about emergency contraception and the A PAUSE and SHARE sex education programmes, respectively, examined medium-term programme effects on outcomes related to sexual health. Graham et al (2002) found that a teacher-led intervention on emergency contraception had no effects on emergency contraception use or sexual experience. Wight et al (2002) reported that the SHARE sex education programme had no effects on condom use overall or at first sex, or on contraception or condom use at last sex. Participation in SHARE (Wight et al., 2002) did not significantly influence the number of unwanted pregnancies, or feelings of regret or pressure at first sex, although a small positive programme effect on regret at first sex with most recent partner ( $p < 0.05$ ) was reported for males. Tucker et al (2007) found that, based on a cross-sectional survey of students who participated in the SHARE programme in 2003 compared to control students, there were no effects of the programme on the number of students who reported having sex. One study of the A PAUSE programme, based on cross-sectional follow-up (Mellanby et al., 1995), indicated a positive effect of the programme on whether participants had ever had sex (OR 1.45; 95% CI 1.13, 1.87).

#### **6.2.3.3 Long-term results (>12 months)**

Three studies (Henderson et al., 2007; Stephenson et al., 2004; 2008), which evaluated two comprehensive sex education programmes, SHARE and RIPPLE, respectively, reported long-term follow-up data. Follow-up ranged from 18 months to over four years.

#### **Knowledge and understanding**

Only the RIPPLE programme was examined in terms of its impact on outcomes related to knowledge. At 18-months follow-up (Stephenson et al., 2004), the programme had positive effects on participants' knowledge relating to STIs ( $p < 0.001$ ), although this effect was only apparent for males. This was in contrast to the 6-month follow-up, where a positive effect had been seen for females ( $p < 0.01$ ) but not males. As at 6-month follow-up, there were no long-term effects of the peer-led RIPPLE programme on knowledge about emergency contraception or local sexual health services, at 18 months (Stephenson et al., 2004) or four years (Stephenson et al., 2008).

#### **Attitudes and values**

Only the RIPPLE programme was examined in terms of its impact on outcomes related to attitudes and values. At 18-months follow-up (Stephenson et al., 2004), there were no significant effects of the RIPPLE programme on students' attitudes or beliefs towards sex, or on perceptions concerning the availability of contraception (Stephenson et al., 2004).

#### **Personal and social skills**

One study (Stephenson et al., 2004) reported on long-term skills outcomes for the RIPPLE sex education programme. At 18-month follow-up, (Stephenson et al (2004) reported that the programme had positively affected confidence in condom use amongst females ( $p < 0.001$ ) but not males. However, at 18 month follow-up, RIPPLE (Stephenson et al., 2004) also had a negative effect on girls'

confidence in refusing sex ( $p < 0.05$ ). There was no effect of the RIPPLE programme on quality of relationships or confidence in discussing sex or contraception.

### **Health and social outcomes relating to alcohol use and sexual health**

Both the RIPPLE and SHARE sex education programmes were evaluated in terms of their long-term effects on outcomes related to sexual health (Stephenson et al., 2004; 2008; Henderson et al., 2007). The results generally indicated that these programmes were not consistently effective at improving health outcomes relating to sexual activity, conceptions and contraception in the longer term.

At the 18-month follow-up (Stephenson et al., 2004), females who received the peer-led RIPPLE programme were significantly less likely to report having sex by age 16 years compared to females in the control group ( $p < 0.001$ ). There was no difference between intervention and control males. Based on a 4-year evaluation of the RIPPLE programme, at age 18 there was no difference in the proportion of males or females who had had sex (Stephenson et al., 2008).

Based on long-term follow-up at 18-months and four years (Stephenson et al., 2004; 2008), respectively, there appeared to be no effects of the RIPPLE on contraception use or STI diagnosis. The long-term effect of the programme on unintended pregnancies was less clear. At 18 months follow-up (Stephenson et al., 2004), the programme was found to have had no effect on unintended pregnancies, but at the four-year follow-up (Stephenson et al., 2008), fewer pregnancies were reported amongst intervention students compared to control students (OR 0.62; 95% CI: 0.42, 0.91). There were no effects of the RIPPLE programme on abortion or birth rates (Stephenson et al., 2008). Long-term evaluation of the SHARE programme (Henderson et al., 2007) found that at four and a half year follow-up, there were no programme effects on termination and conception rates.

## **6.2.4 Summary and evidence statements**

The 12 UK studies that were identified included three brief HIV prevention interventions (Denman et al., 1995; Bellingham and Gillies, 1993; Gillies et al., 1990), two interventions based on a single lesson about emergency contraception (Graham et al., 2002) and contraceptive services (Magnusson et al., 2004), and seven studies evaluating three comprehensive SRE programmes: A PAUSE (Mellanby et al., 1995; 2001); RIPPLE (Stephenson et al., 2004; 2008); and SHARE (Henderson et al., 2007; Tucker et al., 2007; Wight et al., 2002).

### **6.2.4.1 Knowledge and understanding**

Two studies (Tucker et al., 2007, Wight et al., 2002) that evaluated SHARE reported positive effects of the programme on knowledge about STIs (Tucker et al., 2007) and sexual health (Wight et al., 2002). The peer-led RIPPLE programme had non-significant effects on knowledge relating to emergency contraception and sexual health services, but had positive effects on students' medium- and long-term knowledge of STIs for females and males, respectively (Stephenson et al., 2004). The adult-led version of the A PAUSE programme was found to have had a greater impact on students' knowledge of STIs than the peer-led version of the programme (Mellanby et al., 2001). Three studies (Denman et al., 1995; Bellingham and Gillies, 1993; Gillies et al., 1990), including one of a theatre in AIDS/HIV education programme (Denman et al., 1995) and two evaluations of the Streetwise UK

comic (Bellingham and Gillies, 1993; Gillies et al., 1990) reported beneficial short-term intervention effects on knowledge of HIV and AIDS. Graham et al (2002) reported positive effects of a teacher-led intervention about emergency contraception on knowledge of contraception and intrauterine contraceptive devices.

#### **6.2.4.2 Attitudes and values**

The effects of three comprehensive SRE programmes on attitudes were mixed. Compared to teacher-led SRE, the peer-led RIPPLE programme (Stephenson et al., 2004; 2008) was found to have had no effects on attitudes about using condoms or sex at medium- or long-term follow-up. However, positive programme effects of the SHARE programme (Tucker et al., 2007) were found on attitudes concerning condom use and preventing STIs. Both evaluations of the A PAUSE programme (Mellanby et al., 1995; 2001) indicated positive short- and medium-term effects of the programme on perceptions around sexual activity amongst peers. Mellanby et al (1995) found no effects of the programme on beliefs about sexual intercourse, but Mellanby et al (2001) reported that relative to the adult-led version of the programme, the peer-led version had positive on students' short-term attitudes towards the beneficial effects of sex. Results relating to confidence using condoms were mixed. Positive medium-term effects of the peer-led RIPPLE programme (Stephenson et al., 2004) were reported for females but not males, and there were no significant effects of the programme on whether students had discussed contraception with a partner at short- or long-term follow-up. Tucker et al (2007) reported positive programme effects of the SHARE programme on self-efficacy to use condoms, but not on condom acquisition.

Two brief HIV interventions, the Streetwize UK comic and a Theatre in HIV and AIDS education programme, had limited effects on short-term attitudes towards HIV and contraception. Gillies et al (1990) reported a positive effect on attitudes towards having one partner to prevent HIV among school pupils who received the Streetwize UK comic, but among young people in YTCs, Bellingham and Gilles (1993) found no effect of the comic on attitudes about HIV or intentions towards condom use. Denman et al. (1995) also examined attitudes concerning HIV and condoms and reported mainly non-significant findings. There were no significant effects of a teacher-led intervention (Graham et al., 2002) on emergency contraception on intentions to use emergency contraception, but an intervention based on a single lesson about contraceptive services (Magnusson et al., 2004) found that the intervention had a positive effect on perceptions of contraception and health clinic availability.

#### **6.2.4.3 Personal and social skills**

Results for skills outcomes were limited with few studies reporting on these outcomes. Two studies (Stephenson et al., 2004; Mellanby et al., 2001) of the RIPPLE and A PAUSE programmes, respectively, evaluated effects on personal and social skills. Stephenson et al (2004) found no medium-term intervention effects of RIPPLE on relationship quality and although Mellanby et al (2001) found no effect of the A PAUSE programme on assertiveness in boys, there was a positive short-term effect of the programme on assertiveness in girls. Bellingham and Gillies (1990) reported no effects of the Streetwize UK comic on short-term communication about HIV.

#### **6.2.4.4 Health and social outcomes relating to alcohol use and sexual health**

Few of the studies found significant programme effects on health outcomes related to sexual health. All three of the SRE programmes, A PAUSE (Mellanby et al., 1995), RIPPLE (Stephenson et al., 2008) and SHARE (Tucker et al., 2007), were evaluated in terms of their effects on sexual initiation. There were positive medium- and long-term effects of the A PAUSE (Mellanby et al., 1995) and RIPPLE (Stephenson et al., 2004) programmes on the number of students who reported ever having had sex, although for RIPPLE this effects was only apparent among females at the 18-month follow-up. Tucker et al (2007) found no effect of SHARE on the number of students who reported having had sex. There were no effects of either the RIPPLE (Stephenson et al., 2004; 2008) or SHARE (Wight et al., 2002) programmes on use of condoms or other forms of contraception. There were no medium-term effects of the SHARE (Wight et al., 2002) or RIPPLE (Stephenson et al., 2004) programmes on rates of unintended pregnancies, however, Stephenson et al (2008) found that at age 20, students who participated in the peer-led RIPPLE programme were less likely to have been pregnant. However, only 49% of the original sample was followed up at age 20. There were no long-term effects of the RIPPLE (Stephenson et al., 2008) or SHARE (Henderson et al., 2007) programmes on termination rates.

Bellingham and Gillies (1993) found no effects of the Streetwise UK comic on students' number of sexual partners or condom use at last sex, among young people attending YTCs. In addition, there were no effects of two interventions based on a single lesson about emergency contraception (Graham et al., 2002) and contraceptive services (Magnusson et al., 2004), respectively, on contraception use at follow up. The teacher-led intervention about emergency contraception (Graham et al., 2002) also had no effects on sexual experience.

#### **Evidence statement 9**

- 9 (f) There is moderate evidence from two RCTs and two CBA studies<sup>1</sup> to suggest that comprehensive sex education programmes may be effective at increasing students' knowledge about STIs in the short- to long-term. In addition, there is weak evidence from one RCT and two CBA studies<sup>2</sup> to suggest that brief interventions focusing on HIV prevention, such as Theatre in Education or a comic-based intervention, may have short-term positive effects on knowledge about HIV/AIDs. This evidence is directly applicable as these studies were conducted in the UK.
- 9 (g) Overall, there is inconsistent evidence from two RCTs and two CBA studies<sup>3</sup> to determine the effects of comprehensive sex education programmes on attitudes and values relating to sexual health. However, there is weak evidence from one CBA study<sup>4</sup> to suggest that a two-year sex education programme aimed at reducing unsafe sexual behaviour and unwanted pregnancy (SHARE) may have positive effects on long-term attitudes and intentions regarding condoms. There is moderate evidence from two RCTs, one NRCT and two CBA studies<sup>5</sup> to suggest that brief or single session interventions focusing on HIV prevention or contraceptives and contraceptive services may have a limited impact on students' attitudes and values. This evidence is directly applicable as the study was conducted in the UK.

- 9 (h) There is inconsistent evidence from two RCTs and one CBA study<sup>6</sup> to determine the effects of UK-based SRE approaches on personal and social skills.
- 9 (i) There is moderate evidence from one RCT and one NRCT<sup>7</sup> to suggest that comprehensive SRE programmes, that include peer-led sessions such as RIPPLE and A PAUSE, may delay sexual initiation, but strong evidence from three RCTs and one NRCT<sup>8</sup> to suggest that SRE programmes and single session interventions focusing on contraceptives and contraceptive services may have no impacts on condom or contraceptive use. This evidence is directly applicable as the studies were conducted in the UK.
- 9 (j) There is mixed evidence from three RCTs<sup>9</sup> on the effects of comprehensive SRE programmes on outcomes relating to pregnancy. There is moderate evidence from one RCT<sup>10</sup> of the peer-led RIPPLE programme to suggest that this programme may reduce teenage pregnancy, but not abortion, rates in the long-term and strong evidence from one RCT<sup>11</sup> of the teacher-led SHARE programme to suggest that this programme has no long-term effects on conceptions or terminations. This evidence is directly applicable as the studies were conducted in the UK.

<sup>1</sup> Mellanby et al., 2001 (CBA +); Stephenson et al., 2004 (RCT ++); Tucker et al., 2007 (CBA -); Wight et al., 2002 (RCT ++)

<sup>2</sup> Denman et al., 1995 (CBA -); Bellingham and Gillies, 1993 (RCT +); Gillies et al., 1990 (CBA -)

<sup>3</sup> Mellanby et al., 1995 (NRCT +); Mellanby et al., 2001 (CBA +); Stephenson et al., 2004; 2008 (RCT ++); Tucker et al., 2007 (CBA -)

<sup>4</sup> Tucker et al., 2007 (CBA -)

<sup>5</sup> Bellingham and Gillies, 1993 (RCT +); Denman et al., 1995 (CBA -); Gillies et al., 1990 (CBA -); Graham et al., 2002 (RCT ++); Magnusson et al., 2004 (NRCT -)

<sup>6</sup> Bellingham and Gillies, 1993 (RCT +); Mellanby et al., 2001 (CBA +); Stephenson et al., 2004 (RCT ++)

<sup>7</sup> Mellanby et al., 1995 (NRCT +); Stephenson et al., 2004 (RCT ++)

<sup>8</sup> Stephenson et al., 2004; 2008 (both RCT ++); Wight et al., 2002 (RCT ++); Graham et al., 2002 (RCT ++); Magnusson et al., 2004 (NRCT -)

<sup>9</sup> Henderson et al., 2007 (RCT ++); Stephenson et al., 2004; 2008 (both RCT ++); Wight et al., 2002 (RCT ++)

<sup>10</sup> Stephenson et al., 2008 (RCT ++)

<sup>11</sup> Henderson et al., 2007 (RCT ++)

**Table 6.3. UK SRE studies: short-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Bellingham & Gillies, 1993	RCT +	Streetwize comic n=173	No intervention n=164	2 weeks n=241 (72%)	↑ HIV/AIDS***	<b>NS</b> HIV/AIDS <b>NS</b> condom intentions	<b>NS</b> HIV communication with partner
Gillies et al., 1990	CBA -	Streetwize UK n=122	No intervention n=162	2 weeks n=227 (80%)	↑ HIV/AIDS***	↑ HIV prevention through having one partner**	-
Denman et al., 1995	CBA -	Theatre in HIV and AIDS education n=276	Did not take part in the performance or workshop n=531	PT (1 day) n=680 (84%)	↑ HIV/AIDS***	↑ everybody is at risk from AIDS*** ↑ other perceptions of the risk of AIDS <b>NS</b> attitudes towards condom use	-
Magnusson et al., 2004	NRCT -	Contraceptive services n=NR	Normal sex education n=NR	up to 6 months n=512 (87%)	-	↑ contraception availability and clinic location***	-
Mellanby et al., 2001	CBA +	A PAUSE Peer-led n=1,064	A PAUSE Adult-led n=611	PT (1 week) n=1,320 (79%)	↓ STDs***	↑ perceived normative sex prevalence*** ↓ beneficial effects of sex* ↑ stereotypes about females having sex** ↓ stereotypes about males having sex**	↑ assertiveness (females)* <b>NS</b> assertiveness (males)

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 6.4. UK SRE studies: short-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Bellingham & Gillies, 1993	RCT +	Streetwize UK comic n=173	No intervention n=164	2 weeks n=241 (72%)	-	<b>NS</b> number of partners	<b>NS</b> condom use at last sex	-	-
Magnusson et al., 2004	NRCT -	Contraceptive services n=NR	Normal sex education n=NR	~ 6 months n=512 (87%)	-	-	<b>NS</b> contraception use	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

Table 6.5. UK SRE studies: medium-term programme effects on knowledge, attitudes and skills

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Graham et al., 2002	RCT ++	Emergency contraception n=1,552	Teachers did not receive training N=1,682	6 months n=2,632 (81%)	↑ emergency contraception** ↑ intrauterine device*	<b>NS</b> intention to use emergency contraception	-
Mellanby et al., 1995	NRCT +	A PAUSE n=1,175	Normal education n=5,398	1 year <sup>a</sup> NA	-	<b>NS</b> beliefs about sexual intercourse ↑ perceived normative sex prevalence***	-
Stephenson et al., 2004	RCT ++	RIPPLE n=4,516	Teacher-led SRE 4,050	6 months n=7,770 (88%)	↑ methods to prevent STIs (girls only**) <b>NS</b> emergency contraception <b>NS</b> local sexual health services	<b>NS</b> availability of condoms or contraceptives <b>NS</b> condom use <b>NS</b> sex	<b>NS</b> confidence in discussing contraception or sex with partner
Tucker et al., 2007	CBA -	SHARE n=2,760	Non-SHARE programs n=1,564	1 year <sup>a</sup> NA	↑STIs***	↑ condoms: embarrassment***; reduce sexual enjoyment***; to discuss condoms with partner*; prevent AIDS***; condom use prevents STIs**; price*; intention to own*** ↑ belief in planning to protect from STIs* ↑self-efficacy condom use*** <b>NS</b> self-efficacy condom acquisition***	-
Wight et al., 2002	RCT ++	SHARE n=3,616	Normal sex education n=6,000	6 months n=5,854 (87%)	↑ sexual health**	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup>cross-sectional follow-up survey

**Table 6.6. UK SRE studies: medium-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/Number of partners	Contraceptive use	STIs	Conceptions
Graham et al., 2002	RCT ++	Emergency contraception n=1,552	Teachers did not receive training N=1,682	6 months n=2,632 (81%)	<b>NS</b> sexual experience	-	<b>NS</b> use of emergency contraception	-	-
Mellanby et al., 1995	NRCT +	A PAUSE n=1,175	Normal education n=5,398	1 year <sup>a</sup> NA	↓ ever had sex*	-	-	-	-
Tucker et al., 2007	CBA -	SHARE n=2,760	Non-SHARE programs n=1,564	1 year <sup>a</sup> NA	<b>NS</b> reported sex	-	-	-	-
Wight et al., 2002	RCT ++	SHARE n=3,616	Normal sex education n=6,000	6 months n=5,854 (87%)	<b>NS</b> regret at first sex <b>NS</b> pressure at first sex ↓ regret at first sex with most recent partner (males only*)	-	<b>NS</b> condom use: mean score; first sex; last sex <b>NS</b> contraception at last sex	-	<b>NS</b> unwanted pregnancies

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup>Based on cross-sectional follow-up survey

**Table 6.7. UK SRE studies: long-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Stephenson et al., 2004	RCT ++	RIPPLE n=4,516	Teacher-led SRE n=4,050	18 months n=6,656 (76%)	↑ STIs (boys only <sup>***</sup> ) NS emergency contraception NS local sexual health services	NS availability of condoms or contraceptives NS condom use NS sex	↑ confidence condom use (girls only <sup>**</sup> ) ↓ sex refusal-efficacy (girls only <sup>*</sup> ) NS confidence in discussing contraception or sex with partner NS quality of relationship
Stephenson et al., 2008	RCT ++	RIPPLE n=4,516	Teacher-led SRE n=4,050	4 years n=4,310 (49%)	NS emergency contraception NS sexual health services	NS	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

**Table 6.8. UK SRE studies: long-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Stephenson et al., 2004	RCT ++	RIPPLE n=4,516	Teacher-led SRE n=4,050	18 months n=6,656 (76%)	↓ ever had sex (girls only <sup>***</sup> ) NS same sex experience	-	NS contraception use at last sex	-	NS unintended pregnancies
Stephenson et al., 2008	RCT ++	RIPPLE n=4,516	Teacher-led SRE n=4,050	4 years n=4,310 (49%)	NS ever had sex NS regret or pressure at first or last sex	-	NS use of contraception NS unprotected first sex	NS STI diagnosis	↓ pregnancies NS abortion rates NS birth rates
Henderson et al., 2007	RCT ++	SHARE n=2,080	Normal sex education n=2,135	4.5 years N=4196 (99.5%)	-	-	-	-	NS termination and conception rates

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

## 6.3 Abstinence-only programmes

### 6.3.1 Overview of evidence identified

Ten articles (Blake et al., 2001; Borawski et al., 2005; Christopher & Roosa, 1990; Denny et al., 1999; 2002; 2006; Donnelly et al., 2001; Jorgensen et al., 1993; Roosa & Christopher, 1990; Trenholm et al., 2008) were identified that evaluated eight programmes defined as abstinence only programmes across nine studies. These programmes encouraged and promoted abstinence as the best and only way to prevent pregnancy, HIV and other STIs. All nine studies were conducted in the USA and were delivered within schools during normal lesson hours. Additionally, one study reported on a replication of the Success Express Programme (Roosa and Christopher, 1990), which was offered in schools and community centres. In addition, Project Taking Charge (Jorgensen et al., 1993) included three evening sessions for parents.

Four programmes were teacher-led (For Keeps [Borawski et al., 2005]; Sex Can Wait [Denny et al., 1999; Denny and Young, 2006]; Project Taking Charge [Jorgensen et al., 1993] and Project C.A.R.E. [Donnelly et al., 2001]) and one programme, Managing the Pressures before Marriage (MPM; Blake et al., 2001), was peer-led. Three studies did not report details of the providers for three programmes (Success Express Programme [Christopher and Roosa, 1990; Roosa and Christopher, 1990] and My Choice, My Future!/Recapturing the Vision (MCMF/RTV) [Trenholm et al., 2008]). For five programmes no theoretical base was reported (For Keeps; Success Express Programme; Sex Can Wait; Project Taking Charge; MCMF, RTV). Project C.A.R.E (Donnelly et al., 2001) applied social learning theory and one programme, MPM (Blake et al., 2001) applied social learning and social cognitive theories.

Where reported, sample size varied greatly amongst the included studies from 91 to 1,715 students. One study evaluating Sex Can Wait (Denny et al., 1999) did not describe the number of students, instead reporting that the sample consisted of students from 15 schools. No authors reported whether their study was sufficiently powered to detect an intervention effect. However, two studies discussed that the small sample size of sexually inexperienced students (Borawski et al., 2005) and high non-participation in the programme (Trenholm et al., 2008) might have reduced power.

Five programmes targeted adolescents between the ages of 11 to 14 years (MPM; For Keeps; Success Express Programme; Project C.A.R.E.; MCMF/ RTV). Additionally, the Sex Can Wait programme (Denny et al., 1999; 2002; Denny & Young, 2006) targeted students in middle (aged 11-14 years) and high school (aged 14-18 years). Project Taking Charge (Jorgensen et al., 1993), also targeted older adolescents aged over 14 years. The length of follow-up varied between studies. Evaluation of three programmes (Success Express Programme; Project C.A.R.E; MPM) and one evaluation of the Sex Can Wait programme (Denny et al., 1999) was based on immediate post-test only. Evaluation of one programme, Project Taking Charge (Jorgensen et al., 1993) was based on follow-up at six months and evaluation of the three-year MCMF and RTV programmes took place between 42 and 78 months after baseline data was collected. A second evaluation of Sex Can Wait (Denny and Young, 2006) followed up participants at 18 months.

**Table 6.9. Sex and relationships education: abstinence-only programmes**

Author	Study design and rating	Setting	Baseline population	Programme components	Theory	Provider
Blake et al., 2001	RCT +	School	USA n=351 8 <sup>th</sup> grade students	<b>Managing the Pressures before Marriage (MPM):</b> five one-hour sessions plus homework aiming to increase parent-child communication about sex	Skills based	Peer led
Borawski et al., 2005	NRCT +	School	USA n=1,096 students, 12-13 years	<b>For Keeps:</b> five 40-minute sessions emphasising the benefits of abstinence and consequences of early sexual activity; how condoms and contraception does not protect against the emotional consequences of sex; the need for development of resistance skills	Not reported	Teachers
Christopher & Roosa, 1990	NRCT -	School	USA n=320 students, mean age 12.8 years	<b>Success Express:</b> 6 sessions designed to teach behaviours, attitudes and skills consistent with abstinence; graduation ceremony	Not reported	NR
Roosa & Christopher, 1990	NRCT -	School + community	USA n=339 students, mean age 13 years	<b>Success Express:</b> six sessions over six weeks focusing on self-esteem and family values, growth and development that occur during puberty, media and peer pressures, assertiveness training, and goal-setting skills.	No reported	NR
Denny et al., 1999, 2002	NRCT -	School	USA Students from 15 middle and high schools	<b>Sex Can Wait:</b> 5 weeks curriculum on self-esteem, reproductive anatomy, physiology, changes associated with puberty, values and decision making skills; development and enhancement of communication skills; and goal setting and life planning	Not reported	Teachers
Denny & Young, 2006	NRCT -	School	USA Middle school n=698 students High school n=337 students	<b>Sex Can Wait:</b> Five weeks, 24 lessons on self-esteem, reproductive anatomy, physiology, changes associated with puberty, values and decision making skills; development and enhancement of communication skills; and goal setting and life planning	Not reported	Teachers
Donnelly et al., 2001	NRCT -	School	USA n=839 students, 6 <sup>th</sup> -8 <sup>th</sup> grade	<b>Project C.A.R.E./Sex Can Wait:</b> 23 sessions over 1 year to promote abstinence until marriage; Goal setting, decision making, communication skills, self esteem enhancement	Social learning theory	Teachers
Jorgensen et al, 1993	NRCT +	School	USA n=91 students, mean age 14.4 years	<b>Project Taking Charge:</b> 6 weeks abstinence promotion with classroom and parental components	Not reported	Teachers
Trenholm et al., 2008	RCT -	School	USA n=448 Middle School students	<b>My Choice, My Future! (MCMF)</b> 52 lessons over three years; abstinence education	Not reported	Not reported

Author	Study design and rating	Setting	Baseline population	Programme components	Theory	Provider
Trenholm et al., 2008	RCT -	School	USA n=480 middle school students	<b>ReCapturing the Vision (RCV):</b> One year daily class; abstinence education		NR

### 6.3.2 Quality assessment

Of the nine studies, two were RCTs (Trenholm et al., 2008; Blake et al., 2001) and seven were NRCTs (Borawski et al., 2005; Christopher and Roosa, 1990; Denny et al., 1999; Denny and Young, 2006; Donnelly et al., 2001; Jorgensen et al., 1993; Roosa and Christopher, 1990). The RCT by Trenholm et al (2008) was based on individual randomisation of students and Blake et al (2001) randomised at the level of the classroom taking into consideration the probability of type I errors. The study by Blake et al (2001) did not include a 'no intervention' control; rather they compared the effects of the MPM curriculum with and without five homework assignments. Of the two RCT, one study was rated moderate for quality (Blake et al., 2001; RCT +) and one study was rated poor (Trenholm et al., 2008; RCT -). Neither RCT provided details of the method of randomisation so it was difficult to judge whether selection bias was minimised, although both studies stated that random methods were applied. Blake et al (2001) reported outcomes to be reliable, and outcomes and analysis were reported to a high standard. Trenholm et al (2008) did not report on reliability of outcomes and it was not always possible to determine which programme (MCMF or RCV) outcomes were attributable to. Follow up was inadequate in Blake et al (2001) at one week and was unclear and variable in Trenholm et al (2008) at between 42 and 78 months from baseline. Neither study provided the initial sample size so it was impossible to determine attrition rates.

Five of the NRCTs were rated poor (NRCT -) for quality (Christopher and Roosa, 1990; Denny et al., 1990; Denny and Young, 2006; Donnelly et al., 2001; Roosa and Christopher, 1990) and two were rated moderate (NRCT +) for quality (Borawski et al., 2005; Jorgensen et al., 1993). Follow up times were generally inadequate (Borawski et al., 2005; Christopher and Roosa, 1990; Denny et al., 1999; Donnelly et al., 2001; Roosa and Christopher, 1990) and in one study with long-term outcomes (Denny and Young, 2006) attrition was very high at 50%. Attrition was a concern in two other studies, being either high (Christopher and Roosa, 1990) or not calculable due to post-test numbers only being presented (Denny et al., 1999). Analysis and outcomes were reasonably reported across studies except in three studies (Christopher and Roosa, 1990; Donnelly et al., 2001; Roosa and Christopher, 1990) with inadequate reporting of significance levels or effect sizes. Methodology was generally well reported, but lacked detail in three studies (Donnelly et al., 2001; Jorgensen et al., 1993; Roosa and Christopher, 1990).

### 6.3.3 Findings

#### 6.3.3.1 Short-term results (<6 months)

Seven studies (Blake et al., 2001; Borawski et al., 2005; Christopher and Roosa, 1990; Denny et al., 1999; Denny and Young, 2006; Donnelly et al., 2001; Roosa and Christopher, 1990) reported short-term data for five programmes: MPM; For Keeps; Sex Can Wait, Project C.A.R.E., MPM and the Success Express Programme.

#### Knowledge and understanding

Four studies (Blake et al., 2001; Borawski et al., 2005; Denny et al., 1999; Denny and Young, 2006) examined short-term impacts on knowledge. One study (Blake et al., 2001) that examined MPM and

two studies of Sex Can Wait (Denny et al., 1999; Denny and Young, 2006) reported that there were no intervention effects on knowledge about abstinence or the curriculum. One study (Borawski et al., 2005) of the For Keeps programme reported significant positive effects on knowledge about HIV and STDs ( $p < 0.001$ ).

### **Attitudes and values**

All seven studies that evaluated short-term outcomes reported on attitudes and values. Denny et al (1999) reported significant, positive effects of the Sex Can Wait curriculum on attitudes towards abstinence ( $p < 0.01$ ) among high school students but not among middle school students. However, high school students reported a corresponding increase in hopelessness. Five studies (Blake et al., 2001; Borawski et al., 2005; Denny et al., 1999; Denny & Young, 2006; Roosa & Christopher, 1990) examined behavioural intentions and beliefs regarding sex and abstinence. There was no difference in beliefs supporting delayed sex between MPM only students and students who received the enhanced MPM (Blake et al., 2001), however, students who received the enhanced curriculum were less likely to report intentions to have sex before finishing high school ( $p < 0.01$ ). Students who participated in For Keeps (Borawski et al., 2005) were more likely than control students to report a belief in abstinence until marriage ( $p < 0.001$ ) and until older ( $p < 0.01$ ), and were less likely to report intentions to have sex in the next three months ( $p < 0.05$ ) or the next year ( $p < 0.01$ ). However, For Keeps participants also reported fewer intentions than control students to use condoms in the future ( $p < 0.001$ ). Two studies of the Sex Can Wait programme (Denny et al., 1999; Denny and Young, 2006) found significant, positive effects of the Sex Can Wait curriculum on intentions to remain abstinent among high school students (both  $p < 0.001$ ), but not middle school students. There was no difference in the pre-marital sexual beliefs or sexual behaviours of intervention and control participants in the replication study of the Success Express programme (Roosa & Christopher, 1990). Three studies (Donnelly et al., 2001; Christopher & Roosa, 1990; Roosa & Christopher, 1990) examined programme effects on self-esteem, for the Project CARE and Success Express programmes, respectively, finding no effects on this measure.

Blake et al (2001) also examined the effects of the enhanced MPM on refusal efficacy, finding significant positive effects of the enhanced programme compared to the MPM only curriculum on sexual ( $p < 0.01$ ) and substance use ( $p < 0.001$ ) refusal efficacy. There were no significant effects of the Sex Can Wait programme (Denny et al., 1999; Denny and Young, 2006) on decision making. Additionally one study (Borawski et al., 2005) examined the short-term impact of the For Keeps programme on condom use self-efficacy and sexual impulse control but found no significant differences between intervention and control groups.

### **Personal and social skills**

Four studies (Blake et al., 2001; Christopher and Roosa, 1990; Roosa and Christopher, 1990; Donnelly et al., 2001) reported mainly non-significant short-term outcomes relating to student-family communications for three programmes (Success Express; MPM; Project C.A.R.E). Parent-child communication about sex ( $p < 0.05$ ) and school ( $p < 0.001$ ) was significantly higher among students who received the enhanced MPM relative to the curriculum only version of the programme (Blake et

al., 2001). No significant programme effects on family communication were reported in either study evaluating the Success Express programme (Christopher and Roosa, 1990; Roosa & Christopher, 1990) and there were no differences in family support between intervention and control students who participated in Project C.A.R.E (Donnelly et al., 2001).

#### **Health and social outcomes relating to alcohol use and sexual health**

Short-term outcomes related to sexual health were reported by six of the seven studies. The purpose of one study (Donnelly et al., 2001) was to examine the effects of an abstinence-only programme, Project CARE, on substance use outcomes and therefore only reported health outcomes relating to substance use.

Four studies (Christopher and Roosa, 1990; Denny et al., 1999; Denny and Young, 2006; Jorgensen et al., 1993) of three programmes, Success Express Programme; Sex Can Wait; Project Taking Charge, reported outcomes relating to initiation of sex and presented mixed findings. One study (Christopher and Roosa, 1990) that evaluated the Success Express programme found that intervention students reported more lifetime sexual experience than control students ( $p < 0.05$ ), an outcome found to be non-significant in a second evaluation of this programme (Roosa and Christopher, 1990). Both evaluations of Sex Can Wait (Denny et al., 1999; Denny & Young, 2006) found no effect of the programme on sexual initiation among middle school students. However, among high school students a positive effect of the intervention on whether students had ever been sexually activity was found (both  $p < 0.001$ ). The same pattern of results was apparent for the impact of Sex Can Wait on past month sexual activity, with non-significant results for middle school students but significant and positive outcomes for high school students (both  $p < 0.01$ ). Two studies (Blake et al., 2001; Borawski et al., 2005) of the MPM and For Keeps programmes, respectively, examined intervention effects on recent sexual activity finding no significant effects of either intervention. Borawski et al (2005), however, found significant positive effects of the For Keeps programme on frequency of sex ( $p < 0.05$ ), having two or more partners ( $p < 0.01$ ) and multiple episodes of sex ( $p < 0.05$ ).

Donnelly et al (2001) reported that Project C.A.R.E, an abstinence only intervention based on Sex Can Wait, had no effects on alcohol use or substance use, except for use of crack or methamphetamines for which negative effects were demonstrated ( $p < 0.05$ ). One further study (Blake et al., 2001) of MPM examined alcohol related outcomes and reported a small, but significant positive effect of the enhanced curriculum compared to MPM only, on lifetime ( $p \leq 0.05$ ) and recent ( $p \leq 0.05$ ) alcohol use.

#### **6.3.3.2 Medium-term results (up to 12 months)**

One study (Jorgensen et al., 1993), which examined the effects of Project Taking Charge reported medium-term follow-up results.

#### **Knowledge and understanding**

Jorgensen et al (1993) reported that Project Taking Charge had positive effects on knowledge of sexual development ( $p < 0.05$ ) and sexually anatomy ( $p < 0.001$ ), along with knowledge about STIs

( $p < 0.05$ ). No medium-term programme effects were found for knowledge about pregnancy complications.

#### **Attitudes and values**

There were no effects of Project Taking Charge (Jorgensen et al., 1993) on the following measures related to attitudes and values: sexual values, attitudes or intentions and educational aspirations.

#### **Personal and social skills**

There were no effects of Project Taking Charge (Jorgensen et al., 1993) on participants' self-esteem or communication with parents.

#### **Health and social outcomes relating to alcohol use and sexual health**

Jorgensen et al (1993) examined whether participation in Project Taking Charge was associated with delays in the initiation of sex intercourse. Among participants who were sexually inexperienced at baseline, intervention students were less likely than control students to report the initiation of sexual activity at the 6-month follow-up ( $p = 0.05$ ). However, the authors caution that the sample size for analysis was small ( $n = 50$ ) and that the results should be interpreted with caution.

#### **6.3.3.3 Long-term results (>12 months)**

Two studies (Denny and Young, 2006; Trenholm et al., 2008), reporting on evaluations of three programmes (Sex Can Wait, MCMF and RTV), reported long-term follow-up data. Trenholm et al (2008) described follow-up at 42-78 months past baseline, equivalent to six months to three and a half years post-test for participants who took part in the three year programme.

#### **Knowledge and understanding**

There were positive long-term effects on knowledge reported in both studies (Denny and Young, 2006; Trenholm et al., 2008). Middle and high school students who participated in Sex Can Wait (Denny and Young, 2006) demonstrated significantly better knowledge of topics covered in the curriculum than controls ( $p < 0.001$ ), an outcome that had been non-significant at previous post-test evaluations (Denny et al., 1999; Denny and Young, 2006). Outcomes for knowledge about sexually transmitted infections ( $p < 0.001$ ) and the risks of having unprotected sex ( $p < 0.01$ ) were significantly greater amongst students in MCMF (Trenholm et al., 2008) than controls. However, there were no significant differences in knowledge for RTV students and controls.

#### **Attitudes and values**

Denny and Young (2006) reported on the long-term effects of Sex Can Wait on students' attitudes and found no significant programme effects on middle school students' intentions to remain abstinent. For high school students however, intervention students remained significantly more likely to demonstrate favourable intentions ( $p < 0.05$ ) as they had done at post-test.

#### **Personal and social skills**

None of the studies examined long-term programme effects on personal and social skills.

### **Health and social outcomes relating to alcohol use and sexual health**

Both studies reported long-term intervention effects on sexual behaviours. At the 18-month follow-up, middle school students who participated in Sex Can Wait (Denny and Young, 2006) were significantly less likely have initiated sexual activity ( $p < 0.05$ ) and were less likely to report sexual intercourse in the last 30 days ( $p < 0.001$ ), compared to control students. For high school students however there were no significant differences between intervention and control students on either of these measures (Denny & Young, 2006). This is in contrast to the immediate post-test results reported in both Sex Can Wait evaluations which showed positive behavioural outcomes for high school, but not middle school, students. No significant effects on student abstinence at six months to three and a half years were reported following MCMF or RTV (Trenholm et al., 2008) and neither of these interventions demonstrated any effects on pregnancy rates or condom use.

#### **6.3.4 Summary and evidence statements**

The nine studies evaluating abstinence only programmes were similar in population, including mainly younger adolescents aged 12-14 years. Three studies (Denny et al., 1999; Denny and Young, 2006; Jorgensen et al., 1993) included older populations of adolescents (aged >14 years)

##### **6.3.4.1 Knowledge and understanding**

Knowledge outcomes were reported in six studies (Blake et al., 2001; Borawski et al., 2005; Denny et al., 1999; Denny and Young, 2006; Jorgensen et al., 1993; Trenholm et al., 2008). The most commonly reported knowledge outcome was concerning knowledge of STIs, for which two studies (Borawski et al., 2005; Jorgensen et al., 1993) reported positive short- and medium-term programme effects, respectively. A third study, Trenholm et al (2008), evaluated two programmes and found that only MCMF and not RTV affected participants' long-term STI knowledge. Neither study evaluating Sex Can Wait (Denny et al., 1999; Denny and Young, 2006) found short-term differences between programme and control high and middle school students on knowledge of topics covered in the curriculum, but Denny and Young (2006) reported positive long-term effects amongst high school students only. There was no difference in knowledge relating to abstinence among students who received an enhanced version of the MPM compared to those who received the curriculum only version of the programme (Blake et al., 2001).

##### **6.3.4.2 Attitudes and values**

Eight studies examined attitudes and values, and abstinence-only programmes were generally found to have had a positive effect on participants' beliefs and attitudes towards abstinence. Seven studies (Blake et al., 2001; Borawski et al., 2005; Christopher and Roosa, 1990; Denny et al., 1999; Denny and Young, 2006; Jorgensen et al., 1993; Roosa and Christopher, 1990) reported on attitudes towards abstinence or around age of first sex and found mostly positive programme effects. The Success Express programme (Christopher and Roosa, 1990; Roosa and Christopher, 1990) reported mainly non-significant programme effects on attitudes. Borawski et al (2005) reported finding positive effects of For Keeps on intentions to remain abstinent until marriage, until older and in the next three months and both evaluations of Sex Can Wait found positive programme effects on abstinence

intentions for high school, but not middle school students. Jorgensen et al (1993) however reported no effect of Project Taking Charge on intentions to have sex. No programmes reported an adverse programme effect on attitudes towards abstinence or intentions to have sex.

### **6.3.4.3 Personal and social skills**

Eight studies (Blake et al., 2001; Borawski et al., 2005; Christopher and Roosa, 1990; Denny et al., 1999; Denny and Young, 2006; Donnelly et al., 2001; Jorgensen et al., 1993; Roosa and Christopher, 1990) examined outcomes relating to personal and social skills and generally reported no significant differences between intervention and control participants at follow-up. Just one study (Blake et al., 2001) found positive programme effects for skills outcomes: reporting students who had received the MPM programme had more favourable results for parent-child communication outcomes. Results from the other studies indicated that abstinence-only programmes did not affect communication.

### **6.3.4.4 Health and social outcomes relating to alcohol use and sexual health**

Eight studies (Christopher & Roosa, 1990; Blake et al., 2001; Borawski et al., 2005; Denny et al., 1999; Denny & Young, 2006; Jorgensen et al., 1993; Roosa & Christopher, 1990; Trenholm et al., 2008) examined effects on health outcomes related to sexual health and two studies (Blake et al., 2001; Donnelly et al., 2001) examined effects on health outcomes related to substance use. These studies demonstrated that abstinence-only programmes generally had no significant effects on the initiation of sexual activity, with the exception of the Sex Can Wait programme (Denny et al., 1999; Denny & Young, 2006). Two studies of Sex Can Wait (Denny et al., 1999; Denny and Young, 2006) reported positive short-term programme effects on whether high school, but not middle school students, reported sexual intercourse, ever or in the last 30 days. However at long-term follow-up, 18-months after intervention, Denny and Young (2006) found positive programme effects for middle school, but not high school students, on these measures. Jorgensen et al (1993) reported a positive impact of Project Taking Charge on the initiation of sexual activity, but as the sample size for the analyses was small the results are unlikely to be generalisable beyond the study. Based on short-term follow-up, Blake et al (2001) found no differences in sexual behaviour among students who received an enhanced version of the MPM programme compared to the curriculum only version. Borawski et al (2005) also reported a lack of programme effects of the For Keeps on recent sexual intercourse at short-term follow-up, but noted reductions in the frequency of sexual intercourse, number of sexual partners and multiple episodes of sex. Only one abstinence-only programme, Success Express (Christopher and Roosa, 1990), had a negative effect on health outcomes. Intervention students reported greater lifetime sexual experience than controls. However, in a replication study of this programme (Roosa & Christopher, 1990) there was no difference between intervention and control students on this measure. No significant long-differences differences between programme and control participants were reported for number of pregnancies following the MCMF and RTV programmes (Trenholm et al., 2008). Two studies (Borawski et al., 2005; Trenholm et al., 2008) reported outcomes relating to contraception and reported that abstinence programme participants were no more or less likely to use contraception than controls.

Two studies (Donnelly et al., 2001; Blake et al., 2001) examined the effects of abstinence only programmes and alcohol and other substance use. There was no impact of the Project CARE intervention (Donnelly et al., 2001), but students who received the enhanced version of the MPM programme reported less lifetime and recent alcohol use than students who received the curriculum only version of the programme.

#### Evidence statement 10

10 (e) There is moderate evidence from one RCT and two NRCTs<sup>1</sup> to suggest that abstinence only programmes may have positive short- to long-term effects on knowledge relating to STIs. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

10 (f) There is weak evidence from four NRCTs<sup>2</sup> to suggest that abstinence only programmes may have short-term positive effects on attitudes and intentions towards sexual activity. There is weak evidence from one NRCT<sup>3</sup> to judge the impact of abstinence programs on long-term intentions. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

10 (g) There is moderate evidence from four NRCTs and two RCTs<sup>4</sup> to suggest that abstinence only programmes may have no impact on the initiation of sexual behaviours or the maintenance of sexual abstinence. In addition, there is moderate evidence from one RCT and three NRCTs<sup>5</sup> to suggest that abstinence only programmes may have no impact on or increase sexual activity. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

10 (h) There is weak evidence from one RCT<sup>6</sup> to suggest that abstinence only education programmes may have no impact on long-term pregnancy rates and contraception use. This evidence may only be partially applicable because the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

<sup>1</sup> Borawski et al., 2005 (NRCT +); Jorgensen et al, 1993 (NRCT +); Trenholm et al., 2008 (RCT -)

<sup>2</sup> Borawski et al., 2005 (NRCT +); Denny et al., 1999 (NRCT -); Denny and Young, 2006 (NRCT -); Roosa and Christopher, 1990 (NRCT -)

<sup>3</sup> Denny et al., 2006 (NRCT -)

<sup>4</sup> Blake et al., 2001 (RCT +); Borawski et al., 2005 (NRCT +); Denny et al., 1999 (NRCT -); Jorgensen et al, 1993 (NRCT +); Roosa and Christopher, 1990 (NRCT -); Trenholm et al., 2008 (RCT -)

<sup>5</sup> Blake et al., 2001 (RCT +); Borawski et al., 2005 (NRCT +); Denny et al., 1999 (NRCT -); Denny and Young, 2006 (NRCT -)

<sup>6</sup> Trenholm et al., 2008 (RCT -)

**Table 6.10. Abstinence-only programmes: short-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Blake et al., 2001	RCT +	MPM curriculum + homework n=190	MPM curriculum only n=161	1 week	NS abstinence	↓ belief that should expect sex if had sex before* ↓ belief would have sex before finishing high school** ↑ sexual refusal efficacy** ↑ substance use refusal efficacy***	↑ frequency of parent-child communication ↑ parent-child communication about prevention strategies** ↑ parent-child communication about consequences of sex* ↑ parent-child communication about school*** NS parent-child communication about puberty and sexual expectations
Borawski et al., 2005	NRCT +	For Keeps n=1,096	NR n=973	16-25 weeks (66%)	↑ HIV/STDs***	↑ belief in abstinence until older** ↑ belief in abstinence until marriage*** ↓ intentions to have sex, next 3 months* ↓ intentions to have sex, next year** ↓ intentions to use condoms*** NS condom-use efficacy NS sexual impulse control	-
Christopher and Roosa, 1990	NRCT -	Success Express n=191	No intervention n=129	PT	-	NS perceived: best age for first sex; age expected for first sex; best age for marriage; lifetime or friends lifetime sexual involvement NS self-esteem	NS family communication
Denny et al., 1999	NRCT -	Sex Can Wait Middle school, n=287	Regular curriculum n=320	PT	NS curriculum	NS attitudes NS hopelessness NS abstinence intentions NS self-efficacy NS decision making	-
		Sex Can Wait High school, n=195	Regular curriculum n=92	PT	NS curriculum	↑ attitudes** ↑ hopelessness** ↑ abstinence intentions*** NS self-efficacy NS decision making	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Denny and Young, 2006	NRCT -	Sex Can Wait Middle school, n=326	n=372	PT (87%)	NS curriculum	NS abstinence intentions NS hopelessness NS self efficacy NS decision making	-
Denny and Young, 2006	NRCT -	Sex Can Wait High school, n=226	n=111	PT (85%),	NS curriculum	↑ beliefs about abstinence** ↑ intention to remain abstinent*** NS self efficacy NS decision making	-
Donnelly et al., 2001	NRCT -	Project C.A.R.E. n=413	Regular education n=426	PT	-	NS self-esteem	NS social support from families
Roosa and Christopher, 1990	NRCT -	Success Express n=339	No intervention n=129	PT	-	↑ expected age to have first sex* NS pre-marital sex beliefs NS attitude to abstinence NS self-esteem	NS family communication

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

Table 6.11. Abstinence-only programmes: short-term programme effects on health and social outcomes

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	Conceptions	Substance Use
Blake et al., 2001	RCT +	MPM curriculum + homework n=190	MPM curriculum only n=161	1 week	NS sexual intercourse, ever	NS recent sexual intercourse	-	-	↓ lifetime alcohol use* ↓ recent alcohol use
Borawski et al., 2005	NRCT +	For Keeps n=1,096	NR n=973	16-25 weeks (66%)	-	NS recent sexual intercourse ↓ frequency of sexual intercourse* ↓ 2+ sexual partners** ↓ multiple episodes of sex*	NS consistent condom use	-	-

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	Conceptions	Substance Use
Christopher & Roosa, 1990	NRCT -	Success Express n=191	No intervention n=129	PT	↑ lifetime sexual behaviour*	-	-	-	-
Roosa & Christopher, 1990	NRCT -	Success Express n=339	No intervention n=129	PT	<b>NS</b> lifetime sexual behaviour	-	-	-	-
Denny et al., 1999	NRCT -	Sex Can Wait Middle school, n=287	Regular curriculum n=320	PT	<b>NS</b> sexual intercourse, ever	<b>NS</b> sexual intercourse, last 30 days	-	-	-
		Sex Can Wait High school, n=195	Regular curriculum n=92	PT	↓ sexual intercourse, ever***	↓ sexual intercourse, last 30 days**	-	-	-
Denny & Young, 2006	NRCT -	Sex Can Wait n=326 (Middle School)	n=372	PT (87%)	<b>NS</b> sexual intercourse, ever	<b>NS</b> sexual intercourse, last 30 days	-	-	-
		Sex Can Wait n=226 (High School)	n=111	PT (85%)	↓ sexual intercourse, ever***	↓ sexual intercourse, last 30 days**	-	-	-
Donnelly et al., 2001	NRCT -	Project C.A.R.E. n=413	Regular education n=426	PT	-	-	-	-	↓ crack; methamphetamines use* <b>NS</b> alcohol; tobacco; cannabis; inhalants; crack; heroin use

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 6.12. Abstinence-only programmes: medium-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Jorgensen et al, 1993	NRCT +	Project Taking Charge n=52	No intervention n=39	6 months NR	↑ sexual development* ↑ STDs* ↑ sexual anatomy*** NS pregnancy complications	NS sexual values NS sexual attitudes and intentions NS educational aspirations NS self-esteem	NS parent-child sex or vocational communication
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported							

**Table 6.13. Abstinence-only programmes: medium-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	Conceptions	Substance Use
Jorgensen et al, 1993	NRCT +	Project Taking Charge n=52	No intervention n=39	6 months NR	↓ sexual initiation* <sup>a</sup>	-	-	-	-
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported									
<sup>a</sup> Based on small sample (n=50)									

**Table 6.14. Abstinence-only programmes: long-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Denny and Young, 2006	NRCT -	Sex Can Wait Middle school, n=326	n=372	18 months (34%)	NS curriculum	NS abstinence intentions NS hopelessness NS decision making NS self efficacy	-
		Sex Can Wait High school, n=226	n=111	18 months (72%)	↑ curriculum***	NS beliefs about abstinence ↑ intention to remain abstinent* NS decision making NS self efficacy	-
Trenholm et al., 2008	RCT -	My Choice, My Future! n=286 (FU)	No sex education n=162	42-78 months	↑ STDs*** ↑ unprotected sex risks**	-	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Trenholm et al., 2008	RCT -	ReCapturing the Vision n=275	No sex education n=205	42-78 months	<b>NS</b> STDs <b>NS</b> unprotected sex risks	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 6.15. Abstinence-only programmes: long-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	Conceptions	Substance Use
Denny and Young, 2006	NRCT -	Sex Can Wait n=326 (Middle School)	n=372	18 months (34%)	↓ sexual intercourse, ever*	↓ sexual intercourse, last 30 days***	-	-	-
Denny and Young, 2006	NRCT -	Sex Can Wait n=226 (High School)	n=111	18 months (72%)	<b>NS</b> sexual intercourse, ever	<b>NS</b> sexual activity, last 30 days	-	-	-
Trenholm et al., 2008	RCT -	My Choice, My Future! n=286	No sex education n=162	42-78 months (82%)	<b>NS</b> abstinence	-	<b>NS</b> condom use	<b>NS</b> pregnancies	-
		ReCapturing the Vision n=275	No sex education n=205	42-78 months (82%)	<b>NS</b> abstinence	-	<b>NS</b> condom use	<b>NS</b> pregnancies	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

## 6.4 Abstinence-plus programmes

### 6.4.1 Overview of evidence identified

A total of 24 articles were identified that reported on the evaluation of 15 abstinence plus programmes across 18 studies. Abstinence plus programmes were defined as those that reported an emphasis on abstinence as the safest way to avoid HIV/STI infection and pregnancy, but also promoted safer sex through the use of contraceptives. Four articles (Coyle et al., 1999; 2001; Basen-Enquist et al., 2001; Kirby et al., 2004) reported on evaluations of the Safer Choices programme across the same sample of students and were grouped as a single study (Coyle et al., 1999). Three articles (Aten et al., 2002; Siegel et al., 1998; 2001) reported on evaluations of the Rochester AIDS Prevention Project for Youth, although both evaluations appeared to report on largely the same sample of students an additional school was included in the study reported on by Siegel et al (2001) and Aten et al (2002).

All 24 studies were conducted in North America, in the USA (n=22) and Canada (n=2). All 15 programmes were primarily delivered in school during scheduled lesson time. Two programmes, Safer Choices (Coyle et al., 1999) and the Youth AIDS Prevention Project (YAPP; Levy et al., 1995), combined school-based curriculums with activities for parents, and two programmes, a sex education programme based on Health Belief Model and Social learning Theory (HBM-SLT; Eisen et al., 1990) and Focus on Kids (Stanton et al., 2006), were designed to be delivered in schools or in the community. Five programmes were solely taught by teachers (an AIDS prevention programme [Walter & Vaughan, 1993]; HBM-SLT curriculum [Eisen et al., 1990], Positive Prevention [LaChausse, 2006], Reducing the Risk [Kirby et al., 1991] and Safer Choices [Coyle et al., 1999; 2001]) or peers (Protection Express [Caron et al., 2004]). Four programmes, Be Proud! Be Responsible! (BPBR; Borawski et al., 2009), a modified version of Reducing the Risk (Zimmerman et al., 2008), the Rochester AIDS Prevention Project for Youth (RAPP; Siegel et al., 1998; 2001), and Skills for Healthy Relationships (Wright, 1998), were taught by teachers in combination with other providers including adult educators, peers and school nurses. Four programmes, Draw the Line/Respect the Line (Coyle et al., 2004), Focus on Kids (Stanton et al., 2005), Postponing Sexual Involvement (Aarons et al., 2000), and YAPP (Levy et al., 1995), were taught by external health educators and for two programmes, Teen Incentives (Smith, 1994) and an STI prevention curriculum (Boyer & Shafer, 1997), it was not clear who the provider was.

The theoretical base for the curriculum or programme was not reported for three programmes: an STI prevention programme (Boyer & Shafer, 1997), Teen Incentives (Smith, 1994), and an AIDS prevention programme (Walter & Vaughan, 1993). Eight programmes (Be Proud! Be Responsible!, Safer Choices, Draw the Line/Respect the Line, Health Belief Model and Social learning Theory curriculum, Reducing the Risk, Positive Prevention, Focus on Kids, and Skills for Healthy Relationships) were based on a combination of theories. The theories applied most often were social cognitive theory (n=7 programmes), social learning theory and the theory of reasoned action (both n=3 programmes).

**Table 6.16. Sex and relationships education: abstinence-plus programmes**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider
Aarons et al., 2000	RCT +	USA n=522 students; mean 12.8 years	School	<b>Postponing Sexual Involvement:</b> Eight lessons over two month in 7 <sup>th</sup> grade and booster sessions in 8 <sup>th</sup> grade; reproductive health, postponing sexual involvement peer-led curriculum, voluntary booster sessions covering a range of health issues.	Social cognitive theory	Peer led and health professional
Borawski et al., 2009	RCT +	USA n=1,357 students; mean 15 years	School	<b>Be Proud! Be Responsible:</b> Six, 50-minute modules, booster session; abstinence promotion, information and skill building about safer sex practices.	Social cognitive theory, theory of reasoned action, theory of planned behaviour	Predominantly, health education teachers, but in three pairs of schools, approximately a quarter of the classes were taught by school nurses
Boyer & Shafer, 1997	NRCT -	USA n=695 students; mean 14.4 years (range 13-17 years)	School	Three sessions over three days on STI prevention; didactic knowledge and skills building sessions	Not reported	Not reported
Caron et al., 2004	NRCT +	Canada n=945 junior high school students; n=477 senior high school students	School	<b>Protection Express:</b> HIV/STI prevention; Peer training programme for senior high school students, developed educational presentation on one of five topics: postponing sexual intercourse, communication and assertiveness in relationships, equality in relationships, conditions to a healthy relationship, and condom use. Peer presentations subsequently presented to junior students	Social cognitive theory	Peer led
Coyle et al., 1999; 2001	RCT +	USA n=4,310 9 <sup>th</sup> grade students	School, family	<b>Safer Choices:</b> 20 sessions over 2 school years (10 sessions per year); HIV/STI and pregnancy prevention curriculum, role playing, role model stories, parent newsletters, homework assignments, school-community linkages	Social cognitive theory, social influence theory	Teachers
Coyle et al., 2004	RCT +	USA n=2,829 students; mean 11.5 years	School	<b>Draw the Line/Respect the Line:</b> 20 sessions; HIV/AIDS and pregnancy prevention, limit setting and refusal skills	Social cognitive theory, social inoculation theory	Teachers
Eisen et al., 1990; 1992	RCT +	USA n=1,444 students; 13-19 years	School or community	8-12 hour sex education programme based on Health Belief Model and Social learning Theory; information, discussion of emotions, decision-making, and personal responsibility.	Health belief model, social learning theory	Teachers

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider
Hubbard et al., 1998	NRCT +	USA n=532 students; grades 9-12	School	<b>Reducing the Risk:</b> Sixteen lesson sexuality curriculum; skill development, setting behavioural goals, activities to personalise information on the risks of unprotected sex, support for personal values and groups norms against unprotected intercourse.	Social learning theory, social influence theory	Teachers
Kirby et al., 1991	NRCT +	USA n=1,033 students; mean 15.3 years	School	<b>Reducing the Risk:</b> 15 classes over one school year; abstinence and safer sex promotion; promotion of parent/child discussions.	Social learning theory, social inoculation theory, cognitive behaviour theory	Teachers
LaChausse, 2006	RCT -	USA n=353 9 <sup>th</sup> grade students	School	<b>Positive Prevention:</b> Six lessons, 45 minutes each; interactive activities regarding HIV/STIs, risks or early sexual involvement, resisting social pressures for sexual involvement.	Social learning theory, cognitive behavioural theory	Teachers
Levy et al., 1995; Weeks et al 1995	RCT +	USA n=2,392 7 <sup>th</sup> grade students	School, family	<b>Youth AIDS Prevention Project:</b> 10 sessions in 7 <sup>th</sup> grade (1 day/2 weeks) and 5 additional sessions (over 1 week) in 8 <sup>th</sup> grade; HIV/AIDS, pregnancy and STI prevention, decision-making skills and resistance/negotiation skills, homework assignment, orientation meeting for parents.	Social cognitive theory	Master's level health educators
Siegel et al., 1998	NRCT +	USA n=3,696 students; mean 13 years (middle school students); mean 17 years (high school students)	School	<b>Rochester AIDS Prevention Project for Youth:</b> 12 sessions for middle school students (in 7 <sup>th</sup> grade), 12 sessions for high school students (10 <sup>th</sup> , 11 <sup>th</sup> or 12 <sup>th</sup> grade); Curriculum emphasised self-esteem and decision-making, discussion and skills-based activities on sexuality, STIs, pregnancy and HIV/AIDS.	Theory of reasoned action	Teacher, Adult Health Educator or Peer led
Siegel et al., 2001; Aten et al., 2002	NRCT +	USA n=4,001 students; mean 13 years (middle school students); mean 17 years (high school students)	School	<b>Rochester AIDS Prevention Project for Youth:</b> See Siegel et al., 1998 for intervention details	Theory of reasoned action	Teacher, Adult Health Educator or Peer led
Smith, 1994	RCT -	USA n=120 students; mean 15.1 years	School	<b>Teen Incentives Program:</b> Once weekly sessions for eight weeks; interpersonal skills training, career mentorship, role playing, writing and acting out skits	Not reported	Not reported

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider
Stanton et al., 2006	RCT +	USA n=1,131 students; 12-16 years	School or community	<b>Focus on Kids:</b> Eight sessions, 1½ hours each, 1-2 day community; decision-making, goal setting, communication, negotiating, consensual relationships, and information regarding abstinence, safer sex, drugs, alcohol and drug selling.	Social cognitive theory, protection motivation theory	Sex education specialists
Walter & Vaughan, 1993	NRCT +	USA n=1,201 students; mean 15.7 years	School	Six session AIDS prevention programme; facts about AIDS transmission and prevention, correcting misrepresentations regarding AIDS risk behaviours, negotiation skills associated with delaying sex and condom use, knowledge and skills around obtaining and using condoms.	Not reported	Teachers
Wright 1998	NRCT +	Canada n=4,512 students; 13-16 years	School	<b>Skills for Healthy Relationships:</b> Twenty hours of skills building activities (31 activities); knowledge acquisition, skills development, motivational supports, attitudes development.	Theory of reasoned action, theory of planned behaviour, self-efficacy theory	Teachers, Peer leaders
Zimmerman et al., 2008	RCT +	USA n=1,944 students; 13-16 years	School	<b>Reducing the Risk:</b> 16-17 sessions; modified RTR curriculum to include videos with music, peer facilitation, role playing, games and prizes	Not reported	Teacher, Peer led

The overall number of students recruited to participate in the included studies ranged from 120 students to over 4,500 students. Evaluation of six programmes (Reducing the Risk, Youth AID Prevention Project, Draw the Line/Respect the Line, RAPP, Safer Choices and Skills for Healthy Relationships) was based on a sample size of more than 1,500 students. Power calculations or mention of sample size needed to detect significant effect was only discussed in four studies (Caron et al., 2004; Coyle et al 2004; LaChausse, 2006; Walter & Vaughan, 1993).

The programmes examined in the included studies targeted a range of age groups and school year levels. Three programmes, Draw the Line/Respect the Line, Postponing Sexual Involvement and YAPP, targeted students aged between 11 and 13 years. Six programmes (RAPP, Focus on Kids, Protection Express, Skills for Healthy Relationships, an unnamed STI prevention programme and the HBM-SLT curriculum) targeted students across a range of ages, from approximately 12-13 years up to age 16-17, and six programmes (Safer Choices, Positive Prevention, Teen Incentives Programme, Be Proud! Be Responsible!, an unnamed AIDS prevention programme, Reducing the Risk) targeted older adolescents (>14 years).

Programmes were evaluated over a range of follow-up periods. Three studies (Boyer & Shafer, 1997; Smith, 1994; Levy et al., 1995) reported immediate post-test results only, and the majority of studies reported follow-up periods of less than 12 months. Evaluations of three programmes, Reducing the Risk (Hubbard et al., 1998; Kirby et al., 1991), Skills for Healthy Relationships (Wright, 1998) and Safer Choices (Coyle et al., 2001), were based on long-term follow-up greater than 12 months, at 18-, 24- and 31-months respectively.

#### **6.4.2 Quality assessment**

Of the 18 studies identified, ten were RCTs and eight were NRCTs. Nine RCTs (Aarons et al., 2000; Borawski et al., 2009; Coyle et al., 1999; 2004; Eisen et al., 1990; LaChausse, 2006; Levy et al., 1995; Stanton et al., 2006; Zimmerman et al., 2008) were based on cluster randomisation and one study involved individual randomisation of students (Smith, 1994). Cluster randomisation was conducted at school district (Levy et al., 1995), school (Aarons et al., 2000; Borawski et al., 2009; Coyle et al., 1999; 2004; Zimmerman et al., 2008) and classroom level (Eisen et al., 1990; LaChausse, 2006; Stanton et al., 2006). For five of the cluster RCTs (Aarons et al., 2000; Eisen et al., 1990; LaChausse, 2006; Levy et al., 1995; Stanton et al., 2006) the unit of analysis was not matched to the unit of randomisation or authors did not report methods for adjusting for intraclass correlations. Study quality was rated moderate (+ rating) across the majority of the studies and only one study, an RCT, was rated poor (- rating). Although all of the RCTs were reported as randomised, no further details were reported about the method of randomisation, with the exception of Borawski et al (2009), so it was not possible to judge whether selection bias had been adequately minimised. Borawski et al (2009) reported using a two-stage, double-blinded randomisation procedure, and was rated good quality (++) on this particular design aspect. Details on outcomes were generally well reported across the included RCTs and NRCTs. Outcomes measures were reported to be reliable in seven RCTs (Borawski et al., 2009; Coyle et al., 1999; 2004; Eisen et al., 1990; LaChausse, 2006; Stanton et al., 2006; Zimmerman et al., 2008) and three NRCTs (Boyer & Schaffer, 1997; Caron et al., 2004; Wright,

1998), and relevant outcomes were judged to have been reported across all studies. The quality of the analyses conducted was also generally good, but only one RCT (Stanton et al., 2006) reported that an intention-to-treat analysis had been undertaken. The majority of studies based their analysis on students who had completed both baseline and follow-up surveys. One study, RCT (Smith, 1994), was rated poor quality (- rating) because the reporting quality of the study was poor and it was difficult to interpret the statistical results presented.

### **6.4.3 Findings**

#### **6.4.3.1 Short-term results (<6 months)**

Eleven studies (Aarons et al., 2000; Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; Eisen et al., 1990; Levy et al., 1995; Siegel et al., 1998; Smith, 1994; Stanton et al., 2006; Walter & Vaughan, 1993; Wright, 1998) reported short-term data on the effects of 11 programmes: a postponing sexual involvement curriculum, BPBR, an STI/HIV prevention curriculum, Safer Choices, HBM-SLT curriculum, YAPP, RAPP, Teen Incentives, Focus on Kids, an AIDS-preventive curriculum, and Skills for Healthy Relationships.

#### **Knowledge and understanding**

Nine studies (Aarons et al., 2000; Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; Eisen et al., 1990; LaChausse, 2006; Siegel et al., 1998; Walter & Vaughan, 1993; Wright, 1998) examined short-term intervention effects on sexual health knowledge, five of which reported positive effects. Aarons et al (2006) found that the Postponing Sexual Involvement curriculum was only effective at increasing contraceptive knowledge among male intervention students, and had no short-term effects on knowledge related to reproductive sexual services among males or females.

#### **Attitudes and values**

Ten studies (Aarons et al., 2000; Borawski et al., 2009; Coyle et al., 1999; Eisen et al., 1990; Levy et al., 1995; LaChausse, 2006; Siegel et al., 1998; Stanton et al., 2006; Walter & Vaughan, 1993; Wright, 1998) examined short-term intervention effects on attitudes and values.

Six studies (Aarons et al., 2006; Borawski et al., 2009; Levy et al., 1995; Siegel et al., 1998; Stanton et al., 2006; Wright, 1998) reported on changes in behavioural intentions. Four studies (Aarons et al., 2006; Borawski et al., 2009; Levy et al., 1995; Stanton et al., 2006) found no intervention effects on behavioural intentions, including intentions to have sex and intentions for condom use, for four programmes (a postponing sexual involvement curriculum, BPBR, YAPP and Focus on Kids). Female students who received the Postponing Sexual Involvement curriculum (Aarons et al., 2000) reported greater intentions to not have sex in the next six months, compared to control students at the end of seventh grade. However, less than six months later at the beginning of eighth grade, there was no difference in intentions between male or female intervention students and controls. Although Levy et al (1995) found that students in the intervention and control groups did not differ in their intentions to have sex or use condoms; intervention students were more likely to consider using condoms with foam if they planned on being sexually active in the next 12 months. For students who participated in

the RAPP (Siegel et al., 1998), only high school intervention students demonstrated significantly greater behavioural intentions than control students. In the study by Wright (1998), there were significantly higher levels of intentions to engage in preventive behaviours in the intervention group compared to the control group ( $p < 0.0001$ ).

Seven studies (Aarons et al., 2006; Borawski et al., 2009; Coyle et al., 1999; Eisen et al., 1990; LaChausse, 2006; Walter & Vaughan, 1993; Wright, 1998) examined impact on attitudes and beliefs related to sexual behaviour. There were no significant differences between female intervention students who received the Postponing Sexual Involvement curriculum (Aarons et al., 2006) and control students on attitudes toward delayed initiation of sex or delayed childbearing, but among males, intervention students reported more positive attitudes towards delayed childbearing, but not delayed sex, at the end of seventh grade and the beginning of eighth grade. Males and females who participated in Be Proud! Be Responsible! (Borawski et al., 2009) reported significantly higher condom use prevention beliefs, but there were no intervention effects on other beliefs related to condom use, whether condom use was hedonistic, and towards abstinence. Coyle et al (1999) reported short-term intervention effects of the Safer Choices programme on students' attitudes toward condom use, but there were no intervention effects on attitudes about sex. Intervention students expressed more positive attitudes toward condom use and decreased barriers toward condom use, higher self-efficacy for condom use, and higher levels of risk perception than control students. Eisen et al (1990) found that there was no difference in health beliefs between intervention and control students following delivery of a curriculum based on the Health Belief Model and Social Learning Theory. At the 1-month post-test, there were no effects of the Positive Prevention curriculum (LaChausse, 2006) on attitudes towards abstinence, or self-efficacy for abstinence or condom use. Walter and Vaughan (1993) found significant improvements on four of five belief outcomes for students who received a special AIDS-preventive curriculum compared to controls: perceived susceptibility of acquiring AIDS ( $p < 0.01$ ); perceived benefits and barriers for engaging in AIDS preventive behaviour ( $p < 0.01$  and  $p < 0.05$ , respectively); and perceptions about the commonness of involvement in AIDS prevention ( $p < 0.01$ ). There was no difference in participants' perceptions about the acceptability of involvement of AIDS preventive behaviour but significant improvements were found among intervention students on the measure of self-efficacy, which assessed participants' degree of certainty regarding their ability to successfully perform AIDS-preventive actions ( $p < 0.01$ ). Intervention group students who received the Skills for Healthy Relationships curriculum (Wright, 1998) reported significantly more positive attitudes towards homosexuals and people living with AIDS/HIV than control group students at the end of the programme ( $p < 0.0001$ ).

### **Personal and social skills**

Three studies (Borawski et al., 2009; Boyer & Shafer, 1997; Wright, 1998) examined short-term intervention effects on personal and social skills related to sexual risk behaviours. Borawski et al (2009) reported a significant difference between male intervention who participated in BPBR, and control students on the following efficacy outcomes: impulse control, condom negotiation skills, and condom technical skills. A knowledge-and cognitive-behavioural skills-building intervention to prevent

STIs (Boyer & Shafer, 1997) had a significant short-term impact on sexual risk prevention skills ( $p < 0.05$ ) and substance use prevention skills ( $p < 0.001$ ). Intervention group students who participated in Skills for Healthy Relationships (Wright, 1998) reported higher levels of prevention skills<sup>8</sup> than the control group ( $p < 0.0001$ ).

### **Health and social outcomes relating to alcohol use and sexual health**

Six studies reported short-term programme effects on the initiation of sexual involvement. Of these, five studies (Borawski et al., 2009; Coyle et al., 1999; Eisen et al., 1990; Walter & Vaughan, 1993; Wright, 1998) found no intervention effects for the following five programmes: BPBR; Safer Choices; HBM-SLT curriculum; an AIDS-preventive curriculum, Skills for Healthy Relationships. Aarons et al (2000) evaluated an intervention that included reproductive health classes, health risk screening and the Postponing Sexual Involvement curriculum. At the end of the seventh grade, female (but not male) students had significantly higher virginity rates than control students. However, less than six months later at the beginning of eighth grade, there was no difference in virginity rates between intervention and control students of either gender.

Intervention effects on frequency of sexual intercourse and/or number of partners were examined in seven studies (Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; Levy et al., 1995; Smith, 1994; Stanton et al., 2006; Walter & Vaughan, 1993). Four studies (Borawski et al., 2009; Coyle et al., 1999; Levy et al., 1995; Stanton et al., 2006) reported no intervention effects on frequency of sexual intercourse. Smith (1994) reported that students who participated in the Teen Incentives programme decreased their sexual activity (absolute and relative frequency) compared to control students who received written materials on contraception and decision-making. Boyer and Shafer (1997) found no effects of an STI/HIV prevention curriculum on number of sexual partners but Walter and Vaughan (1993) found that an AIDS-preventive curriculum had short-term effects (up to 3 months) on sexual risk behaviours. Compared to control students, students who participated in the curriculum in 9<sup>th</sup> or 11<sup>th</sup> grade reported less involvement in sexual intercourse with high-risk sexual partners ( $p < 0.05$ ) and were more likely to be sexually monogamous ( $p < 0.05$ ).

Eight studies (Aarons et al., 2000; Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; Levy et al., 1995; Smith, 1994; Stanton et al., 2006; Walter & Vaughan, 1993) examined intervention effects on contraceptive use; four studies (Borawski et al., 2009; Boyer & Shafer, 1997; Levy et al., 1995; Stanton et al., 2006) found no intervention effects for the following programmes: BPBR, an STI/HIV prevention curriculum, and Focus on Kids. Aarons et al (2000) found that female intervention students who participated in a two-year curriculum reported greater use of contraception at the end of the programme compared to control students, both at the post-test at the end of seventh grade and at the beginning of eighth grade. Among sexually experienced students, those who participated in Safer Choices (Coyle et al., 1999) reported fewer acts of sexual intercourse without a condom in the past 3 months compared to the control group (mean difference [SE] 0.50 [0.31];  $p = 0.03$ ) and were more likely to have used condoms or protection against pregnancy at last intercourse (condoms: OR 1.91;

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<sup>8</sup> Communication and behavioural skills relevant to prevention

95% CI 1.13, 3.21; other contraception: OR 1.62; 95% CI 1.05, 2.50). Two other studies reported intervention effects on contraceptive use. Smith (1994) reported that students who participated in the Teen Incentives programme increased their use of contraceptives relative to control students ( $p < 0.05$ ) and students who participated in an AIDS-preventive curriculum (Walter and Vaughan, 1993) were more likely to use condoms ( $p < 0.05$ ) than control students.

Coyle et al (1999) also found that there was no difference between students who received Safer Choices and control students in their use of alcohol and other drugs before sex in the past 3 months, and whether they had been tested for HIV or other STIs. Walter and Vaughan (1993) reported that participation in an AIDS-preventive curriculum was associated with a favourable trend for STI incidence, but the difference between intervention and control students did not reach significance.

#### **6.4.3.2 Medium-term results (up to 12 months)**

Eleven studies (Aarons et al., 2000; Borawski et al., 2009; Caron et al., 2004; Coyle et al., 2004; Eisen et al., 1990; Kirby et al., 1991; LaChausse, 2006; Siegel et al., 2001; Stanton et al., 2006; Wright, 1998; Zimmerman et al., 2008) reported medium-term follow-up data for 11 programmes: Postponing Sexual Involvement, Be Proud! Be Responsible!, Protection Express, Draw the Line/Respect the Line, HBM-SLT curriculum, Reducing the Risk (standard and modified), Positive Prevention, RAPP, Focus on Kids, and Skills for Healthy Relationship.

#### **Knowledge and understanding**

Eight studies (Aarons et al., 2000; Borawski et al., 2009; Coyle et al., 2004; Kirby et al., 1991; LaChausse, 2006; Siegel et al., 2001; Wright, 1998; Zimmerman et al., 2008) examined medium-term programme effects on knowledge. Five studies (Borawski et al., 2009; Coyle et al., 2004; Kirby et al., 1991; Siegel et al., 2001; Wright, 1998) reported that significant increases in knowledge were sustained among intervention students at medium-term follow-up for five programmes: BPBR, Draw the Line/Respect the Line, Reducing the Risk, RAPP, and Skills for Healthy Relationships. Aarons et al (2000) found programme effects on knowledge related to contraceptives among males intervention students only. Furthermore, there were no programme effects on knowledge related to reproductive health services among either gender. Two studies (LaChausse, 2006; Zimmerman et al., 2008) reported no medium-term intervention effects on knowledge.

#### **Attitudes and values**

Nine studies (Aarons et al., 2000; Caron et al., 2004; Coyle et al., 2004; Kirby et al., 1991; LaChausse, 2006; Siegel et al., 2001; Stanton et al., 2006; Wright, 1998; Zimmerman et al., 2008) examined medium-term programme effects on attitudes.

Six studies (Aarons et al., 2000; Caron et al., 2004; Siegel et al., 2001; Stanton et al., 2006; Wright, 1998) examined programme impact on behavioural intentions. There were no medium-term effects of the Postponing Sexual Involvement curriculum (Aarons et al., 2000) on intentions to not have sex in the next six months among females and among males, intentions to not have sex were significantly lower among intervention students (OR 0.32; 95% CI 0.13, 0.80). Junior high students who participated in Protection Express were more likely than control students to report intentions to remain

abstinent and to use condoms (both  $p < 0.001$ ). However, among senior high students who participated in the programme as peer leaders there were no intervention effects on behavioural intentions. Among middle school who participated in RAPP (Siegel et al., 2001), intervention students reported safer behavioural intentions regarding sexual behaviour and substance use than controls (females,  $p < 0.05$ ; males,  $p < 0.01$ ), but there was no difference among high school students who received the programme. Stanton et al (2006) found no differences in intentions to engage in sex among students who participated in Focus on Kids and control students who received an environmental health intervention. Compared to the control group, students who participated in the Skills for Healthy Relationships programme (Wright, 1998) reported significantly higher levels of intentions to engage in preventive behaviours in the intervention group.

Nine studies (Aarons et al., 2000; Caron et al., 2004; Coyle et al., 2004; Kirby et al., 1991; LaChausse, 2006; Siegel et al., 2001; Stanton et al., 2006; Zimmerman et al., 2008) examined medium-term intervention effects on attitudes, beliefs and/or self-efficacy. Following delivery of booster sessions in the eighth grade, there were no medium-term effects of the Postponing Sexual Involvement curriculum on attitudes to delaying sex or childbearing, or self-efficacy to refuse sex. Caron et al (2004) reported that the Protection Express curriculum had positive effects on junior high intervention students' attitudes to abstinence, and role beliefs and perceived self-efficacy for abstinence and condom use. Senior high students, who acted as peer leaders, also reported changes in attitudes and beliefs in relation to abstinence and condom use after participation in the programme relative to the control group. Coyle et al (2004) found that boys who received the Draw the Line/Respect the Line programme had more positive attitudes toward not having sex than control students ( $p < 0.01$ ), however two studies (LaChausse, 2006; Zimmerman et al., 2008) reported no programme effects on attitudes towards delaying sexual involvement for Positive Prevention and Reducing the Risk, respectively. Students who participated in Skills for Healthy Relationships (Wright, 1998) reported significantly more positive attitudes towards homosexuals and people living with AIDS/HIV than control group students. Of three studies (Coyle et al., 2004; Kirby et al., 1991; Zimmerman et al., 2008) that examined students' perceptions or beliefs toward peer norms for sexual involvement, significant positive programme effects were reported in two studies (Coyle et al., 2004; Kirby et al., 1991) for Draw the Line/Respect the Line and the original evaluation of Reducing the Risk, respectively, but not for a modified version of Reducing the Risk (Zimmerman et al., 2008). Coyle et al (2004) also found that male students who participated in Draw the Line/Respect the Line had stronger sexual limits ( $p < 0.01$ ), and were less likely to place themselves in situations that could lead to sexual behaviours ( $p < 0.001$ ), than control students. Four studies (LaChausse, 2006; Siegel et al., 2001; Stanton et al., 2006; Zimmerman et al., 2008) examined intervention effects on self-efficacy. LaChausse (2006) reported that there were no significant differences between intervention and control students in self-efficacy to abstain from sexual intercourse, but that intervention students reported a higher self-efficacy to use condoms (mean [SD]: 7.41 [0.90] vs. 6.74 [1.26];  $p = 0.001$ ). In the study by Siegel et al (2001), compared to control students, self-efficacy was significantly higher among middle school and high school female students who participated in the RAPP ( $p < 0.05$  and  $p < 0.01$ , respectively). Stanton et al (2006) reported higher perceptions of self efficacy and response efficacy regarding abstinence

among participants in Focus on Kids compared to control students. Intervention students also demonstrated significantly higher perceptions of self efficacy to use condoms. Zimmerman et al (2008) found no significant differences between intervention and control students on three measures of self-efficacy (refusal, condom and situational).

### **Personal and social skills**

Two studies (Kirby et al., 1991; Wright, 1998) examined medium-term programme effects on personal and social skills related to sexual risk reduction. Kirby et al (1991) found that the Reducing the Risk curriculum impacted on student's communication with their parents at 6-months; intervention participants and their parents were more likely than control students to have ever discussed abstinence ( $p<0.01$ ) and contraception ( $p<0.01$ ). However, there was no difference between group in their level of communication with their parents about pregnancy and STIs. Students who participated in the Skills for Healthy Relationships curriculum (Wright, 1998) reported higher levels of prevention skills compared to the control group.

### **Health and social outcomes relating to alcohol use and sexual health**

Nine studies examined medium-term programme effects on initiation of sexual intercourse. Four studies (Borawski et al., 2009; Caron et al., 2004; Kirby et al., 1991; Wright, 1998) found that there were no medium-term effects of the following curriculums on initiation of sexual intercourse: BPBR, Protection Express, Reducing the Risk and Skills for Healthy Relationships. Aarons et al (2000) reported that, at the end of 8<sup>th</sup> grade, female students who had participated in the Postponing Sexual Involvement curriculum had significantly higher virginity rates than control students (OR 1.88; 95% CI 1.02, 3.47). Coyle et al (2004) found that young men, but not young women, who received the Draw the Line/Respect the Line curriculum were significantly less likely than control students to report ever having sex, at the end of 9<sup>th</sup> grade (age 14-15 years) one year after receiving the intervention. At 6-months follow-up, students who received the Positive Prevention curriculum (LaChausse, 2006) were also significantly less likely to have had sex compared to control students (OR 0.19, 95% CI 0.07, 0.51) Based on a composite measure of initiation or onset of sexual experience, Siegel et al (2001) found that rates of initiation were lower among middle school females who received the RAPP curriculum in the medium-term than among control groups ( $p<0.01$ ). Zimmerman et al (2008) found that when combined, participants who received the traditional or modified version of Reducing the Risk were significantly less like to have initiated sexual activity at the end of 10<sup>th</sup> grade (age 15-16 years; one year after intervention) than control participants ( $p<0.05$ ).

Programme effects on frequency of sexual intercourse and/or number of partners were examined in six studies (Borawski et al., 2009; Coyle et al., 2004; Kirby et al., 1991; LaChausse, 2006; Siegel et al., 2001; Stanton et al., 2006). These studies found that none of the programmes examined (BPBR, Draw the Line/Respect the Line, Reducing the Risk, Positive Prevention, RAPP and Focus on Kids) had any effect on these outcomes at the medium-term follow-up.

Nine studies (Aarons et al., 2000; Borawski et al., 2009; Caron et al., 2004; Coyle et al., 2004; Eisen et al., 1990; Kirby et al., 1991; LaChausse, 2006; Stanton et al., 2006; Zimmerman et al., 2008)

examined medium-term programme effects on contraceptive use, of which seven studies (Borawski et al., 2009; Coyle et al., 2004; Eisen et al., 1990; Kirby et al., 1991; LaChausse, 2006; Stanton et al., 2006; Zimmerman et al., 2008) found no effects for the following programmes: BPBR, Draw the Line/Respect the Line, HBM-SLT curriculum, Reducing the Risk (standard and modified), Positive Prevention, and Focus on Kids. Aarons et al (2000) found that female, but not male, intervention students who received the Postponing Sexual Involvement curriculum, in addition to health risk screening and reproductive health classes reported greater use of contraception at the end of eighth grade compared to control students. Caron et al (2004) reported that at 9-months follow-up, senior high intervention students who acted as peers were more likely than control students to report using a condom consistently with their regular or occasional sexual partner ( $p < 0.01$ ). However, junior high intervention and control students did not differ with respect to condom use.

Two studies (Eisen et al., 1990; Kirby et al., 1991) examined the medium-term effects of a HLM-SLT curriculum and Reducing the Risk, respectively, on pregnancy. Neither study identified significant programme effects on this outcome.

#### **6.4.3.3 Long-term results (>12 months)**

Four studies (Coyle et al., 2001; Kirby et al., 1991; Hubbard et al., 1998; Wright, 1998) reported long-term follow-up data for three programmes: Safer Choices, Reducing the Risk and Skills for Healthy Relationships.

##### **Knowledge and understanding**

Three studies (Coyle et al., 2001; Kirby et al., 1991; Wright, 1998) examined long-term programme effects on sexual health knowledge. After 31-months follow-up, Coyle et al (2001) reported that effects on knowledge of HIV and STDs remained significantly higher for intervention students who participated in Safer Choices compared to control students (mean difference [SE] HIV 0.11 [0.02]; STIs 0.09 [0.02]; both  $p = 0.00$ ). Kirby et al (1991) and Wright (1998) also reported sustained long-term increases in knowledge among students exposed to abstinence plus programmes compared to controls.

##### **Attitudes and values**

At 31-months follow-up, Coyle et al (2001) found that Safer Choices students expressed significantly more positive attitudes than comparison students about condoms (mean difference [SE] 0.07 [0.02];  $p = .01$ ) and reported significantly fewer barriers to condom use (mean difference [SE] -0.11 [0.04];  $p = 0.01$ ), greater self-efficacy for condom use (mean difference [SE] 0.11 [0.03];  $p = 0.00$ ) and perceived HIV and STD risks to be higher (mean difference [SE] HIV 0.11 [0.05];  $p < 0.05$ ; STIs 0.09 [0.04];  $p < 0.05$ ). However, there was no difference between intervention and control students on the following measures: attitudes about sex; normative beliefs about condoms; self efficacy for refusing sex; and self efficacy for communication. Despite medium-term effects on beliefs about the sexual involvement of peers, at 18-months follow-up (Kirby et al., 1999) there was no difference between intervention students who participated in Reducing the Risk and control students on this outcome. Wright (1998) reported that both short- and medium-term effects on attitudes and intentions were

maintained at the end of 11<sup>th</sup> grade. Intervention group students reported significantly more positive attitudes towards homosexuals and people living with AIDS/HIV than control group students, and significantly higher levels of intentions to engage in preventive behaviours in the intervention group compared to the control group.

### **Personal and social skills**

Despite a short-term impact on communication with parents (Coyle et al., 1999), there were no long-term effects of the Safer Choices curriculum (Coyle et al., 2001) on students' level of communication with their parents. Kirby et al (1991) found that medium-term effects on parental communication were sustained long-term for abstinence ( $p < 0.05$ ) but not for contraception. As at previous follow-ups (Kirby et al., 1991), there was no difference between Reducing the Risk and control students in communication with parents about pregnancy and STDs, or in intentions to use skills for avoiding unprotected intercourse. Wright (1998) found that short- and medium-term intervention effects on prevention skills were sustained at the long-term follow-up among students who participated in the Skills for Healthy Relationship programme, compared to controls. However, there was no difference in self-esteem between intervention and control students.

### **Health and social outcomes relating to alcohol use and sexual health**

Two studies (Kirby et al., 1991; Hubbard et al., 1998) demonstrated that the Reducing the Risk curriculum was partially effective at reducing the age of initiation over the long-term. At 18-months, Kirby et al (1991) found that fewer students in the intervention group had initiated intercourse compared to the control group (29% vs. 38%;  $p < 0.05$ ). However, the results of the logistic regression analysis of the proportions initiating intercourse did not reach significance ( $p = 0.13$ ). In a replication of the Reducing the Risk curriculum, Hubbard et al (1998) also found that fewer intervention students than control students were sexually active at 18-months follow-up (28% vs. 43%;  $p < 0.05$ ). However, this study experienced large losses to follow-up (only 36% of students were followed up) and consequently students followed up at 18 months were unlikely to be representative of the baseline sample. For the other programmes with long-term follow-up, Safer Choices and Skills for Healthy Relationships, there were no intervention effects on initiation of sexual intercourse.

Kirby et al (1991) examined the long-term effects of the Reducing the Risk curriculum on frequency of sexual intercourse, finding that there were no statistically significant differences between the intervention and control group. Kirby et al (1991) also found that there was no long-term effects of the Reducing the Risk curriculum on contraceptive use or pregnancy. Hubbard et al (1998) reported that the curriculum had a long-term impact on use of contraception by new initiates, but as previously stated the results of this study were confounded by large losses to follow-up. There appeared to be long-term effects of the Safer Choices curriculum at long-term follow-up. At 31 months, compared to control students, intervention students reported fewer acts of sexual intercourse without a condom in the last 3 months (mean difference [SE] 0.63 [0.23];  $p = 0.05$ ) and fewer sexual partners without a condom in the last 3 months (mean difference [SE] 0.73 [0.14];  $p = 0.02$ ). Intervention students were also significantly more likely to have used condoms (OR 1.68; 95% CI 1.02, 2.76) or other pregnancy prevention methods at last intercourse (OR 1.76; 95% CI 1.01, 30.7).

#### **6.4.4 Summary and evidence statements**

A total of 18 studies were identified that evaluated 15 sex and relationships education programmes based on an abstinence-plus approach. Abstinence plus programmes were defined as those that reported an emphasis on abstinence as the safest way to avoid HIV/STI infection and pregnancy, but also promoted safer sex through the use of contraceptives. All 15 programmes were developed and evaluated in North America; 13 programmes were developed in the USA and two programmes were developed in Canada. Two programmes, Safer Choices and YAPP, incorporated activities for parents and one programme, Protection Express, was exclusively peer-led. The programmes identified tended to target older adolescents (>14 years) or students across a range of ages, from the age of 13 upwards.

##### **6.4.4.1 Knowledge and understanding**

Thirteen studies (Aarons et al 2000; Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; 2001; Coyle et al., 2004; Eisen et al., 1990; Kirby et al., 1991; LaChausse, 2006; Siegel et al., 1998; 2001; Walter & Vaughan, 1993; Wright, 1998; Zimmerman et al., 2008) examined intervention effects on sexual health knowledge. These studies found that abstinence-plus programmes were generally effective in improving sexual health knowledge in the short- and medium-term. In addition, three studies (Coyle et al., 2001; Kirby et al., 1991; Wright, 1998) examined long-term programme effects on knowledge for three programmes, Safer Choices, Reducing the Risk and Skills for Healthy Relationships. All three studies reported sustained long-term increases in knowledge among students exposed to abstinence plus programmes compared to controls.

##### **6.4.4.2 Attitudes and values**

Fourteen studies (Aarons et al., 2000; Borawski et al., 2009; Coyle et al., 1999; Coyle et al., 2004; Eisen et al., 1990; Kirby et al., 1991; LaChausse, 2006; Levy et al., 1995; Siegel et al., 1998; 2001; Stanton et al., 2006; Walter & Vaughan, 1993; Wright, 1998; Zimmerman et al., 2008) examined short- and medium-term intervention effects on attitudes and values. The results of these studies demonstrated that intervention effects on behavioural intentions, attitudes to sexual behaviour, and self-efficacy were inconsistent and there was no clear indication of the direction of effects. In addition, some programmes, such as Draw the Line/Respect the Line, had differing effects on male and female students. Two studies (Coyle et al., 2001; Wright, 1998) examined long-term effects on attitudes and values for Safer Choices, Reducing the Risk and Skills for Healthy Relationships, respectively. Safer Choices had long-term positive effects on students' attitudes to and self-efficacy for condom use, but did not impact attitudes or self-efficacy related to sex. Wright (1998) found that positive effects of the Skills for Healthy Relationships programme on attitudes and intentions related to HIV prevention were sustained long-term.

##### **6.4.4.3 Personal and social skills**

Six studies (Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; 2001; Kirby et al., 1991; Wright, 1998) examined intervention effects on personal and social skills related to sexual risk behaviours for five programmes that incorporated skills building activities (BPBR, an STI/HIV

prevention curriculum, Safer Choices, Reducing the Risk and Skills for Healthy Relationships). All five programmes had some positive short- or medium-term effects on skills relating to sexual risk prevention. Two studies (Kirby et al., 1991; Coyle et al., 1999; 2001) examined effects on communication with parents for Reducing the Risk and Safer Choices, respectively. Despite a short-term impact on communication with parents (Coyle et al., 1999), there were no long-term effects of the Safer Choices curriculum (Coyle et al., 2001) on students' level of communication with their parents. There were mixed effects of Reducing the Risk on communication, there were medium- to long-term positive effects on students' communication with their parents about abstinence, but positive medium-term effects on communication about contraception were not sustained. There was no difference between Reducing the Risk and control students in communication with parents about pregnancy and STDs, or in intentions to use skills for avoiding unprotected intercourse in the long-term.

#### ***6.4.4.4 Health and social outcomes relating to alcohol use and sexual health***

All 18 studies examined intervention effects on a range of health outcome measures relating to sexual health. Across these studies there was no indication of short-term programme effects on the initiation of sexual involvement and at the medium-term follow-up, programme effects were largely inconsistent with four studies (Borawski et al., 2009; Caron et al., 2004; Kirby et al., 1991; Wright, 1998) reporting no programme effects on initiation of sexual intercourse. There was some evidence of a positive impact for five studies (Aarons et al., 2000; Coyle et al., 2004; LaChausse, 2006; Siegel et al., 2001; Zimmerman et al., 2008), although for three studies (Aaron et al., 2000; Coyle et al., 2004; Siegel et al., 2001) there were contrasting outcomes among intervention males and females. Two studies (Kirby et al., 1991; Hubbard et al., 1998) demonstrated that the Reducing the Risk curriculum was partially effective at reducing the age of initiation over the long-term, but methodological limitations of the study by Hubbard et al (1998) and lack of statistical significance in logistic regression analyses in the study by Kirby et al (1991) limited the interpretation of this finding. For two further programmes with long-term follow-up, Safer Choices (Coyle et al., 2001) and Skills for Healthy Relationships (Wright, 1998), there were no intervention effects on initiation of sexual intercourse. Programme effects on frequency of sexual intercourse and number of sexual partners were found to be inconsistent or non-existent in the short-, medium- and long-term across 11 studies (Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; 2004; Levy et al., 1995; Kirby et al., 1991; LaChausse, 2006; Siegel et al., 2001; Smith, 1994; Stanton et al., 2006; Walter & Vaughan, 1993).

Short- and medium-term intervention effects on contraceptive use were found to be inconsistent across 14 studies (Aarons et al., 2000; Borawski et al., 2009; Boyer & Shafer, 1997; Caron et al., 2004; Coyle et al., 1999; 2004; Eisen et al., 1990; Kirby et al., 1991; LaChausse, 2006; Levy et al., 1995; Stanton et al., 2006; Smith, 1994; Walter & Vaughan, 1993; Zimmerman et al., 2008). Of these studies, six studies (Aarons et al., 2000; Caron et al., 2004; Coyle et al., 1999; Smith, 1994; Walter & Vaughan, 1993) reported short- to medium-term effects on condom use, with increased use of condoms and contraceptives among intervention students relative to controls. Kirby et al (1991) reported that there was no long-term effects of the Reducing the Risk curriculum on contraceptive use,

but in a replication study of Reducing the Risk, Hubbard et al (1998) reported that the curriculum had a long-term impact on use of contraception by new initiates. However, the results of this study were confounded by large losses to follow-up. There appeared to be long-term effects of the Safer Choices curriculum on contraceptive use. At long-term follow-up, compared to control students, intervention students reported fewer acts of sexual intercourse without a condom and fewer sexual partners without a condom in the last 3 months. Intervention students were also significantly more likely to have used condoms or other pregnancy prevention methods at last intercourse, than controls

Two studies (Eisen et al., 1990; Kirby et al., 1991) examined the medium- to long-term effects of a HLM-SLT curriculum and Reducing the Risk, respectively, on pregnancy. Neither study identified significant programme effects on this outcome.

#### **Evidence statement 11**

- 11 (f) There is moderate evidence from three RCTs and three NRCTs<sup>1</sup> to suggest that programmes that emphasise abstinence but that also promote safer sex, may produce short- to long-term improvements in sexual health-related knowledge. This evidence may only be partially applicable because as these studies were conducted in the USA and may not be generalisable beyond the populations studied. In addition, the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.
- 11 (g) There is inconsistent evidence from four RCTs and four NRCTs<sup>2</sup> to determine the effects of abstinence-plus programmes on attitudes, behavioural intentions and self-efficacy relating to sexual behaviour.
- 11 (h) There is inconsistent evidence from one RCT and two NRCTs<sup>3</sup> to determine the long-term effects of abstinence-plus programmes on communication with parents. There is moderate evidence from one RCT and one NRCT<sup>4</sup> to suggest abstinence-plus programmes that incorporate skills building activities may have positive, short and medium- to long-term effects on skills relevant to prevention. This evidence may only be partially applicable because as these studies were conducted in the USA and may not be generalisable beyond the populations studied. In addition, the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.
- 11 (i) There is moderate evidence from five RCTs and five NRCTs<sup>5</sup> to suggest that abstinence-plus programmes may not have a consistent short-, medium- or long-term impact on the initiation of sexual activity or the maintenance of abstinence. In addition, there is moderate evidence from four RCTs and two NRCTs<sup>6</sup> to suggest that abstinence plus programmes may not have an impact on frequency of sexual activity and risky sexual behaviours. This evidence may only be partially applicable because as these studies were conducted in the USA and may not be generalisable beyond the populations studied. In addition, the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

11 (j) There is moderate evidence from six RCTs and three NRCTs<sup>7</sup> to suggest that abstinence-plus programmes may not have a consistent impact on condom and other contraceptive use, and moderate evidence from one RCT and one NRCT<sup>8</sup> to suggest that abstinence-plus programmes have no medium- to long-term impact on pregnancy rates. This evidence may only be partially applicable because as these studies were conducted in the USA and may not be generalisable beyond the populations studied. In addition, the programme's emphasis on abstinence is of limited relevance to PSHE delivery in secondary schools focusing on SRE and alcohol education.

<sup>1</sup> Borawski et al., 2009 (RCT +); Coyle et al., 2001 (RCT +); Coyle et al., 2004 (RCT +); Kirby et al., 1991 (NRCT +); Siegel et al., 2001 (NRCT +); Wright 1998 (NRCT +)

<sup>2</sup> Borawski et al., 2009 (RCT +); Caron et al., 2004 (NRCT +); Coyle et al., 2004 (RCT +); Kirby et al., 1991 (NRCT +); LaChausse, 2006 (RCT +); Siegel et al., 2001 (NRCT +); Wright, 1998 (NRCT +); Zimmerman et al., 2008 (RCT +)

<sup>3</sup> Coyle et al., 2001 (RCT +); Hubbard et al., 1998 (NRCT +); Kirby et al., 1991 (NRCT +)

<sup>4</sup> Borawski et al., 2009 (RCT +); Wright, 1998 (NRCT +)

<sup>5</sup> Borawski et al., 2009 (RCT +); Caron et al., 2004 (NRCT +); Coyle et al., 2001 (RCT +); Coyle et al., 2004 (RCT +); Hubbard et al., 1998 (NRCT +); Kirby et al., 1991 (NRCT +); LaChausse, 2006 (RCT +); Siegel et al., 2001 (NRCT +); Wright 1998 (NRCT +); Zimmerman et al., 2008 (RCT +)

<sup>6</sup> Borawski et al., 2009 (RCT +); Coyle et al., 2004 (RCT +); Kirby et al., 1991 (NRCT +); LaChausse, 2006 (RCT +); Siegel et al., 2001 (NRCT +); Stanton et al., 2006 (RCT +)

<sup>7</sup> Caron et al., 2004 (NRCT +); Coyle et al., 2001 (RCT +); Coyle et al., 2004 (RCT +); Eisen et al., 1990 (RCT +); Kirby et al., 1991 (NRCT +); Hubbard et al., 1998 (NRCT +); LaChausse, 2006 (RCT +); Stanton et al., 2006 (RCT +); Zimmerman et al., 2008 (RCT +)

<sup>8</sup> Eisen et al., 1990 (RCT +); Kirby et al., 1991 (NRCT +)

**Table 6.17. Abstinence-plus programmes: short-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Aarons et al., 2000	RCT +	Postponing Sexual Involvement n=262	No intervention n=260	PT	↑ contraception (males only*) <b>NS</b> reproductive health services	↓ intentions to not have sex (females only*) ↑ self-efficacy to refuse sex (females only*) <b>NS</b> attitudes: delayed sex ↑ attitudes: delayed childbearing (boys only*)	<b>NS</b> parent or boy/girlfriend communication
				<6 months	↑ contraception (males only*) <b>NS</b> reproductive health services	<b>NS</b> intentions to not have sex <b>NS</b> self-efficacy to refuse sex <b>NS</b> attitudes: delayed sex ↑ attitudes: delayed childbearing (boys only*)	<b>NS</b> parent or boy/girlfriend communication
Borawski et al., 2009	RCT +	BPBR n=631	Usual curriculum n=726	PT	↑ STIs*** ↑ condoms***	↑ beliefs: condom use prevention** <b>NS</b> beliefs: condom use <b>NS</b> beliefs: condom use hedonistic <b>NS</b> beliefs: abstinence <b>NS</b> intentions to have sex ↑ intentions to use a condom*	↑ condom technical skills*** ↑ impulse control** ↑ condom negotiation skills**
				4-months (97%)	↑ STIs** ↑ condoms***	<b>NS</b> beliefs: condom use prevention ↑ beliefs: condom use <b>NS</b> beliefs: condom use hedonistic <b>NS</b> beliefs: abstinence ↓ intentions to have sex* <b>NS</b> intentions to use a condom <b>NS</b> perceived peer beliefs: sex/condom use	↑ condom negotiation skills** ↑ condom technical skills** <b>NS</b> impulse control
Boyer & Shafer, 1997	NRCT +	STI/HIV prevention n=210	Didactic education n=303	PT n=513 (74%)	↑ STIs*	-	↑ sexual risk prevention skills* ↑ substance use prevention skills***

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Coyle et al., 1999; Coyle et al., 2001	RCT +	Safer Choices n=NR	Knowledge-based HIV prevention curriculum n=NR	End of first year n=3,677 (85%)	↑ HIV*** ↑ other STIs***	↑ condom positive attitudes* ↓ condom use barriers*** ↑ risk perception HIV***/other STIs* ↑ self-efficacy: condom use*** NS attitudes about sex NS self-efficacy: refusing sex NS self-efficacy: communication	↑parent communication*
Eisen et al., 1990	RCT +	HBM-SLT curriculum N=722	Community-based programmes N=722	PT N=1,328 (92%)	↑ sexual knowledge*	NS health beliefs	-
LaChausse, 2006	RCT +	Positive Prevention N=216	Usual curriculum N=137	1 month	NS HIV infection and AIDS	NS attitudes towards abstinence NS self-efficacy: abstinence NS self-efficacy: condoms	-
Levy et al., 1995; Weeks et al., 1995	RCT +	YAPP N=1,459	Basic AIDS education N=933	PT N=1,669 (70%)	-	↑ consider using condoms with foam*** NS intentions to have sex NS intentions to use condoms	-
Siegel et al., 1998	NRCT +	RAPP n=2,437 (1,402 health educator; 1,035 peer educator)	Usual curriculum n=1,259	PT N=2758 (75%)	↑ knowledge <sup>a**</sup>	↑ behavioural intentions (high school only; females*/males**)	

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Stanton et al., 2006	RCT +	Focus on Kids N=870	Environmental health intervention N=261	3 months N=898 (79%)	-	<p><b>NS</b> abstinence: self-efficacy, response efficacy, response costs; extrinsic/intrinsic rewards; severity; vulnerability</p> <p><b>NS</b> intentions to be abstinent</p> <p><b>NS</b> condoms: self-efficacy, response efficacy, extrinsic/intrinsic rewards; severity; vulnerability</p> <p>↓ response costs*</p> <p><b>NS</b> intentions to be use condoms</p>	-
Walter & Vaughan, 1993	RCT +	AIDS-preventive curriculum n= 667	No intervention n= 534	3 months	↑ AIDS transmission and prevention***	<p>↑perceived susceptibility of acquiring AIDS**</p> <p>↑perceived benefits for engaging in AIDS preventive behaviour**</p> <p>↓ perceived barriers for engaging in AIDS preventive behaviour*</p> <p>↑ perceptions about the commonness of involvement in AIDS prevention**</p> <p>↑ self-efficacy to perform AIDS-preventive actions**</p>	-
Wright 1998	NRCT +	Skills for Health Relationships N=2606	Usual curriculum N=1906	PT	↑ HIV/AIDS***	<p>↑ positive attitudes towards homosexuals and people living with AIDS/HIV***</p> <p>↑ intentions to engage in preventive behaviours***</p>	<p>↑ prevention skills***</p> <p>↓ self-esteem**</p>

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> Significance not reported

**Table 6.18. Abstinence-plus programmes: short-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Aarons et al., 2000	RCT +	Postponing Sexual Involvement n=262	No intervention n=260	PT n=503 <sup>a</sup>	↑ virginity (females only)*	-	↑ used contraceptives/ condoms last time had sex (female only)*	-	-
				<6 months n=564 <sup>a</sup>	NS virginity	-	↑ used contraceptives/ condoms last time had sex (female only)*	-	-
Borawski et al., 2009	RCT +	BPBR N=631	Usual curriculum N=726	PT, 4 months	NS ever had intercourse	NS frequency	NS frequency of unprotected intercourse	-	-
Boyer & Shafer, 1997	NRCT +	STI/HIV prevention N=210	Didactic education N=303	PT n=513 (74%)	-	NS number of sexual partners	NS condom use	-	-
Coyle et al., 1999; Coyle et al., 2001	RCT +	Safer Choices n=NR	Normal education n=NR	End of first year n=3,677 (85%)	NS	↓ without a condom (past 3 months)* NS number of times had intercourse (past 3 months)	↑ condom use at first intercourse* ↑ condom use at last intercourse*	NS tested for HIV/STI	-
Eisen et al., 1990; Eisen et al., 1992	RCT +	HBM-SLT curriculum N=722	Community-based programmes N=722	PT N=1,328 (92%)	NS abstinence maintenance	-	-	-	-
Levy et al., 1995; Weeks et al., 1995	RCT +	YAPP N=1,459	Basic AIDS education N=933	PT N=1,669 (70%)	-	NS sex in last 30 days	↑ condoms with foam** NS engaged in protective behaviours	-	-
Smith, 1994	RCT -	Teen Incentives N=60	Written materials N=60	PT N=95 (79%)	-	↓ frequency*	↑ contraception*	-	-

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Stanton et al., 2006	RCT +	Focus on Kids N=870	Environmental health intervention N=261	3 months	-	NS rates of sexual intercourse (past 6 months)	NS condom use	-	-
Walter & Vaughan, 1993	RCT +	AIDS-preventive curriculum n= 667	No intervention n= 534	3 months	NS abstinence	↓ involvement in sexual intercourse with high-risk partners* ↑ sexual monogamy*	↑ condom use*	NS STI incidence	-
Wright 1998	NRCT +	Skills for Health Relationships N=2606	Usual curriculum N=1906	PT	NS sexual experience	-	-	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported  
<sup>a</sup> follow-up based on cross-sectional samples

**Table 6.19. Abstinence-plus programmes: medium-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Aarons et al., 2000	RCT +	Postponing Sexual Involvement n=262	No intervention n=260	12-months n=510	↑ contraceptives (males only*) NS reproductive health services	NS intentions to not have sex NS self-efficacy to refuse sex NS attitudes: delayed sex NS attitudes: delayed childbearing	NS parent or boy/girlfriend communication
Borawski et al., 2009	RCT +	BPBR n=631	Usual curriculum n=726	12-months (92%)	↑ STIs*** ↑ condoms*	NS beliefs: condom use prevention; condom use; condom use hedonistic; abstinence NS intentions to have sex or use a condom NS perceived peer beliefs: sex/condom use	↑ condom negotiation skills (male only**) NS impulse control NS condom negotiation skills

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Caron et al., 2004	NRCT +	Protection Express n=369 junior high	Usual curriculum n=329 junior high	9-months (70%)	-	Postponing sexual intercourse: ↑ intentions*** ↑ attitudes*** ↑ role beliefs*** ↑ perceived self-efficacy*** ↑ anticipated regret NS perceived behavioural control NS personal normative beliefs Condom use: ↑ intentions*** ↑ role beliefs*** NS attitudes NS behavioural control NS personal normative beliefs NS perceived self-efficacy NS anticipated regret	-
Caron et al., 2004	NRCT +	Protection Express n=147 senior high	Usual curriculum n=159 senior high	9-months (70%)	-	Postponing sexual intercourse: NS intentions ↑ attitudes*** ↑ behaviour control (direct only)*** ↑ personal normative beliefs** ↑ role beliefs*** ↑ perceived self-efficacy*** Condom use: NS intentions NS attitudes ↑ behaviour control (indirect only)*** NS personal normative beliefs NS anticipated regret NS role beliefs ↑ perceived self-efficacy***	-
Coyle et al., 2004	RCT +	Draw the Line/Respect the Line N=NR	Usual curriculum N=NR	Until end of ninth grade	↑ HIV and condoms (boys only***)	↑ attitudes favouring reasons for not having sex (boys only**) ↓ peer normative beliefs favouring sex (boys only**) ↑ sexual limits (boys only**) ↓ situations that could lead to sexual behaviour (males only***)	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Kirby et al., 1991	NRCT +	Reducing the Risk n= 586	Usual curriculum n= 447	6 months NR	↑ contraceptive knowledge***	↓ belief that peers are having sex**	↑ communication with parents: abstinence** ↑ communication with parents: contraception** NS communication with parents: pregnancy NS communication with parents: STIs
LaChausse, 2006	RCT +	Positive Prevention N=216	Usual curriculum N=137	6 months	NS HIV infection and AIDS	NS Attitudes toward sexual abstinence NS self-efficacy for abstinence ↑ self-efficacy to use condoms***	-
Siegel et al., 2001; Aten et al., 2002	NRCT +	RAPP n=1,404 health educator; 1,020 peer educator; 313 regular health educator	Usual curriculum n= 1264	Mean duration 41.2 weeks	↑ knowledge <sup>a</sup> (middle school only: females***/males**)	↑ sex self-efficacy (females only; middle school*/high school**) ↑ 'preferable' behavioural intentions (middle school only: females*/males**)	-
Stanton et al., 2006	RCT +	Focus on Kids N=870	Environmental health intervention N=261	6 months N=938 (83%);	-	↑ self efficacy to abstain** ↑ response efficacy for abstinence* NS abstinence: response costs; extrinsic/intrinsic rewards; severity; vulnerability NS intentions to be abstinent ↑ self efficacy to use condoms* NS condoms: response efficacy, extrinsic/intrinsic rewards; severity; vulnerability; response costs NS intentions to be use condoms	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Stanton et al., 2006	RCT +	Focus on Kids N=870	Environmental health intervention N=261	9 months N=904 (80%)	-	<b>NS</b> abstinence: self-efficacy, response efficacy, response costs; extrinsic/intrinsic rewards; severity; vulnerability <b>NS</b> intentions to be abstinent <b>NS</b> condoms: self-efficacy, response efficacy, extrinsic/intrinsic rewards; severity; vulnerability; response costs <b>NS</b> intentions to be use condoms	-
Wright 1998	NRCT +	Skills for Health Relationships N=2606	Usual curriculum N=1906	Grade 10	↑ HIV/AIDS***	↑ positive attitudes towards homosexuals and people living with AIDS/HIV*** ↑ intentions to engage in preventive behaviours***	↑ prevention skills**
Zimmerman et al., 2008	RCT +	Reducing the Risk Standard, n=NR Modified, n=NR	Standard curriculum N=NR	End of 10 <sup>th</sup> grade (52%)	<b>NS</b>	<b>NS</b> peer sexual activity, attitudes about waiting to have sex, self-efficacy, response to sexual pressure	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> human reproduction, decision making, communication with others concerning sexual matters, HIV/AIDS and other STIs, high risk behaviours and other sexuality items

**Table 6.20. Abstinence-plus programmes: medium-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Aarons et al., 2000	RCT +	Postponing Sexual Involvement n=262	No intervention n=260	1-year n=510 <sup>a</sup>	↑ virginity (females only)*	-	↑ used contraceptives /condom last time had sex (female only)*	-	-
Borawski et al., 2009	RCT +	BPBR N=631	Usual curriculum N=726	12 months	NS ever had intercourse	NS frequency	NS frequency of unprotected intercourse	-	-
Caron et al., 2004	NRCT +	Protection Express n=369 junior high, n=147 senior high	Usual curriculum n=329 junior high, n=159 senior high	9-months (70%)	NS postponing sex	-	↑ condom use (senior high only**)	-	-
Coyle et al., 2004	RCT +	Draw the Line/Respect the Line N=NR	Usual curriculum N=NR	Until end of ninth grade	↓ Ever had sex (boys only**)	NS Had sex in the last 12 months NS occasions of sexual intercourse NS number of sexual partners	NS condom use	-	-
Eisen et al., 1990; Eisen et al., 1992	RCT +	HBM-SLT curriculum N=722	Community-based programmes N=722	12 months N=888 (62%)	-	-	NS contraceptive use at first intercourse NS use of effective method at most recent intercourse <sup>b</sup> NS contraceptive efficiency <sup>b</sup>	-	NS pregnancy
Kirby et al., 1991	NRCT +	Reducing the Risk n= 586	Usual curriculum n= 447	6 months NR	NS initiated intercourse	NS frequency	NS contraceptive practice NS unprotected intercourse	-	NS pregnancy

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
LaChausse, 2006	RCT +	Positive Prevention N=216	Usual curriculum N=137	6 months N=287 (81%)	↓ ever had sexual intercourse*	NS frequency	NS frequency of condom use	-	-
Siegel et al., 2001; Aten et al., 2002	NRCT +	RAPP n=1,404 health educator; 1,020 peer educator; 313 regular health educator	Usual curriculum n= 1264	Mean duration 41.2 weeks	↓ initiation/ onset sexual experience (middle school females only**)	NS risky sexual behaviour	-	-	-
Stanton et al., 2006	RCT +	Focus on Kids N=870	Environmental health intervention N=261	6 and 9 months	-	NS rates of sexual intercourse (past 6 months)	NS condom use	-	-
Wright 1998	NRCT +	Skills for Health Relationships N=2606	Usual curriculum N=1906	All follow-ups	NS sexual experience	-	-	-	-
Zimmerman et al., 2008	RCT +	Reducing the Risk Standard, n=NR Modified, n=NR	Standard curriculum N=NR	End of 10 <sup>th</sup> grade N=1,424	↓ initiation of sexual activity*	-	NS frequency of condom use NS condom use at last sex	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported  
<sup>a</sup> follow-up based on cross-sectional samples; <sup>b</sup> sexually inexperienced at baseline

Table 6.21. Abstinence-plus programmes: long-term programme effects on knowledge, attitudes and skills

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Coyle et al., 1999; Coyle et al., 2001	RCT +	Safer Choices n=NR	Knowledge-based HIV prevention curriculum n=NR	31 months n=3,058 (71%)	↑ HIV*** ↑ other STIs***	↑ condom positive attitudes** ↓ condom use barriers** ↑ risk perception HIV*/other STIs* ↑ self-efficacy for condom use*** NS attitudes about sex; NS normative beliefs about condoms NS self efficacy: refusing sex NS self efficacy: communication	NS communication with parents
Hubbard et al., 1998	NRCT +	Reducing the Risk N=267	Usual curriculum N=265	18 months n=212 (36%)	-	-	↑ communication with parents: contraception* ↑ communication with parents: protection from HIV/STIs* NS communication with parents: pregnancy NS communication with parents: abstinence
Kirby et al., 1991	NRCT +	Reducing the Risk n= 586	Usual curriculum n= 447	18 months N=758 (73%)	↑ contraceptive knowledge***	NS belief that peers are having sex	↑ communication with parents: abstinence* NS communication with parents: contraception NS communication with parents: pregnancy NS communication with parents: STIs
Wright 1998	NRCT +	Skills for Health Relationships N=2606	Usual curriculum N=1906	Grade 11	↑ HIV/AIDS***	↑ positive attitudes towards homosexuals and people living with AIDS/HIV*** ↑ intentions to engage in preventive behaviours**	↑ prevention skills*

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

**Table 6.22. Abstinence-plus programmes: Long-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Coyle et al., 2001	RCT +	Safer Choices n=NR	Normal education n=NR	31 months n=3,058 (71%)	<b>NS</b>	↓ without a condom (past 3 months)*	↑ condom use at last intercourse* ↑ use of protection at last intercourse*	<b>NS</b> tested for HIV/STI	-
Kirby et al., 1991	NRCT +	Reducing the Risk n= 586	Usual curriculum n= 447	18 months N=758 (73%)	↓ initiated intercourse* (NB: NS on log regressions)	<b>NS</b> frequency	<b>NS</b> contraceptive practice <b>NS</b> unprotected intercourse	-	<b>NS</b> pregnancy
Hubbard et al., 1998	NRCT +	Reducing the Risk N=267	Usual curriculum N=265	18 months n=212 (36%)	↓ initiation of sexual activity*	-	↑ use of contraception by new initiates*	-	-
Wright, 1998	NRCT +	Skills for Health Relationships N=2606	Usual curriculum N=1906	Grade 11 (73%; 79%)	<b>NS</b> sexual experience	-	-	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

## 6.5 HIV and sexual risk-reduction programmes

### 6.5.1 Overview of evidence identified

A total of 11 studies reported on school-based HIV prevention and sexual risk-reduction programmes. Studies were defined by their specific focus on HIV prevention and HIV risk-behaviour, sexual risk-behaviour or a combination of both.

Of the 11 studies, six were conducted in North America (Coyle et al., 2006, Fisher et al., 2002, Lemieux et al., 2008, Mitchell-DiCenso et al., 1997, Roberto et al., 2007, Workman et al., 1996) and the remaining five studies were conducted in European countries, including Italy (Borgia et al., 2005), Spain (Traeen, 2003), Norway (Kvalem et al., 1996), Sweden (Larsson et al., 2006), and the Netherlands (Schaalma et al., 1996). All programmes were delivered in school time however one programme (Roberto et al., 2007) also included six computer-based activities to be completed outside of school time. Two programmes were delivered solely by teachers (Safe sex and pregnancy prevention [Traeen, 2003]; AIDS/STI prevention curriculum [Schaalma et al., 1996]). A further two were delivered in combination with teachers; with one also using peer educators (HIV prevention curriculum [Fisher et al., 2002]) and another also using public health nurses and community professionals (McMasters Teen Programme [Mitchell-DiCenso et al., 1997]). Three programmes solely used peer educators (an AIDS and sexuality education programme [Kvalem et al., 1996]; Students Working Against AIDS Together [SWAAT; Lemieux et al., 2008]; and a programme based on social learning theory [Borgia et al., 2005]). One programme used health educators to deliver the intervention (All4You [Coyle et al., 2006]), one used undergraduate psychology students (CBT HIV prevention [Workman et al., 1996]), one used nurses/midwives and medical students (contraception programme [Larsson et al., 2006]) and one study was delivered using the internet (computer-based education [Roberto et al., 2007]).

The theoretical base was not reported for the contraception programme (Larsson et al., 2006). Five programmes were underpinned by a single theoretical base (SLT programme, HIV prevention education, McMasters Teen Programme, Computer-based education, CBT HIV prevention). However, five others used a combination of theories (All4You, Safe sex and pregnancy prevention, AIDS and sexuality education, SWAAT, AIDS/STI prevention curriculum). Overall social learning theory was the most commonly used theory in HIV/sexual risk-reduction programmes (n=5 programmes). Theory of planned behaviour (n=2 programmes), the information-motivation-behavioural skills (IMB) model (n=2 programmes) and the cognitive behavioural model (n=2 programmes) were also applied more often than others.

**Table 6.23. Sex and relationships education: HIV and sexual risk-reduction programmes**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider
Borgia et al., 2005	RCT +	Italy n=1,697 students, median 18 years (high school)	School	5 sessions over 10 hours the aim was to increase knowledge of HIV, address social influences and group norms, improve decision making, communication and negotiation skills and related self-efficacy, place risks related to specific contexts and behaviour in proper dimension and abolish prejudice and stigma towards persons with AIDS.	Social learning theory	Peer educators
Coyle et al., 2006	RCT ++	USA n=988 students, 14-18 years	School	<b>All4you!</b> : 14 sessions over 26 hours with 9 delivered in classrooms and 5 delivered in visits to volunteer sites. Programme included skills based HIV/STD and pregnancy prevention curriculum; service-learning activities involving visits to volunteer sites.	Social development theory, social cognitive theory, theory of planned behaviour, theory of reasoned action	Health educators
Fisher et al., 2002	NRCT ++	USA n=1,577 students, mean age 14.8 years	School	Combined peer plus curriculum HIV prevention intervention delivered in 5 lessons.	Information-motivation-behavioural skills (IMB) model	Teachers and peer educators
Kvalem et al., 1996	RCT -	Norway n=2,088 high school students, range 16-20 years	School	AIDS and sexuality education programme focussing on STI and pregnancy prevention delivered in 10-14 hours over a two day period.	Cognitive social learning theory, social influence theory	Peer educators
Larsson et al., 2006	NRCT +	Sweden n=461 students, mean age 17.25 years	School	Educational programme aimed to improve knowledge of, attitudes towards and practices relating to condom and emergency hormonal contraceptive use. The multi-component programme included one 20-minute lesson about the emergency contraceptive pill (nurse/midwife); one session of three 40-minute lessons by educators from the Love Emergency (medical students) within one month after the first lesson focused on attitudes and values towards different contraceptive methods, including rehearsal of condom skills; VIP card for free condoms; telephone number to access individual counselling from nurse/midwife.	Not reported	Nurse/midwife and medical students

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider
Lemieux et al., 2008	CBA -	USA n=422 students, mean age 16 years	School	<b>Students Working Against Aids Together:</b> Music-based HIV prevention intervention. Main components were the creation, recording and distribution of HIV prevention themed music and promotional materials; in-class presentations. Programme took place over five months, four months preparation to create a CD and a month of CD distribution.	Information-motivation-behavioural skills model, natural opinion leader model	Peer educators
Mitchell-DiCenso et al., 1997	RCT +	USA n=2,309 students, mean age 12.6 years (intervention group)	School	<b>McMasters Teen Programme:</b> curriculum-based programme aimed at providing skills training. Ten one hour sessions included accurate information about reproductive system and adolescent development; relationship strategies; emotional communication skills; sexual problem solving skills.	Cognitive behavioural model	Teachers, public health nurses, community professionals
Roberto et al., 2007	RCT +	USA n=402 students, 10 <sup>th</sup> grade, mean age 15.5 years	School	Computer-based HIV prevention/sexual health programme based on an extended parallel process model. Delivered over 7 weeks and included six computer-based activities completed outside class time.	Extended parallel process model	Computer-based (via internet)
Schaalma et al., 1996	RCT +	Netherlands n=3,142 students, 9 <sup>th</sup> and 10 <sup>th</sup> grade	School	AIDS/STI prevention curriculum. Key components of the study focused on Knowledge about AIDS, STDs, transmission, prevention, and risk perception; attitudes toward safe sex in general and condom use; values, social influences, and communication skills regarding the prevention of AIDS and STDs; self-efficacy beliefs regarding negotiating skills and practicing condom use.	Social cognitive theory, communication theories, fear arousing communication, risk perception, social comparison, social/psychological inoculation theories	Teachers
Traeen, 2003	RCT +	Norway n=1,183 students, age 16-17 years	School	Safe sex and unwanted pregnancy reduction programme focusing on social skills and life skills plus knowledge based.	Social constructionism, social learning theory and sexual script theory.	Teachers

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider
Workman et al., 1996	RCT -	USA n=60 students, mean age 15 years	School	Cognitive-behavioural HIV/AIDS prevention intervention focusing on sexual risk-reduction delivered over 12 weeks with 30 minutes per week. Key components focused on sexual-social values clarification, sexual-social decision making, reproductive-sexual anatomy and physiology, contraceptives, STDs, AIDS myths and facts, and sexual assertiveness and communication skills.	Cognitive-behavioural theory	Undergraduate psychology students

The overall number of students recruited to participate in the included studies ranged from 60 students to 3,142 students. Overall, five programmes (SLT programme, HIV prevention curriculum, AIDS and sexuality education, McMasters Teen Programme, AIDS/STI prevention curriculum) were based on samples greater than 1,500 students. The use of power calculations or an appropriate sample size to detect a significant effect was discussed in only 3 studies (Borgia et al., 2005, Traeen, 2003, Larsson et al., 2006) with two studies recognising the limitations of their samples (Borgia et al., 2005; Traeen, 2003). A further two studies provided enough information to determine that sample size was appropriate (Fisher et al., 2002, Mitchell-DiCenso et al., 1997). One study had a very small sample which was insufficiently powered (Workman et al., 1996). However, five studies did not provide sufficient information to determine whether the sample size was appropriate. (Coyle et al., 2006; Kvaalem et al., 1996; Lemieux et al., 2008; Roberto et al., 2007; Schaalma et al., 1996).

The included studies focused on different ages and school years. One programme (McMasters Teen Programme) targeted young people 12-14 years with a mean age of 12.6 years. Two studies included a wide age range of students from age 13-14 years to 18-19 years (HIV prevention curriculum, All4you). A further two studies focused on older adolescents ranging between 16-20 years (AIDS and sexuality education, contraception programme) and two other studies focused on one age group/grade (aged 18 years; SLT programme, 15-16 years; Computer-based education).

Follow up times varied amongst programme evaluations. Two studies (Roberto et al., 2007; Workman et al., 1996) reported immediate post-test results only and three (Borgia et al., 2005; Lemieux et al., 2008; Schaalma et al., 1996) reported a short follow-up time of 5 months or less. Three studies (Fisher et al., 2002; Kvaalem et al., 1996; Larsson et al., 2006) reported maximum follow-up times of 12 months and three studies (Coyle et al., 2006; Mitchell-DiCenso et al., 1997; Traeen, 2003) reported follow-up times greater than 12 months at 18 months (Coyle et al., 2006; Traeen, 2003) and 4 years (Mitchell-DiCenso et al., 1997).

### **6.5.2 Quality Assessment**

Of the 11 included studies, eight were RCTs, two were NRCT and one was based on a CBA study design. Of the eight RCTs, seven (Borgia et al., 2005; Coyle et al., 2006; Kvaalem et al., 1996; Mitchell-DiCenso et al., 1997; Roberto et al., 2007, Schaalma et al., 1996, Traeen, 2003) were based on cluster randomisation and one study used individual student randomisation (Workman et al., 1996). Cluster randomisation was conducted at school level in six studies (Borgia et al., 2005; Coyle et al., 2006; Mitchell-DiCenso et al., 1997; Roberto et al., 2007; Schaalma et al., 1996; Traeen, 2003) and at classroom level in one study (Kvaalem et al., 1996). The unit of analysis in three of the RCTs (Borgia et al., 2005; Kvaalem et al., 1996; Traeen, 2003) did not match the unit of allocation nor was any adjustment reported in the studies. The majority of studies were rated as moderate quality (+ rating). One RCT (Coyle et al., 2006) was rated good quality (++ rating) presenting a high quality matched study design and providing thorough details of the methodology and results. Only one study reported intention to treat analysis (Fisher et al., 2002) and this NRCT was rated good quality. However, three studies were rated as poor quality (- rating). Methodological data were limited in some studies and results were not always reported fully. Outcome measures were reported to be reliable in seven RCTs

(Borgia et al., 2005; Coyle et al., 2006; Mitchell-DiCenso et al., 1997; Roberto et al., 2007; Schaalma et al., 1996; Traeen, 2003; Workman et al., 1996), in one NRCT (Fisher et al., 2002), and in one CBA study (Lemieux et al., 2008). Relevant outcomes were reported across all included studies.

### **6.5.3 Findings**

#### **6.5.3.1 Short-term results (<6 months)**

Six studies (Borgia et al., 2005; Fisher et al., 2002; Lemieux et al., 2008; Roberto et al., 2007; Schaalma et al., 1996; Workman et al., 1996) reported short-term outcomes on six programmes: a social learning theory-based (SLT) programme, an HIV prevention curriculum, SWAAT, a computer-based education programme, AIDS/STI prevention curriculum, a cognitive behavioural therapy-based (CBT) HIV prevention intervention.

#### **Knowledge and understanding**

Five studies (Borgia et al., 2005; Fisher et al., 2002; Roberto et al., 2007; Schaalma et al., 1996; Workman et al., 1996) reported short-term results related to sexual health and HIV knowledge and understanding. All five programmes reported significant improvements in knowledge relating to, for example, pregnancy, AIDS and prevention behaviours. One exception was in the peer educator delivery intervention (Fisher et al., 2002) which showed non-significant results compared to the teacher and combined methods of delivery.

#### **Attitudes and values**

Five studies (Borgia et al., 2005; Fisher et al., 2002; Lemieux et al., 2008; Roberto et al., 2007; Schaalma et al., 1996) reported short-term results of their programme on participants' attitudes and values.

Behavioural intention data (e.g. condom use) were reported by four studies (Fisher et al., 2002; Lemieux et al., 2008; Schaalma et al., 1996). Only one study (Schaalma et al., 1996) showed an increase in condom use intentions and students receiving the combined programme within the HIV prevention curriculum (Fisher et al., 2002) reported intentions to engage in HIV prevention behaviour that were significantly higher than the control group ( $p < 0.05$ ).

Five studies (Borgia et al., 2005; Fisher et al., 2002; Lemieux et al., 2008; Roberto et al., 2007; Schaalma et al., 1996) reported on attitudes and values relating to sexual behaviour. No significant short-term effects for attitudes towards condom use or social normative views of condom use were seen in those receiving SWAAT intervention (Lemieux et al., 2008). Intervention students receiving the SLT HIV prevention programme (Borgia et al., 2005) showed increases in attitudes and risk perceptions. Schaalma et al (1996) reported that students receiving an AIDS/STI prevention curriculum demonstrated significant increases in positive attitude and self-efficacy beliefs in addition to increased perceptions of subjective norms, peer behaviour, and risk appraisal. Roberto et al (2007) reported non-significant results relating to condom self-efficacy and refusal self-efficacy. Intervention students also expressed increased attitudes towards waiting to have sex and expressed significantly increased levels of situational self-efficacy. However, the intervention group also demonstrated

reduced perception of their own susceptibility to HIV/STIs. Fisher et al (2002) reported short-term results from a computer-based education programme on HIV prevention attitudes and norms stratified by intervention group (classroom, combined, peer) and sexual experience at baseline. Findings showed mixed effects on different groups.

### **Personal and social skills**

Five studies (Borgia et al., 2005; Fisher et al., 2002; Roberto et al., 2007; Workman et al., 1996) explored short-term intervention effects on personal and social skills related to sexual behaviour and relationships. Two HIV focused studies (Borgia et al., 2005; Lemieux et al., 2008) reported significant increases in prevention skills<sup>9</sup>. A HIV prevention curriculum (Fisher et al., 2002) found significant increased in behavioural skills<sup>10</sup> in both their sexually inexperienced ( $p < 0.01$ ) and sexually experienced ( $p < 0.05$ ) intervention students exposed to a combined classroom and peer-based programme. However the intervention groups using either classroom only or peer only interventions showed no significant differences to the control group. Intervention students in one computer-based HIV and sexual health education programme (Roberto et al., 2007) reported significantly higher levels of condom negotiation skills compared to the control group ( $p < 0.05$ ). Workman and colleagues (1996) found no impact of their cognitive behavioural therapy-based HIV prevention intervention on their intervention students when examining: sexual decision-making, sexual assertiveness, level of comfort discussing AIDS preventative behaviour skills.

### **Health and social outcomes relating to alcohol use and sexual health**

Five studies (Borgia et al., 2005; Fisher et al., 2002; Lemieux et al., 2008; Roberto et al., 2007; Schaalma et al., 1996) reported short-term health and social outcomes related to sexual health and alcohol use behaviours. Of these, two studies (Borgia et al., 2005; Schaalma et al., 1996) reported no significant effects on health outcomes in the following programmes: social learning theory-based HIV programme; AIDS/STI prevention curriculum. Roberto et al (2007) reported that students in the experimental group were significantly less likely to initiate sexual activity between pre-test and post-test compared to the control group ( $p < 0.01$ ). No studies examined short-term programme effects on conceptions.

Three studies examined the programme effects on frequency and/or number of sexual partners (Borgia et al., 2005; Roberto et al., 2007; Schaalma et al., 1996). All three studies reported no programme effects. Short-term effects on contraceptive use were reported by five studies (Borgia et al., 2005; Fisher et al., 2002; Lemieux et al., 2008; Roberto et al., 2007; Schaalma et al., 1996). Two studies (Borgia et al., 2005; Schaalma et al., 1996) found no intervention effects on frequency or consistent use of condoms in the past two or three months in students receiving either a social learning theory-based HIV programme or an AIDS/STI prevention programme. One study (Roberto et al., 2007) found no effects on condom use at last sexual intercourse in those students receiving a

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<sup>9</sup> Communication and negotiation skills; Borgia et al., 2007. Self-efficacy to perform prevention behaviours; Lemieux et al., 2008.

<sup>10</sup> Abstinence and condom acquisition and use.

computer-based HIV education programme. Intervention students receiving the SWAAT curriculum (Lemieux et al., 2008) reported significant improvements in condom use behaviours in the preceding three months ( $p < 0.05$ ). Compared to the control students receiving their usual curriculum, sexually active students receiving the combined classroom/peer HIV intervention and those receiving the peer only HIV intervention reported significant increases in condom use in the past three months ( $p < 0.05$ ) (Fisher et al., 2002). Lemieux and colleagues (2008) also found short-term programme effects relating to uptake of testing for sexually transmitted infections in the experimental group receiving the SWAAT intervention.

### **6.5.3.2 Medium-term results (up to 12 months)**

Seven studies (Coyle et al., 2006; Fisher et al., 2002; Kvaalem et al., 1996; Larsson et al., 2006; Mitchell-DiCenso et al., 1997; Traeen, 2003; Workman et al., 1996) examined medium-term effects from seven programmes: All4you!, an HIV prevention curriculum, an AIDS/STI prevention programme, a contraception programme, McMaster's Teen Programme, a safe sex and pregnancy prevention programme, and a CBT HIV prevention programme.

#### **Knowledge and understanding**

Two studies (Coyle et al., 2006; Larsson et al., 2006) reported the medium-term impact of their programme on knowledge and understanding. Coyle and colleagues (2006) reported two medium-term follow up periods, one at 6 months and one at 12 months. At the six month follow-up a significant increase in HIV and condom knowledge ( $p < 0.05$ ) was found in the intervention group compared to the control group. However, this was not significant at 12 month follow-up. Non-significant results were also reported for general condom knowledge at both 6 and 12 month follow-up. Knowledge of emergency hormonal contraception (EHC) was examined at a 12 month follow-up of students receiving a contraception education programme. Students in the intervention group showed significant increases ( $p < 0.01$ ) in knowledge of EHC use at 72 hours after unprotected sex. However, no significant improvements were found in knowledge of EHC use on the first day after intercourse or of the side effects relating to EHC.

#### **Attitudes and values**

Two studies (Coyle et al., 2006; Larsson et al., 2006) examined medium-term programme effects on attitudes and values. Coyle and colleagues (2006) reported that students participating in the All4You! programme showed no significant difference in behavioural intentions relating to condom use at both 6 and 12 months compared to the control group. Furthermore, attitudes and beliefs regarding condom use for pregnancy prevention and for sexual intercourse generally were significantly higher in the control group receiving their usual curriculum than in the intervention group. Although, there was no significant difference at the 12 month follow-up for these beliefs, the control group did show a significantly higher ( $p < 0.05$ ) increase in condom self-efficacy to get and use condoms compared to the intervention group at 12 month follow-up. A number of non-significant effects on attitudes and beliefs were reported at both 6 and 12 month follow-up as follows: attitudes towards condoms generally; condoms for STI prevention; perceptions of number of sexually active peers and peers

using condoms; perceptions of peer beliefs regarding condom use; optimism; fatalism; community orientation; connectedness to caring adult outside family circle; and self-efficacy to abstain. Larsson and colleagues (2006) found that attitudes and values of participants in a contraception programme remained relatively unchanged when observed at 12 month follow-up with the exception of a significant decrease in the view that EHC is a kind of abortion ( $p < 0.05$ ) and an increase in condom self-efficacy to buy condoms ( $p < 0.05$ ). Non-significant changes in contraceptive attitudes and values were observed in the following cases: attitude towards using EHC; feeling embarrassed to buy condoms; view that condoms are a man's responsibility; that contraceptives will be influenced by EHC; that an EHC increase would increase the risk of unprotected sex; could imagine discussing condoms; could imagine using condoms if they had a new partner; would recommend EHC to a friend.

### **Personal and social skills**

No studies reported medium-term programme effects on personal and social skills.

### **Health and social outcomes relating to alcohol use and sexual health**

Seven studies (Coyle et al., 2006; Fisher et al., 2002; Kvaalem et al., 1996; Larsson et al., 2006; Mitchell-DiCenso et al., 1997; Traeen, 2003; Workman et al., 1996) examined medium-term effects from seven programmes. Three studies (Coyle et al., 2006; Kvaalem et al., 1996; Mitchell-DiCenso et al., 1997) found no significant medium-term programme effects on initiation of sexual intercourse at either 6 (Coyle et al., 2006) or 12 month follow-up for the following programmes: All4you!; AIDS/STI education; McMaster's Teen Programme. Participants in the All4you! (Coyle et al., 2006) programme showed a significantly lower frequency of sexual intercourse in the intervention group compared to the control group receiving their usual curriculum. However, this was no longer significant at 12 month follow-up. There was no significant difference seen for number of unprotected partners (steady and non-steady) in the past three month or number of previous partners. Workman and colleagues (1996) also reported no significant effects on HIV prevention behaviours in students receiving the CBT HIV prevention programme.

Medium-term programme effects on contraception were reported in five studies (Coyle et al., 2006; Fisher et al., 2002; Kvaalem et al., 1996; Larsson et al., 2006; Traeen, 2003). One study (Kvaalem et al., 1996) reported no significant effects on condom use. Students participating in the All4you! programme (Coyle et al., 2006) showed significant decreases in unprotected sex (overall ( $p < 0.01$ ) and with non-steady partners ( $p < 0.05$ )) in the past 3 months and in condom use at last sexual intercourse ( $p < 0.01$ ). However, no effects were seen at 12 month follow-up for these aspects or for frequency of unprotected sex with steady partners or effective pregnancy prevention behaviour at last sexual intercourse. At six months follow-up Kvaalem et al (1996) found significantly increased levels of condom use in the intervention group compared to the control ( $p < 0.001$ ). However, these were not sustained at 12 month follow-up. Students participating in the contraception programme showed increased condom use at 12 months follow-up ( $p < 0.05$ ) and showed no significant differences in lifetime use of EHC compared to the control group. Fisher and colleagues (2002) reported mixed results from their intervention groups with significant increases in condom use seen in the classroom intervention group ( $p < 0.01$ ) and no significant differences seen in the peer and combined

peer/classroom intervention groups compared to the control. Students exposed to the safe sex and pregnancy prevention intervention (Traeen, 2003) who were sexually inexperienced at baseline showed significant increases in use of condoms ( $p<0.05$ ) and oral/hormonal contraceptives ( $p<0.05$ ) at first sex. However, no significant differences were seen in other methods of contraception at first sex or in the use of condoms or oral/hormonal contraception at most recent sex. Increases were seen in interrupted intercourse at both first sex and most recent sex ( $p<0.05$ ) compared to controls.

One study (Coyle et al., 2006) examined the medium-term programme effects on health outcomes relating to sexually transmitted infection and alcohol and drug use. Findings in both the six month follow-up and the 12 month follow-up showed no significant programme effects on the number of HIV or STI tests taken or the use of drugs/alcohol prior to sexual intercourse in the past three months. Two studies also (Coyle et al., 2006; Mitchell-DiCenso et al 1997) reported no significant programme effects on pregnancy rates compared to control groups.

### **6.5.3.3 Long-term results (>12 months)**

Three studies (Coyle et al., 2006; Mitchell-DiCenso et al 1997; Traeen, 2003) examined long-term programme effects for three interventions: All4you!, McMaster's Teen Programme, and a safe sex and pregnancy prevention programme.

#### **Knowledge and understanding**

Programme effects on knowledge and understanding were examined by one study (Coyle et al., 2006). Students participating in the intervention showed significant increases in HIV and condom knowledge ( $p<0.05$ ) as well as general condom knowledge ( $p<0.05$ ) compared to the control group receiving the usual curriculum.

#### **Personal and social skills**

One study (Coyle et al., 2006) reported on behavioural intention and attitudes and values relating to condom use and peers and self-efficacy at 18 months follow-up. However, no significant effects were shown in the intervention group at this time.

#### **Health and social outcomes relating to alcohol use and sexual health**

Three studies (Coyle et al., 2006; Mitchell-DiCenso et al 1997; Traeen, 2003) examined long-term health outcomes relating to sexual health and alcohol. Two studies (Coyle et al., 2006; Mitchell-DiCenso et al 1997) reported programme effects on initiation at first intercourse and similar to the medium-term results no significant effects were found. One study (Coyle et al., 2006) reported on frequency and number of sexual partners at 18 months follow-up and similar to medium-term effects there were no significant positive effects on number of unprotected partners or past number of sexual partners. In addition, there was a significant negative effect on number of unprotected non-steady sexual partners ( $p<0.05$ ) in the intervention group compared to the control. Three studies (Coyle et al., 2006; Mitchell-DiCenso et al 1997; Traeen, 2003) reported long-term effects on contraception use

#### **6.5.4 Summary and evidence statements**

Overall, 11 studies (Borgia et al., 2005; Coyle et al., 2006; Fisher et al., 2002; Kvaalem et al., 1996; Larsson et al., 2006; Lemieux et al., 2008; Mitchell-DiCenso et al., 1997; Roberto et al., 2007; Schaalma et al., 1996; Traeen, 2003; Workman et al., 1996) were identified that examined HIV and sexual risk-reduction programmes.

##### **6.5.4.1 Knowledge and understanding**

Knowledge outcomes were reported by seven studies (Borgia et al., 2005; Coyle et al., 2006; Fisher et al., 2002; Larsson et al., 2006; Roberto et al., 2007; Schaalma et al., 1996; Workman et al., 1996). General HIV or sexual health knowledge was reported most frequently. However, only two studies (Coyle et al., 2006; Larsson et al., 2006) explored medium- or long-term knowledge outcomes and they focused on knowledge of HIV and condom use or the emergency hormonal contraceptive (EHC) pill. Medium-term effects were inconsistent with evidence of increased knowledge of EHC use on the third day after unprotected sex. No effect on HIV and condom knowledge was seen at 12 months follow-up, yet there was a positive effect at 18 months. Both studies included older adolescents in their sample (Coyle et al., 2006: 14-18 years; Larsson et al., 2006: mean 17.25 years).

##### **6.5.4.2 Attitudes and values**

Outcomes relating to attitudes were reported by seven studies (Borgia et al., 2005; Coyle et al., 2006; Fisher et al., 2002; Lemieux et al., 2008; Larsson et al., 2006; Roberto et al., 2007; Schaalma et al., 1996). A wide variety of outcomes were reported across studies and often specific outcomes were only reported within one study, thus preventing comparison. Condom self-efficacy, perception of social norms and condom use/prevention intentions were the outcomes most commonly reported across studies. Lemieux et al (2008) and Roberto et al (2007) reported no programme effects on condom self-efficacy. Whereas Coyle et al (2006) reported no programme effects for condom self-efficacy at six and 18 months follow-up and a reduction at 12 months follow-up. Perceptions of social norms increased in both the classroom (sexually experienced at baseline) and combined groups (sexually inexperienced at baseline) receiving a HIV prevention curriculum but not in the other groups. Lemieux et al (2008) reported no programme effects on views relating to social normative support. Schaalma et al (1996) found an increase in positive perceptions of subjective norms at 4-8 weeks follow-up. A significant improvement in condom use/prevention intentions was seen in Schaalma et al (1996). However, four studies (Fisher et al., 2002; Lemieux et al., 2008; Coyle et al., 2006; Larsson et al., 2006) reported primarily no effect on condom use or prevention intentions.

##### **6.5.4.3 Personal and social skills**

Short-term programme effects on personal and social skills were reported by five studies (Borgia et al., 2005; Fisher et al., 2002; Lemieux et al., 2008; Roberto et al., 2007; Workman et al., 1996). Findings were predominantly positive and indicated programme effects overall on prevention or behavioural skills in two studies (Borgia et al., 2005; Lemieux et al., 2008). Participants receiving the combined programme in the HIV prevention curriculum showed an increase in behavioural skills. Participants in

the computer-based educational programme reported an increase in condom negotiation skills. Only one study (Workman et al., 1996) reported no effects on any personal or social skills.

#### **6.5.4.4 Health and social outcomes relating to alcohol use and sexual health**

Eleven studies reported health outcomes from HIV and sexual risk-reduction programmes. Impact on sexual initiation was explored in four studies (Roberto et al., 2007; Coyle et al., 2006; Kvaem et al., 1996; Mitchell-DiCenso et al., 1997) and only short or medium-term outcomes were reported. One study (Roberto et al., 2007) reported positive results on age at sexual initiation. All other studies showed no programme effects. Furthermore, three studies (Borgia et al., 2005; Roberto et al., 2007; Schaalma et al., 1996) reported no impact on the rate of sexual activity and four studies (Borgia et al., 2005; Coyle et al., 2006; Roberto et al., 2007; Schaalma et al., 1996) showed no effect on the number of sexual partners participants reported. One study (Borgia et al., 2005) split analysis by whether participants were sexually active at baseline or not, whereas it was not clear if this was the case in others. Five studies (Fisher et al., 2002; Lemieux et al., 2008; Coyle et al., 2006; Kvaem et al., 1996; Larsson et al., 2006) showed positive short-term programme effects on condom use and one study (Traeen, 2003) showed programme effects on protected intercourse. The long-term programme effects were limited and one study (Borgia et al., 2005) showed no short-term programme effects on condom use. However, the mean age of the study population was 18 years which may have had an influence on the results if relationship status was not accounted for in an older adolescent population. One study (Mitchell-DiCenso et al., 1997) targeting a younger cohort reported only long-term effects on condom use, with positive increase in condom use among males at 2 years follow-up. Limited outcomes were presented on HIV/STI testing, alcohol or drug use and pregnancy. One study (Lemieux et al., 2008) reported a significant increase in HIV testing, however all other outcomes showed no difference compared to the control groups.

#### **Evidence statement 12**

- 12 (g) There is moderate evidence from five RCTs, two NRCTs and one CBA study<sup>1</sup> to suggest that HIV and sexual risk-reduction programmes can improve sexual health and HIV knowledge in the short-, medium-and long-term. This evidence may be only partially applicable to the UK as five of the studies were conducted in the USA, one in Italy and one in the Netherlands and may not be generalisable beyond the populations studied.
- 12 (h) There is mixed evidence from four RCTs and one NRCT<sup>2</sup> that examined the effects of HIV and sexual risk-reduction programmes on young people's (14 years) attitudes and values towards sexual health and alcohol. This evidence may be only partially applicable to the UK as studies were carried out in the USA, Italy and the Netherlands and may not be generalisable beyond the populations studied.
- 12 (i) There is moderate evidence from two RCTs, one NRCT and one CBA study<sup>3</sup> to suggest that HIV and sexual risk-reduction programmes may improve personal and social skills including behavioural prevention skills and condom negotiation skills in the short-term. There was no evidence to determine the effects of HIV and sexual risk-reduction on personal and social skills in the medium- to long-term. This evidence may be only partially applicable to the UK as

studies were carried out in the USA and Italy and may not be generalisable beyond the populations studied.

- 12 (j) There is moderate evidence from seven RCTs<sup>4</sup> to suggest that HIV and sexual risk-reduction programmes may have no effects on sexual initiation, frequency of sexual activity or number of sexual partners. This evidence may be only partially applicable to the UK as studies were carried out in the USA, Norway, Italy and Netherlands and may not be generalisable beyond the populations studied.
- 12 (k) There is strong evidence from three RCTs, two NRCTs and one CBA study<sup>6</sup> to suggest that HIV and sexual risk-reduction programmes can increase condom use or protected intercourse in the short- to medium-term. However, there was moderate evidence from two RCTs<sup>7</sup> to suggest that the long-term effects of HIV and sexual risk-reduction programmes on contraceptive use may be limited. This evidence may be only partially applicable to the UK as studies were carried out in the USA, Norway, and Sweden and may not be generalisable beyond the populations studied.
- 12 (l) There is moderate evidence from two RCTs<sup>8</sup> to suggest that HIV and sexual risk-reduction programmes have no medium- to long-term effect on sexually transmitted infections, alcohol and drug use or on conceptions. As both studies were implemented in the USA findings may be only partially applicable to the UK and may not be generalisable beyond the populations studied.

<sup>1</sup> Borgia et al., 2005 (RCT +); Coyle et al., 2006 (RCT ++); Fisher et al., 2002 (NRCT ++); Larsson et al., 2006 (NRCT +); Lemieux et al., 2008 (CBA -); Roberto et al., 2007 (RCT +); Schaalma et al., 1996 (RCT +); Workman et al., 1996 (RCT -)

<sup>2</sup> Borgia et al., 2005 (RCT +); Coyle et al., 2006 (RCT ++); Fisher et al., 2002 (NRCT ++); Roberto et al., 2007 (RCT +); Schaalma et al., 1996 (RCT +)

<sup>3</sup> Borgia et al., 2005 (RCT +); Fisher et al., 2002 (NRCT ++); Lemieux et al., 2008 (CBA -); Roberto et al., 2007 (RCT +)

<sup>4</sup> Borgia et al., 2005 (RCT +); Coyle et al., 2006 (RCT ++); Kvaem et al., 1996 (RCT -); Mitchell-DiCenso et al., 1997 (RCT +); Roberto et al., 2007 (RCT +); Schaalma et al., 1996 (RCT +); Workman et al., 1996 (RCT -)

<sup>5</sup> Coyle et al., 2006 (RCT ++); Kvaem et al., 1996 (RCT -); Mitchell-DiCenso et al., 1997 (RCT +)

<sup>6</sup> Borgia et al., 2005 (RCT +); Coyle et al., 2006 (RCT ++); Roberto et al., 2007 (RCT +); Schaalma et al., 1996 (RCT +)

<sup>7</sup> Coyle et al., 2006 (RCT ++); Fisher et al., 2002 (NRCT ++); Lemieux et al., 2008 (CBA -); Kvaem et al., 1996 (RCT -); Larsson et al., 2006 (NRCT +); Traeen, 2003 (RCT +)

<sup>8</sup> Coyle et al., 2006 (RCT ++); Traeen, 2003 (RCT +)

<sup>9</sup> Coyle et al., 2006 (RCT ++); Mitchell-DiCenso et al., 1997 (RCT +)

**Table 6.24. HIV and sexual risk-reduction programmes: short-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Personal/social skills
Borgia et al., 2005 <sup>3</sup>	RCT +	Peer-led n=613	Teacher-led n=682	5 months	↑Knowledge	↑ Attitudes, risk-perception	↑Prevention skills
Fisher et al., 2002	NRCT ++	HIV prevention curriculum Classroom, n=310 Peer, n=381 Combined, n=296	Usual curriculum n=589	3 months	<i>Sexually inexperienced:</i> ↑ HIV prevention information (classroom <sup>***</sup> , combined <sup>***</sup> only) <i>Sexually experienced:</i> ↑ HIV prevention information (classroom <sup>***</sup> , combined <sup>***</sup> , peer <sup>**</sup> )	<i>Sexually inexperienced:</i> ↑ attitudes (classroom <sup>**</sup> , combined <sup>**</sup> only) ↑ norms (combined only*) ↑ intentions (combined only*) <i>Sexually experienced:</i> ↑ attitudes (peer <sup>**</sup> , combined <sup>**</sup> only) ↑ norms (classroom only*) <b>NS</b> intentions	<i>Sexually inexperienced:</i> ↑ behavioural skills (combined only <sup>**</sup> ) <i>Sexually experienced:</i> ↑ behavioural skills (combined only*)
Lemieux et al., 2008	CBA -	SWAAT n=NR	No intervention n=NR	3 months	-	<b>NS</b> condom use <sup>a</sup> <b>NS</b> social normative support for condom use <sup>a</sup> <b>NS</b> intention to use condoms	↑HIV prevention behavioural skills*
Roberto et al., 2007	RCT +	Computer-based education n=181	No intervention n=221	PT	↑ knowledge <sup>***</sup>	↑attitude towards waiting* <b>NS</b> condom self-efficacy, refusal self-efficacy ↑ situational self-efficacy* ↓susceptibility <sup>**</sup>	↑condom negotiation*
Schaalma et al., 1996	RCT +	AIDS/STI prevention curriculum n=NR	Usual curriculum n=NR	4-8 weeks	↑knowledge <sup>***</sup>	↑ risk appraisal <sup>**</sup> ↑positive attitudes <sup>***</sup> ↑ positive perceptions of subjective norms <sup>**</sup> ↑ positive perceptions of peer behaviour* ↑ self-efficacy beliefs* ↑ condom use intentions <sup>**</sup>	-
Workman et al., 1996	RCT -	CBT HIV prevention n=30	Womanhood development n=30	PT (1 week)	↑ HIV knowledge <sup>**</sup>	-	<b>NS</b> sexual decision-making <b>NS</b> sexual assertiveness <b>NS</b> level of comfort discussing AIDS preventative behaviour

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

<sup>a</sup> Authors claimed the programme provided protective measures as significant decreases were seen in controls

**Table 6.25. HIV and sexual risk-reduction programmes: short-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Borgia et al., 2005 <sup>3</sup>	RCT +	Peer-led n=613	Teacher-led n=682	5 months	-	<b>NS</b> number of partners, past 3 months <sup>a</sup>	<b>NS</b> frequency of condom use, past 3 months	-	-
Fisher et al., 2002	NRCT ++	HIV prevention curriculum, classroom n=310 Peer n=381 Combined n=296	Usual curriculum n=589	3 months	-	-	↑ condom use, past 3 months <sup>a</sup> (combined*, peer* only)	-	-
Lemieux et al., 2008	CBA -	SWAAT n=NR	No intervention n=NR	3 months	-	-	↑Condom use, past 3 months*	↑ HIV testing**	-
Roberto et al., 2007	RCT +	Computer-based education n=181	No intervention n=221	PT	↓ initiation of sexual activity**	<b>NS</b> number of partners	<b>NS</b> condoms use at last intercourse	-	-
Schaalma et al., 1996	RCT +	AIDS/STI prevention curriculum n=NR	Usual curriculum n=NR	4-8 weeks	-	<b>NS</b> sexual risk index <sup>b</sup>	-	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup>sexually experienced at baseline; <sup>b</sup>score ranging from 0 (no sexual intercourse) to 3 (inconsistently using condoms with two or more sex partners)

**Table 6.26. HIV and sexual risk-reduction programmes: medium-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Personal/social Skills
Coyle et al., 2006	RCT ++	All4you! n=597	Usual curriculum n=391	6 months (73%)	↑ HIV & condoms* NS condoms	NS condoms generally NS condoms for STI protection ↓ condoms for pregnancy protection* ↓ condoms for intercourse* NS normative beliefs NS condom use intentions NS condom self-efficacy NS self-efficacy to abstain	-
				12 months (62%)	NS HIV & condoms NS condoms	NS attitudes and beliefs regarding condoms NS normative beliefs NS condom use intentions ↓ condom self-efficacy* NS self-efficacy to abstain	-
Larsson et al., 2006	NRCT +	Contraception programme n=282	No intervention n=179	12 months n=367 (94%)	↑EHC on 3 <sup>rd</sup> day** NS EHC on 1 <sup>st</sup> day NS EHC side effects	↓ EHC is a kind of abortion* ↑could imagine buying condoms* NS other attitudes towards EHC and condoms	-
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported EHC emergency hormonal contraception							

**Table 6.27. HIV and sexual risk-reduction programmes: medium-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Coyle et al., 2006	RCT ++	All4you! n=597	Usual curriculum n=391	6 months (73%)	NS sexual initiation	NS Number of unprotected partners <sup>a</sup> ↓ frequency of sexual intercourse <sup>a*</sup> NS number of unprotected steady/non-steady partners <sup>a</sup> NS number of previous sexual partners	↓ frequency of unprotected intercourse <sup>a</sup> ↓ frequency of unprotected intercourse <sup>a</sup> (steady partner only*) ↑ condom use <sup>b</sup> NS effective pregnancy prevention <sup>b</sup>	NS number of HIV tests NS number of tests for STIs	NS pregnancy since baseline

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Coyle et al., 2006	RCT ++	All4you! n=597	Usual curriculum n=391	12 months (62%)	NS sexual initiation	NS Number of unprotected partners <sup>a</sup> NS Frequency of intercourse <sup>a</sup> NS number of unprotected steady/non-steady partners <sup>a</sup> NS number of sexual partners previous	NS Frequency of unprotected intercourse <sup>a</sup> NS Frequency of unprotected intercourse <sup>a</sup> (steady partner, non-steady partner) NS condom use <sup>b</sup> NS effective pregnancy prevention <sup>b</sup>	NS number of HIV tests NS number of tests for STIs	NS pregnancy since baseline
Fisher et al., 2002	NRCT ++	HIV prevention Classroom, n=310 Peer, n=381 Combined, n=296	Usual curriculum n=589	12 months	-	-	↑ condom use, past year (classroom only <sup>c**</sup> )	-	-
Kvalem et al., 1996	RCT -	AIDS and sexuality education n=284	No intervention n=801	6 months (76%)	-	-	↑ condom use***	-	-
				12 months (69%)	NS initiation of first intercourse	-	NS condom use	-	-
Larsson et al., 2006	NRCT +	Contraception programme n=282	No intervention n=179	12 months	-	-	↑ condom use* NS used EHC, ever	-	-
Mitchell-DiCenso et al., 1997	RCT +	McMasters Teen Programme n=2,309	Usual curriculum n=1,666	12 months	NS initiation of first intercourse	-	-	-	NS first pregnancy

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Traeen, 2003	RCT +	Safe sex and pregnancy prevention n=416	No intervention n=197	6-7 months (69%)	-	-	At first intercourse <sup>c</sup> : <b>NS</b> some contraception at first sex, no contraception, condoms before orgasm, emergency contraception <sup>b</sup> ↑ interrupted at first sex, condoms, hormonal/oral contraception At most recent sex <sup>c</sup> : <b>NS</b> some contraception, no contraception, condoms before orgasm, condoms, hormonal/oral contraception, emergency contraception. ↑ interrupted	-	-
Workman et al., 1996	RCT -	CBT HIV prevention n=30	Womanhood development n=30	PT (1 week)	-	<b>NS</b> AIDS preventative behaviours	-	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> in past 3 months; <sup>b</sup> at last intercourse; <sup>c</sup> sexually experienced at baseline

**Table 6.28. HIV and sexual risk-reduction programmes: long-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Coyle et al., 2006	RCT ++	All4you! n=597	Usual curriculum n=391	18 months	↑ HIV & condoms* ↑ condoms*	<b>NS</b> attitudes and beliefs regarding condoms <b>NS</b> normative beliefs <b>NS</b> condom use intentions <b>NS</b> condom self-efficacy <b>NS</b> self-efficacy to abstain	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 6.29. HIV and sexual risk-reduction programmes: long-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Coyle et al., 2006	RCT ++	All4you! n=597	Usual curriculum n=391	18 months	<b>NS</b> sexual initiation among those inexperienced at baseline	<b>NS</b> Number of unprotected partners <sup>a</sup> <b>NS</b> Frequency of intercourse <sup>a</sup> <b>NS</b> Number unprotected steady partners <sup>a</sup> ↑ Number unprotected non-steady partners <sup>a*</sup> <b>NS</b> number of previous sexual partners	<b>NS</b> Frequency of unprotected intercourse <sup>a</sup> <b>NS</b> Frequency of unprotected intercourse <sup>a</sup> (steady partner/non-steady) <b>NS</b> condom use <sup>b</sup> <b>NS</b> effective pregnancy prevention <sup>b</sup>	<b>NS</b> number of HIV tests <b>NS</b> number of tests for STIs	<b>NS</b> pregnancy since baseline
Traeen, 2003	RCT +	Safe sex and pregnancy prevention n=416	No intervention n=197	1-2 years (56%)	-	-	<b>NS</b> contraceptive use at first sex <sup>c</sup>	-	-
Mitchell-DiCenso et al., 1997	RCT +	McMasters Teen Programme n=2,309	Usual curriculum n=1,666	2-4 years	<b>NS</b> initiation of first intercourse	-	↑ always condom use in males, 2 years	-	<b>NS</b> first pregnancy

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> past 3 months; <sup>b</sup> last intercourse; <sup>c</sup> sexually inexperienced at baseline, <sup>c</sup> sexually experienced at baseline.

## 6.6 Other school-based approaches

### 6.6.1 Overview of evidence identified

A total of included seven studies were identified that reported on six different programme approaches relating to sexual health. Two studies examined school-based clinic programmes (Stout et al., 1996; Teitler, 1997), two studies (Somers et al., 2001; 2006) reported findings from one programme using baby simulators (Baby Think it Over), and three studies (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004) examined the effects of combined community and school-based programmes. School-based clinic studies were included where the evaluation examined a health clinic located directly within the school grounds. Stout et al (1996) examined school-based clinic programmes at three pairs of schools (sites A, B and C), which had a centre that had been operating for five school months at the time of the baseline survey. All three centres had varying operating budgets, staffing levels and qualifications, and constraints on their practice, but all three faced the constraint of not being able to prescribe or dispense contraception. Teitler (1997) evaluated the impact of nine school-based health resource centres where students could receive reproductive health information, condoms and general health referrals. Vincent et al (2004) examined the long-term effects of the School/Community Programme for Sexual Risk Reduction Among Teens, which was originally conducted in a rural county in South Carolina. Two studies (Lewis et al., 1999; Paine-Andrews et al., 1999) reported on the replication of this programme in three Kansas communities (Franklin County, Geary County and one neighbourhood in Wichita). Paine-Andrews et al (1999) examined the effects of all three community partnerships, and Lewis et al (1999) examined the effects of the initiative in Geary County only. All three studies (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004) examined the effects of the programme at the county level by comparing outcomes in intervention and non-intervention communities.

All studies were conducted in North America. Two studies (Stout et al., 1996; Teitler, 1997) were carried out in schools and consisted of two school based clinics (Stout et al., 1996; Teitler, 1997) neither of which reported a theoretical base. A further three studies evaluated complex interventions conducted out in schools and the community (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004), two studies (Lewis et al., 1999; Vincent et al., 2004) did not report a theoretical base for the intervention, but the intervention in the third study (Paine-Andrews et al., 1999) was underpinned by theory of change theory. The Baby Think it Over programme was carried out in both school and the home (Somers et al., 2001; 2006) with no theoretical base in the initial study but with cognitive development theory underpinning the second study.

**Table 6.30. Sex and relationship education: other school-based approaches**

Author	Study design and rating	Setting	Baseline population	Programme components	Theory	Provider
Stout et al., 1996	CBA -	School	USA n=1870 – site A n=778 – site B n=1,651, site C	School health promotion clinics; open 16-40 hours per week	Not reported	Clinic staff in school
Teitler 1997	CBA -	School	USA n=945 (at FU) students, mean 16 years	Drop in centres at school providing information, condoms and health referrals	Not reported	Health professionals and graduate interns
Lewis et al., 1999	ITS -	School + community	USA n=NR, 9 <sup>th</sup> -12 <sup>th</sup> grade students	<b>Reducing the Risk:</b> K-12 <sup>th</sup> Grade Curriculum; increased access to health services and contraceptives; media efforts to increase awareness; peer education and support; supervised activities; programs in the faith community; community lineages	Not reported	Teachers
Paine-Andrews et al., 1999	CBA -	School + community	USA Participant details NR	Pregnancy prevention programme over five years; Enhanced sexuality education for teachers and parents; comprehensive, age-appropriate sexuality education from K-12; increased access to health services; collaboration with school administrators; use of mass media; increased awareness and involvement of the entire community in teenage pregnancy prevention, peer support and education; alternative activities for young people; and involvement of the faith community.	Theory of change	Various not described
Somers et al., 2001	CBA -	School + home	USA 100 students, mean age years: intervention 17.1; control 16.4	<b>Baby Think It Over:</b> 48 hours at home and school; computerised infant simulator	Not reported	NA
Somers et al., 2006	NRCT -	School + home	USA 230 students, mean age years: intervention 15.8; control 16.6	<b>Baby Think It Over:</b> Two nights and three days; computerised infant simulator	Cognitive development	NA
Vincent et al., 2004	ITS -	School + community	USA n=NR	Abstinence and contraception promotion interventions from K-12 grades in one county	Not reported	Health educators

One study examined three school health promotion clinics (Stout et al., 1996) where services were delivered by clinic staff. A second school-based clinic (Teitler, 1997) provided information, referrals and condoms to students was delivered by health professionals and graduate interns. The Baby Think it Over Programme was primarily delivered by the baby simulators used by young people over a period of 2-3 days. External professionals (i.e. health educators) were used to deliver the abstinence and safe sex programmes (Vincent et al., 2004). Reducing the Risk programme was the only intervention delivered by teachers. Further, the community-based pregnancy prevention programme (Paine-Andrews et al., 1999) used a variety of people to deliver the intervention however details for this were unclear.

The number of students recruited into the programmes ranged from 100 students to 1,870 students. However, the number of participants was not reported in three studies (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004). Only one study (Stout et al., 1996) was based on a sample of more than 1,500 participants and as this study employed three different clinic sites as intervention sites only two of the three sites had intervention groups over 1,500. Appropriate sample size to power the analysis conducted was only discussed in one case (Teitler, 1997) and authors concluded that the sample was too small to capture small or medium size effects.

Programmes targeted a range of age groups. Two studies did not clearly record the age group of their participating students (Paine-Andrews et al., 1999; Vincent et al., 2004). Reducing the Risk and both clinic-based interventions targeted students aged 14-18 years in grades 9-12 (Stout et al., 1996) and Teitler (1997) reported a mean age of 16 years for participants. The participants in the first Baby think it Over programme (Somers et al., 2001) had a mean age of 17.1 years whereas the second cohort (Somers et al., 2006) were younger with a mean age of 15.8 years. Interventions duration varied by programme with Baby Think It Over (Somers et al., 2001; 2006) carried out over 48-36 hours, curriculum-based programmes took place regularly over several years (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004) and school-based clinics open to students throughout the school week and available over a two year period (Stout et al., 1996; Teitler, 1997).

Programmes reported a range of follow-up times. One study (Somers et al., 2006) reported immediate post-test results only and one other (Somers et al., 2001) reported follow-up results at less than six months. Two studies (Lewis et al., 1999; Stout et al., 1996) reported long-term follow-up between 2-3 years. One study (Vincent et al., 2004) explored data relating to girls aged 14-17 years in one county receiving abstinence and safe sex education over a 20 year period. A further two other studies (Paine-Andrews et al., 1999; Teitler, 1997) did not report a clear follow-up time.

### **6.6.2 Quality assessment**

Of the seven studies included, one (Somers et al., 2006) was a NRCT. Four studies (Paine-Andrews et al., 1999; Somers et al., 2001; Stout et al., 1996; Teitler, 1997) were CBA studies and two studies (Vincent et al., 2004; Lewis et al., 1999) were based on an interrupted time series. Study quality was rated poor across all seven studies (- rating). The Baby Think it Over programme (Somers et al., 2006) was based on varied follow-up times for participants, it was not clear how bias was minimised and contamination may have been significant in this study. Limited details on the intervention and the

reliability of the measures used were provided. The four CBA studies (Paine-Andrews et al., 1999; Somers et al., 2001; Stout et al., 1996; Teitler, 1997) were all rated poor quality. Studies were judged to have provided limited details of their methodology, intervention, and participants in both the intervention and control groups. Follow-up times were also generally too short to be classed as meaningful in some studies, although outcome measures were deemed appropriate overall. The two interrupted time series studies (Lewis et al., 1999; Vincent et al., 2004) were not well reported in terms of the methodology used for the time series. Neither study reported a clearly defined point in time over which the intervention occurred, other than the year of intervention, nor was it clear if the intervention occurred independently of other changes over time.

### **6.6.3 Findings**

#### **6.6.3.1 Short-term results (<6 months)**

Two studies (Somers et al., 2001; 2006) reported short-term programme effects for the Baby Think It Over, infant simulator programme.

##### **Knowledge and understanding**

None of the studies identified examined short-term programme effects on knowledge and understanding.

##### **Attitudes and values**

Two studies (Somers et al., 2001; 2006) using the Baby think it over programme reported short-term effects on participants' attitudes and values. Non-significant effects on behavioural intentions regarding safe sex and child bearing were reported in both studies. The programme also had no effect on attitudes towards pre-marital sex, child rearing, pregnancy, or future orientation. However, Somers et al (2006) did report a decrease in the intervention students' views regarding other people's acceptance of teenage pregnancy ( $p \leq 0.05$ ).

##### **Personal and social skills**

None of the studies identified examined short-term programme effects on personal and social skills.

##### **Health and social outcomes relating to alcohol use and sexual health**

Two studies (Somers et al., 2001; 2006) of the Baby Think It Over programme examined short-term health outcomes on participants. There no effects of the intervention on age of first sex, frequency of sex or contraceptive use.

#### **6.6.3.2 Medium-term results (up to 12 months)**

None of the studies identified examined medium-term programme effects.

#### **6.6.3.3 Long-term results (>12 months)**

Five studies (Stout et al., 1996; Teitler, 1997; Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004) examined long-term effects intervention effects for two school-based health centres and three school- and community-based programmes, respectively.

### **Knowledge and understanding**

None of the studies identified examined medium-term programme effects on knowledge and understanding.

### **Attitudes and values**

Stout et al (1996) examined the effects of school-based health centres across three pairs of school sites defined as sites A, B and C. At one site, site B, there was a decrease in positive views towards abstinence before marriage relative to the comparison site ( $p < 0.05$ ), but at a second site, site C, an increase in the number of people favouring abstinence before marriage was reported relative to the comparison site ( $p < 0.05$ ). Interviews with staff at site C indicated that they placed a great emphasis on encouraging abstinence, a factor which is likely to have influenced outcomes at this site. At the third site, site A, there was no difference between the intervention and comparison sites in reproductive health attitudes.

### **Personal and social skills**

Stout et al (1996) reported that there were no significant programme effects of health clinics on participants' sexuality dialogue with parents, at any of the three intervention sites, compared to comparison sites.

### **Health and social outcomes relating to alcohol use and sexual health**

Three studies (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004) reported long-term programme effects for two multicomponent community- and school-based intervention programme approaches. Vincent et al (2004) examined the long-term effects of the School/Community programme in a rural county in South Carolina, by comparing 20 years of pregnancy rates among girls aged 14-17 in the intervention county with three comparison counties. Based on three approaches to the analyses, the authors found that: (1) overall, there was a general downturn in teen pregnancy rates across the entire state between 1981 and 2000; (2) in the intervention county rates fell from 54.8 to 32.1 pregnancies per 1,000 females; and (3) the intervention county started higher and ended lower than the comparison communities. From this the authors concluded that the intervention had had a positive effect on teenage pregnancies in the intervention county. Paine-Andrews et al (1999) examined the effects of the replication of the School/Community programme on estimated pregnancy rates and birth rates across three communities in Kansas, USA. Overall, although estimated pregnancy rates decreased among females aged 14-17 in two intervention communities (Franklin County and Geary County), there was no significant difference in pregnancy rates between the intervention and comparison communities. Changes in birth rates were mixed in two intervention communities in Wichita, and overall there was no significant difference between intervention and control communities on this measure. Lewis et al (1999) examined the effects of the school/community partnership approach in Geary County in more detail. In the intervention community the estimated pregnancy rate for 14-17 year olds decreased between 1991 and 1996 (the partnership approach was introduced in 1993), in comparison to an increase in comparison communities. However, based on an average of the estimated pregnancy rate for the three years

before and during the intervention, the relative decrease seen in the intervention community was not found to be significant.

Two studies examined the long-term effects of two school-based health centres. Teitler (1997) reported on the evaluation of the health resource centres programme which was implemented in nine schools in Philadelphia, USA. There were no significant effects of the health resource centres on initiation of sex, sex in the past month or condom use. However, the authors reported that the direction of the effect was in favour of the health centres on all of these measures. Stout et al (1996) examined the effects of school-based health centres across three study sites. At study site A, relative to the control school, students who used the health centre reported a reduction in contraceptive use ( $p < 0.05$ ) and there was no difference in reproductive health outcomes. At site B, relative to the control site, clinic participants reported an increase in contraception use at first sex and an increase in contraception initiation in the first six months of initiating sex. However, no other programme effects were observed. Clinic participants at site C reported a decrease in sexual activity relative to participants at the control site ( $p < 0.05$ ), but among sexually active students there were no changes in contraceptive behaviour. The authors note that the emphasis on abstinence at this site might have contributed to the reduction in sexual activity.

#### **6.6.4 Summary and evidence statements**

A total of included seven studies were identified that reported on six programmes relating to other school-based approaches to sex and relationships education

##### **6.6.4.1 Knowledge and understanding**

No studies in this category reported on knowledge outcomes.

##### **6.6.4.2 Attitudes and values**

Three studies (Stout et al., 1996; Somers et al., 2001; 2006) that reported on school-based health clinics and an infant simulation intervention, respectively, reported few effects on attitudes. There were inconsistent effects on reproductive attitudes across three school health clinic sites (Stout et al., 1996), which appeared to be largely due to the different operational goals of the sites studied. Findings from the Baby Think It Over programme (Somers et al., 2001; 2006) indicated no effects of the intervention on attitudes and values towards child bearing or safe sex.

##### **6.6.4.3 Personal and social skills**

Only one study (Stout et al., 1996), which examined three school-based health clinics, reported programme effects on personal and social skills. Stout et al (1996) examined the impact of participation in school-based health clinics on sexuality communication between students and parents, but they proved to have no effect on this outcome.

##### **6.6.4.4 Health and social outcomes relating to alcohol use and sexual health**

There were no effects of the Baby Think it Over infant simulation programme on any of the sexual behaviour measures examined (Somers et al., 2001; 2006). Three studies (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004) that examined a school and community partnership

approach to tackling teenage pregnancy, generally found that although there were reductions in pregnancy rates among 14-17 year olds at the intervention sites, these reductions were not found to be significant compared to non-intervention sites. However, one study (Vincent et al., 2004) that examined pregnancy rates over 20 years concluded that the intervention had had a positive effect on teenage pregnancies. Two studies (Stout et al., 1996; Teitler, 1997), which examined the long-term effects of school-based health centres, found that these programmes did not have consistent effects on participant's sexual behaviour.

#### **Evidence statement 13**

- 13 (e) There is inconsistent evidence from one NRCT and two CBAs<sup>1</sup> to determine the effects of school-based clinics or an infant simulation intervention on knowledge, attitudes, values and personal and social skills.
- 13 (f) There is weak evidence from one NRCT and one CBA study<sup>2</sup> to suggest that infant simulation programmes have no effect on health outcomes related to sexual health. This evidence may be only partially applicable to the UK as studies were carried out in the USA and may not be generalisable beyond the populations studied.
- 13 (g) There is weak evidence from two CBA studies and one ITS<sup>3</sup> to suggest that a comprehensive school- and community-based approach to teenage pregnancy may produce modest reductions in teenage pregnancy rates. This evidence may be only partially applicable to the UK as studies were carried out in the USA and may not be generalisable beyond the populations studied.
- 13 (h) There is inconsistent evidence from two CBAs<sup>4</sup> to determine the effects of school-based clinics on health outcomes related to sexual health.

<sup>1</sup> Stout et al., 1996 (CBA -); Somers et al., 2001 (CBA -); Somers et al., 2006 (NRCT -)

<sup>2</sup> Somers et al., 2001 (CBA -); Somers et al., 2006 (NRCT -);

<sup>3</sup> Lewis et al., 1999 (Interrupted time series -); Paine-Andrews et al., 1999 (CBA -); Vincent et al., 2004 (CBA -)

<sup>4</sup> Stout et al., 1996 (CBA -); Teitler, 1997 (CBA -)

**Table 6.31. Other school-based SRE approaches: short-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Somers et al., 2001	CBA -	Baby Think It Over n=84	No intervention n=16	6-10 weeks n=NR	-	<b>NS</b> contraceptive/sexual attitudes <b>NS</b> pre-marital sex <b>NS</b> pregnancy <b>NS</b> child bearing <b>NS</b> child rearing	-
Somers et al., 2006	NRCT -	Baby Think It Over n=113	No intervention n=117	PT n=NR	-	↓ Perception of others' acceptance about teen pregnancy* <b>NS</b> realism about child rearing <b>NS</b> future orientation <b>NS</b> sex and child bearing intentions <b>NS</b> pre-marital sex	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 6.32. Other school-based SRE approaches: short-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/Number of partners	Contraceptive use	STIs	Conceptions
Somers et al., 2001	CBA -	Baby Think It Over n=84	No intervention n=16	6-10 weeks n=NR	-	<b>NS</b> sexual behaviours	-	-	-
Somers et al., 2006	NRCT -	Baby Think It Over n=113	No intervention n=117	PT n=NR	<b>NS</b> age first had sex	<b>NS</b> frequency of sex; oral sex	<b>NS</b> contraception use	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 6.33. Other school-based SRE approaches: long-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Skills
Stout et al., 1996	CBA -	Site A n=739	Site A n=1131	2 years n=NR	-	<b>NS</b> reproductive health attitudes	<b>NS</b> sexuality dialog with parents
		Site B n=354	Site B n=424		-	↓ abstinence before marriage*	<b>NS</b> sexuality dialog with parents
		Site C n=1126	Site C n=525		-	↑ abstinence before marriage*	<b>NS</b> sexuality dialog with parents

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 6.34. Other school-based SRE approaches: long-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/Number of partners	Contraceptive use	STIs	Conceptions
Lewis et al., 1999	ITS -	Multicomponent school and community intervention n=1 site	Non-intervention matched counties n=NR	3 years n=NR	-	-	-	-	<b>NS</b> pregnancy rates
Paine-Andrews et al., 1999	CBA -	Multicomponent school and community intervention n=4 sites	Non-intervention matched counties n=4 sites	NR	-	-	-	-	<b>NS</b> pregnancy rates <b>NS</b> birth rates
Vincent et al., 2004	ITS -	Multicomponent school and community intervention n=1 site	Non-intervention counties n=3 sites	20 years NA	-	-	-	-	↓ pregnancy rates <sup>NS</sup>
Stout et al., 1996	CBA -	Site A n=739	Site A n=1131	2 years n=NR	-	<b>NS</b> sexual activity	↓ contraception use*	↓ binge drinking*	<b>NS</b> emotional health <b>NS</b> health service utilisation

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs	Conceptions
Stout et al., 1996	CBA -	Site B n=354	Site B n=424	2 years n=NR	-	NS sexual activity	↑ contraception use at first sex* ↑ initiation of contraception within first 6 months of sex*	-	-
Stout et al., 1996	CBA -	Site C n=1126	Site C n=525	2 years n=NR	-	↓ sexual activity*	NS contraception use	-	-
Teitler 1997	CBA -	Students in schools with Health Resource Centres n=348 (at FU)	Students in schools without Health Resource Centres n=597 (at FU)	NR n=945	NS initiation of sex	NS past month sex	NS condom use at last sex; in last month	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

## **6.7 Review of published economic evaluations**

One study (Wang et al., 2000) was identified that met the criteria for inclusion in the review of published economic evaluations. Wang et al (2000) evaluated the cost-effectiveness and cost benefit of Safer Choices, an abstinence-plus programmes.

### **6.7.1 Review of Wang et al (2000)**

#### **6.7.1.1 Overview**

The aim of the study by Wang et al (2000) was to evaluate the cost-effectiveness and cost benefits of Safer Choices, an abstinence-plus sex and relationships education programme, compared to a standard, information-based curriculum.

#### **6.7.1.2 Summary of effectiveness data**

Effectiveness estimates were drawn from an evaluation of the Safer Choices programme by Coyle et al (1999). The economic evaluation was based on 7-month follow-up data and a sample of 3677 ninth-grade students who had completed both the baseline and follow-up surveys. At the 7-month follow-up, the authors reported that a significant increase in condom and contraceptive use at last intercourse was found (both  $p < 0.05$ ); 67% of intervention students compared to 52% of the control group reported using condoms at last intercourse, and 68% of intervention students reported using contraception at last intercourse compared to 57% of the control group.

#### **6.7.1.3 Summary of resource utilisation and cost data**

The authors adapted the Bernoulli model to translate increases in condom use into cases of HIV and other STDs (Chlamydia, gonorrhoea, and pelvic inflammatory disease [PID]) averted. The model estimated the probability of HIV infection based on four variables: number of sexual partners, number of sexual contacts with each partner, HIV prevalence, and probability of transmission. In addition, a pregnancy model was developed to translate increases in contraceptive use into cases of pregnancy averted. Full details of the variables used in the model were reported in the article. To examine the cost-benefit of Safer Choices, cases of HIV, other STIs and pregnancies averted were translated into medical and social costs averted. Cost data for the base-case analysis were based on the private sector perspective, but the use of the both public and private sector costs were explored in sensitivity analyses. Medical costs for HIV, Chlamydia, gonorrhoea, PID and pregnancy were drawn from previously published studies or estimated by the authors. For societal costs related to HIV infection and pregnancy the authors used estimates drawn from previously published studies and assumptions made by the authors. Social costs including lost productivity for HIV infection, and costs relating to earning-related outcomes, public assistance, and other consequences for childbearing.

A retrospective cost analysis was conducted to estimate intervention costs which consisted of programme costs and the costs of condoms and oral contraceptives. Direct programme costs included teacher training, teaching, lesson materials and site coordination as shown in Table 36. The costs of developing and evaluating the programme were excluded. The costs of condoms and oral contraceptives were estimated as the product of the number of condoms or oral contraceptives used

within 1-year among intervention students and their sexual partners and the wholesale price of condoms or oral contraceptives. The total costs to implement the programme were estimated at \$102,852 (1994 US\$) and the costs of condoms and oral contraceptives were estimated at \$2,391, resulting in total intervention costs of \$105,243.

**Table 6.35. Programme implementation costs, Safer Choices**

<b>Component</b>	<b>Total cost, \$ (1994)</b>
Teacher training	29,183.10
Teaching	16,400.00
Peer facilitators	25,436.80
Site coordinator training	1,640.00
Site coordination	23,616.00
Curriculum packages	3,904.00
Implementation materials	490.00
Activity kits	590.000
Photocopies for students	430.35
Photocopies for teachers	11.59
Videos	1150.00
<b>Total</b>	<b>102,851.84</b>

#### **6.7.1.4 Summary of cost-effectiveness data**

Overall, 0.12 cases of HIV, 24.30 cases of Chlamydia, 2.77 cases of gonorrhoea, 5.86 cases of PID and 18.50 cases of pregnancy were estimated to have been averted over a 1-year time horizon. The total costs averted were calculated at \$279,519 (\$139,806 medical costs and \$139,713 social costs). Overall, the net benefit of the programme was \$174,276 and the benefit-cost ratio was 2.65, indicating that for every \$1 spent on the programme, \$2.65 were saved in medical and societal costs.

The authors reported that the results were not cost-saving in two scenarios: (1) low probability of HIV or STD transmission, low percentage of students using contraceptives, high contraceptive failure rate, low medical costs, and low prevalence or incidence rate; and (2) low probability of HIV or STD transmission, low percentage of students using contraceptives, high contraceptive failure rate, low medical costs, and low condom use per act.

#### **6.7.1.5 Comments**

The economic evaluation answered a well-defined question, evaluating the cost-effectiveness and cost benefits of a school-based abstinence-plus programme relative to a standard, information-based HIV curriculum. Data on the impact of the programme on condom use were drawn from an RCT and translated into cases of health outcomes averted using an analytic model. The authors developed a static model with a 1-year time horizon, and so did not incorporate population-level transmission dynamics. The authors made several assumptions regarding the data used in the model, but the robustness of the results were examined in a multivariate sensitivity analysis. Costs were considered from a medical and societal perspective and the authors appeared to have considered all the important costs and consequences of the two perspectives adopted. However, the conclusions of the

analysis were not based on an overall index or ratio of costs to effects. In addition, the use of a static model and short time horizon means that the true benefits of the intervention may have been considerably underestimated. The generalisability of the study to a UK context is unclear as the data used in the evaluation is based on studies conducted in the USA, and other US population estimates. However, the authors state that the methods and data used were conservative and it is possible that the intervention may be cost saving in a UK context.

### **6.7.2 Summary and evidence statements**

One study (Wang et al., 2000) was identified that met the criteria for inclusion in the review of published economic evaluations. Wang et al (2000) evaluated the cost-effectiveness and cost benefits of a school-based sex and relationships education programme, Safer Choices. Evaluations of the effectiveness of this programme were identified and are included in Section 6.2.

Overall the net benefit of the Safer Choices programmes was \$174,276 and the benefit-cost ratio was 2.65, indicating that for every \$1 spent on the programme, \$2.65 were saved in medical and societal costs.

#### **Evidence statement 14**

There is moderate evidence from one economic evaluation study<sup>1</sup> to suggest that a sex and relationships education programme, Safer Choices, may be cost-effective and cost saving. This evidence may be of limited applicability to a UK context because cost and benefit estimates were based on data from studies conducted in the USA.

<sup>1</sup> Wang et al., 2000 (CEA +)

**6.36. Sex and relationships education: summary of economic evaluation studies**

Study details	Research question	Methods of estimation for costs and benefits	Results	Confounders, potential sources of bias and other comments
<p>Wang et al (2000)</p> <p>Country/currency: US\$ (1994)</p> <p>CEA +</p>	<p>Research question: To evaluate the cost-effectiveness and cost benefit of Safer Choices</p> <p>Population: High school students and their sexual partners</p> <p>Intervention: Safer Choices, a school based education programme designed to prevent HIV, other STDs, and pregnancy.</p> <p>Perspective: Medical and societal</p>	<p>The authors adapted the Bernoulli model to translate increases in condom use into cases of HIV and other STDs (Chlamydia, gonorrhoea, and pelvic inflammatory disease) averted. Pregnancy model was developed to translate increases in contraceptive use into cases of pregnancy averted, and cases of adverse health outcomes averted were translated into medical and social costs averted.</p> <p>A retrospective cost analysis was conducted to estimate intervention costs which consisted of programme costs and the costs of condoms and oral contraceptives.</p>	<p>Total intervention costs were estimated at \$105,243 and 0.12 cases of HIV, 24.30 cases of Chlamydia, 2.77 cases of gonorrhoea, 5.86 cases of PID and 18.50 cases of pregnancy were estimated to have been averted over a 1-year time horizon. The total costs averted were calculated at \$279,519 (\$139,806 medical costs and \$139,713 social costs).</p> <p>In the cost-benefit analysis, the net benefit was \$174,276 and the benefit-cost ratio was 2.65.</p> <p>Results were not cost-saving in two scenarios, when the following variable estimates were used: low probability of HIV or STD transmission, low percentage of students using contraceptives, high contraceptive failure rate, low medical costs, and low prevalence or incidence rate/low condom use per act.</p>	<p>Intervention effectiveness based on 7-month outcome data.</p> <p>Model did not incorporate population-level transmission dynamics</p> <p>Short time horizon</p> <p>No ratio of cost to benefits presented.</p> <p>Study limited by some of the assumptions made, e.g. all relationships were of a heterosexual nature and that the sexual partners of intervention students were from a pool outside of the intervention group.</p>

## 7 General health education programmes

No systematic reviews or meta-analyses were identified for inclusion in the review of general health education programmes, and in addition no economic evaluation studies were identified. Nine articles that reported on evaluations of general health education programmes were identified. Studies were defined as general health education if they focused on a broad range of health behaviours, but incorporated as a minimum, a focus on both alcohol use and sexual health.

### 7.1 General health education programmes

#### 7.1.1 Overview of evidence identified

Overall, nine studies (Bond et al., 2004; Flay et al., 2004; Harrington et al., 2001; O'Donnell et al., 1999; 2002; Moberg & Piper, 1990; McNeal et al., 2004; Patton et al., 2006; Piper et al., 2000) reported on the evaluation of six general health education programmes that reported relevant alcohol and sexual education outcomes. Two studies (O'Donnell et al., 1999; 2002) examined the effectiveness of the Reach for Health (RFH) curriculum, and the effects of the inclusion of an additional community youth service (CYS) component. Although both studies appeared to be based on the same sample of students from two middle schools, O'Donnell et al (2002) reported on a subsample of students who met eligibility criteria and dropped the 'no intervention' control group from the analyses. Two studies (Harrington et al., 2001; McNeal et al., 2004) examined the All Stars intervention programme, which was designed to reduce substance use, sexual behaviour and violence. McNeal et al (2004) extended the analyses presented in the study by Harrington et al (2001) by breaking down the composite substance use measure into separate types of drugs (cigarettes, cannabis, alcohol and inhalants). Bond et al (2004) and Patton et al (2006) examined the Gatehouse Project, a 2-year programme which was designed to improve emotional wellbeing and reduce health risk behaviours. The study by Bond et al (2004) was based on longitudinal follow-up of students who received the programme in year 8 and annually thereafter until the end of Year 10. Patton et al (2006) surveyed subsequent cross-sectional samples of year 8 students over five years. The two remaining studies examined the Healthy for Life health promotion programme (Piper et al., 2000), which targeted poor nutrition and eating patterns, tobacco, alcohol and cannabis use, and Flay et al (2004) examined the effects of a social development curriculum, with and without additional community components, delivered as part of the Aban Aya project.

Table 7.1. General health education programmes

Author	Study design and rating	Setting	Baseline population	Programme components	Theory	Provider
Bond et al., 2004	RCT ++	School	Australia n=2,678 13-14 years	<b>Gatehouse Project:</b> Multi-component study focusing on emotional well-being and risk behaviours carried out in 40 hours over 10 weeks. Addressing risk and protective factors and delivered in year 8	Not reported	Teachers and other staff members
Flay et al., 2004	RCT ++	School + community	USA n=644 10-12 years	<b>Aban Aya:</b> Three years, 16- 21 lessons per year; building cognitive behavioural skill, school + community intervention (SCI) and social development curriculum (SCD) groups. SCI = SDC + parental support, community development, school climate	Behavioural change theories	University-based health educators
Harrington et al., 2001	RCT +	School	USA n=2,289 students, mode 12 years	<b>All Stars:</b> 1 year; 14 entire class, four small group and four one on one sessions; debates, games and general discussion	Not reported	Teachers; External (specialists, All Star facilitators)
McNeal et al., 2004	RCT +	School	USA n=2,289 students, 11-13 years	<b>All Stars:</b> 22 sessions; substance use, sex and violence prevention	Social learning theory	Teachers; External (specialists, All Star facilitators)
Moberg & Piper, 1990	CBA +	School	USA n=197 students 12-14 years	<b>Project Model Health:</b> 32 hour programme delivered throughout the semester focusing on a range of health outcomes including reduction in drink driving and risk-taking attitudes.	Social learning theories	Teams of college-age instructors
O'Donnell et al., 1999; 2002	RCT +	School, community	USA n=1,157 students in 12-14 years	<b>Reach for Health curriculum + Community Youth Service programme:</b> 40 lessons and three hours per week community placements; curriculum focused on health risks related to substance use, sexual health, violence, STI, and unintended pregnancy.	Health belief model; social learning theory	Teachers
Patton et al., 2006	RCT +	School	Australia n=2,546 students, 13-14 years	<b>Gatehouse Project:</b> Three year programme including a 10 week problem solving curriculum in 8 <sup>th</sup> grade	Not reported	Teachers and other staff members
Piper et al., 2000	RCT -	School, community	USA n=2,483 students, 11-14 years	<b>The Healthy for Life Programme:</b> containing a peer, family and community component and focusing general health behaviours including alcohol use.	Social influences model	Teachers and peer leaders

Five of the six programmes were conducted in North America and the remaining study (the Gateway Project; Bond et al., 2004; Patton et al., 2006) was carried out in Australia. All six programmes were primarily delivered in schools with four solely school-based and two using combined school and community elements. Aban Aya (Flay et al., 2004) focused on building cognitive behavioural skills and consisted of two intervention groups; one using social development curriculum and one using the social development curriculum in conjunction with parental support and community development. Founded on social learning theory, the All Stars programme (Harrington et al., 2001; McNeal et al., 2004) employed a curriculum-based approach to prevent substance use, sex and violence. Project Model Health (Moberg & Piper, 1990) was curriculum-based and reported a range of health outcomes including drink driving and risk-taking attitudes. Founded on health belief models and social learning theory, the Reach for Health (RFH) curriculum (O'Donnell et al., 1999; 2002) with a community youth service (CYS) programme employed primarily school-based educational sessions along with community placements. Gatehouse Project (Bond et al., 2004; Patton et al., 2006) was a multi-component programme carried out solely in schools focusing on emotional well-being and risk behaviours. The social learning theories-based programme Health for Life (Piper et al., 2000) focused on general health but had an alcohol prevention and sexual behaviour aspect and contained a peer, family and community element.

The RFH curriculum (O'Donnell et al., 1999; 2002) used only teachers to deliver the intervention. A further three studies (All Stars [Harrington et al., 2001; McNeal et al., 2004]; Gatehouse Project [Bond et al., 2004; Patton et al., 2006]; and the Healthy for Life programme [Piper et al., 2000]) supported teacher delivery with specialist facilitators, other staff members and peer leaders respectively. Two other studies, of the Aban Aya project (Flay et al., 2004) and Project Model Health (Moberg & Piper, 1990) were not provided by teachers but used university-based educators and teams of college-age educators, respectively, to deliver the programmes. Age and grade of participating students varied slightly in students receiving general health interventions. However, all studies reported participating students between ages 11-14 years.

Sample sizes varied across programmes from 197 students to 2,676 students. Evaluation of three programmes (All Stars [Harrington et al., 2001; McNeal et al., 2004]; Gatehouse Project [Patton et al., 2006; Bond et al., 2004]; and the Healthy for Life programme [Piper et al., 2000]) was based on a sample size greater than 1,500 students. Power calculations were reported in five of the nine studies (Harrington et al., 2001; McNeal et al., 2004; Patton et al., 2006; Bond et al., 2004; Piper et al., 2000). Studies were sufficiently powered in all five studies, however, one study recognised that some subsamples were smaller than desired and could have reduced the power and thus the precision of the estimates (Piper et al., 2000). Evaluations took place over differing follow-up periods. Evaluation of Project Model Health was based on follow-up at 20 months (Moberg & Piper, 1990). O'Donnell et al (1999; 2002) reported post-test results along with findings at two years for the Reach for Health Curriculum. The Gatehouse Project (Bond et al., 2004) was evaluated at one and two years follow-up. The study of the Healthy for Life Programme (Piper et al., 2000) followed-up students until 10<sup>th</sup> grade and follow up of participants in All Stars was conducted at one year post intervention. The second

study of the Gateway Project (Patton et al., 2006) consisted of three cross-sectional studies, conducted at 2-year intervals.

### **7.1.2 Quality assessment**

Of the nine studies, eight were RCTs and one was a CBA study. Six RCTs (Flay et al., 2004; O'Donnell et al., 1999; 2002; Patton et al., 2006; Bond et al., 2004; Piper et al., 2000) were based on cluster randomisation and two studies (All Stars [Harrington et al., 2001; McNeal et al., 2004]) were based on individual randomisation. Cluster randomisation was carried out at school district (Gatehouse Project [Bond et al., 2004]), school (Aban Aya [Flay et al., 2004]; Gatehouse Project [Patton et al., 2006]; The Healthy for Life Programme [Piper et al., 2000]) and classroom (RFH + CYS [O'Donnell et al., 1999; 2002]) level. In three of the cluster RCTs the unit of randomisation did not match the unit of analysis. However, in all three cases (Flay et al., 2004; Bond et al., 2004; Piper et al., 2000) the analyses were adjusted for the intraclass correlations, with one study reporting an intention to treat analysis (ITT) (Bond et al., 2004). All but three of the RCTs were rated moderate (+ rating) for quality. Two RCT studies (Bond et al., 2004; Flay et al., 2004) were rated good quality (++ rating), as methods of randomisation were clear and appropriate, and design and outcome measures were clearly reported and reliable. One RCT (Piper et al., 2000) was rated poor quality (- rating) as the method of randomisation used was subject to bias. Although assignment to the intervention and control groups was random, schools allocated to the intervention arm chose which version of the curriculum to deliver. One CBA study (Moberg & Piper, 1990) was also rated as moderate quality. Attrition rates were unclear in this study. The reliability of outcome measures was not reported for one programme (RFH +CYS [O'Donnell et al., 1999; 2002]) and another did not report full details of outcomes (Harrington et al., 2001). However, outcome measures were judged to be relevant and reliable in all other studies. Follow-up times were deemed to be meaningful across all included studies.

### **7.1.3 Findings**

#### **7.1.3.1 Short-term results (<6 months)**

Three studies (O'Donnell et al., 1999; Bond et al., 2004; Patton et al., 2006) reporting on two programmes, the RHS curriculum + CYS programme and the Gateway Project, respectively, reported immediate post-test programme effects.

#### **Knowledge and understanding**

None of the identified studies examined short-term intervention effects on knowledge and understanding.

#### **Attitudes and values**

Bond et al (2004) examined the effects of the Gateway Project on self-reported anxiety/depressive symptoms, finding that the intervention had no impact on this outcome.

### **Personal and social skills**

Bond et al (2004) also examined the effects of the Gateway Project on student's social relationships in terms of their availability of attachments and conflictual relationships. There were no effects of the intervention on either of these measures.

### **Health and social outcomes relating to alcohol use and sexual health**

Short-term programme effects of the RFH + CYS programme (O'Donnell et al., 1999) showed no effect of the RFH curriculum only, compared to a no intervention control, on sexual activity or an index of sexual behaviour<sup>11</sup>. However, students who received the RFH curriculum and participated in CYS activities were less likely to report recent sexual activity ( $p < 0.05$ ) and reported lower scores on the sexual behaviour index ( $p < 0.05$ ), than control students. Two studies (Bond et al., 2004; Patton et al., 2006) examined the short-term impact of the Gateway Project. At the end of the 2-year intervention programme, both studies found that the intervention had no effects on alcohol or other substance use, and Patton et al (2006) also found no intervention effects on early initiation of sexual activity. At the end of the one-year All Stars programme there were no differences between intervention and control students in terms of their sexual activity. However, compared to both the teacher condition and control, specialist intervention students showed a higher mean level of substance use ( $p < 0.05$ ) (Harrington et al., 2001).

#### **7.1.3.2 Medium-term results (up to 12 months)**

Five studies (Harrington et al., 2001; McNeal et al., 2004; Bond et al., 2004; Piper et al., 2000; Moberg & Piper, 1990) reported medium-term programme effects for four programmes: All Stars; The Healthy for Life Programme; Gatehouse Project; Project Model Health.

### **Knowledge and understanding**

One study (Moberg & Piper, 1990) examined programme effects relating to participants' knowledge of health. However, no effects were shown at one year follow-up.

### **Attitudes and values**

Three studies (Bond et al., 2004; Moberg & Piper, 1990; Piper et al., 2000) examined short-term intervention effects on attitudes and values. Bond et al (2004) reported that there were no effects of the Gatehouse Project on self-reported anxiety/depressive symptoms. Moberg and Piper (1990) found significant effects of the Project Model Health programme; intervention students reported more positive attitudes towards sex<sup>12</sup> and reported fewer intentions to use substances, compared to control students. There were no intervention effects on self-esteem. Piper et al (2000) reported that participants receiving the intensive, 1-year version of the Healthy for Life Programme were less likely

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<sup>11</sup> Four category index, scored as follows: (1) no lifetime experience with intercourse; (2) past but no recent intercourse; (3) recent, always protected intercourse (both condoms and contraceptive use); and (4) recent, unprotected intercourse.

<sup>12</sup> Belief that students should postpone the onset of sexual intercourse; students who are sexually active should use contraception.

to perceive high rates of substance use among their peers ( $p < 0.001$ ). Students who received the 3-year, age appropriate version of the programme did not differ from control students on this measure.

### **Personal and social skills**

None of the included studies examined medium-term intervention effects on personal and social skills.

### **Health and social outcomes relating to alcohol use and sexual health**

Four studies (Harrington et al., 2001; McNeal et al., 2004; Bond et al., 2004; Moberg & Piper, 1990; Piper et al., 2000) examined medium-term effects on health outcomes relating to sexual health and alcohol for three general health programmes (All Stars; The Healthy for Life Programme; Gatehouse Project). There were no effects of the All Stars programme (McNeal et al., 2004) on sexual activity in the past month, but students who received the teacher-led version of the intervention showed a decrease in their use of alcohol in the past month, compared to controls ( $p < 0.05$ ). There was no impact of the intensive version of Healthy for Life programme on past month sexual intercourse, but students receiving the age appropriate intervention were more likely than control students to report having had sexual intercourse in the past month ( $p < 0.05$ ). At one year follow-up, students who received the age-appropriate version of the Healthy for Life Programme (Piper et al., 2000) were also more likely than control students to have used alcohol in the past month ( $p < 0.05$ ). There was no difference between intervention students who received the intensive version of the programme and control students on this measure. There were no medium-term effects of the Gatehouse project (Bond et al., 2004) on alcohol use measures, including any drinking and binge drinking. Findings from the evaluation of Project Model Health (Moberg & Piper, 1990) revealed no effects of the programme on past month alcohol use or alcohol use frequency. However, at the 1-year follow-up, students who participated in Project Model Health were less likely to report they had been sexually active in the past month, compared to controls (Moberg and Piper, 1990).

#### **7.1.3.3 Long-term results (>12 months)**

Five studies (Piper et al., 2000; Flay et al., 2004; O'Donnell et al., 1999; 2002; Patton et al., 2006) reported long-term findings for five programmes: The Healthy for Life Programme; Gatehouse Project; Aban Aya; Project Model Health; RFH + CYS programme.

### **Knowledge and understanding**

None of the included studies examined long-term programme effects on knowledge and understanding.

### **Attitudes and values**

At follow-up in 10<sup>th</sup> grade, there was no difference between intervention students who participated in the Healthy for Life programme and control students in their perceptions of peer substance use.

### **Personal and social skills**

None of the included studies examined long-term programme effects on personal and social skills.

### **Health and social outcomes relating to alcohol use and sexual health**

Five studies (Piper et al., 2000; Flay et al., 2004; O'Donnell et al., 2002; Patton et al., 2006) reported long-term findings on health outcomes for five programmes: The Healthy for Life Programme; Gatehouse Project; Aban Aya; RFH + CYS programme.

Two studies (Patton et al., 2006; O'Donnell et al., 2002) reporting on two programmes (Gatehouse Project; RFH + CYS programme) examined programme effects on sexual initiation. There were effects of the Gatehouse Project (Patton et al., 2006) on early sexual initiation. Results from a cross-sectional survey of year 8 students taken two years after intervention showed that students in intervention schools were less likely to report early initiation of sexual intercourse (OR 0.55 95% CI: 0.37,0.83). At the 2-year follow-up, students who received the RFH + CYS programme (O'Donnell et al., 2002) were less likely to report sexual initiation after receiving either one year (OR 0.49; 95% CI: 0.25, 0.99) or two years (OR 0.32; 95% CI: 0.25, 0.99) of the combined programme, compared to students who received the RFH curriculum only. Students in the combined programme arm were also less likely to report recent sexual activity after one (OR 0.48; 95% CI: 0.24, 0.96) or two (OR 0.39; 95% CI: 0.20, 0.76) years of the programme. Piper et al (2000) found no change in past month sexual activity in 10<sup>th</sup> grade students who had received either the intensive or age appropriate version of Healthy for Life, despite finding a negative treatment effect on this measure at the ninth grade follow-up. Findings from the Aban Aya programme (Flay et al., 2004) at three years follow-up showed a decrease in sexual activity among males in the Social/Community Intervention (SCI) group ( $p < 0.05$ ) and an increase in condom use ( $p < 0.05$ ), but not in the Social Development Curriculum (SDC). A reduction in substance use was also seen among males in both intervention groups ( $p = 0.05$ ) and students in the SCI group also showed decreases in provoking behaviours and school delinquency ( $p < 0.05$ ). No significant programme effects were found for females on any of these measures. No programme effects on substance use were present at any cross-sectional observation periods in the Gatehouse Project (Patton et al., 2006). Students who participated in the Health for Life programme (Piper et al., 2000) reported increases in past month alcohol use in both the age appropriate and intensive intervention groups ( $p < 0.05$ ), in addition to an increase in the overall substance use scale for those students receiving the age appropriate intervention ( $p < 0.05$ ).

#### **7.1.4 Summary and evidence statements**

A total of nine studies (Bond et al., 2004; Flay et al., 2004; Harrington et al., 2001; O'Donnell et al., 1999; 2002; Moberg & Piper, 1990; McNeal et al., 2004; Patton et al., 2006; Piper et al., 2000) were identified that examined sex and relationship or alcohol education within a general health education programme.

##### **7.1.4.1 Knowledge and understanding**

Only one study (Moberg & Piper, 1990) examined programme effects on knowledge however results showed no difference between the intervention and control groups.

#### **7.1.4.2 Attitudes and values**

Two studies (Moberg & Piper, 1990; Piper et al., 2000) detailed the impact of their programmes on participants' attitudes and values. Findings from Project Model Health (Moberg & Piper, 1990) showed that at one year follow-up intervention students displayed improved health attitudes towards postponing sex and using contraceptives in addition to a positive reduction in their attitudes and intentions towards alcohol and other drugs. Piper et al (2000) found a medium-term impact on students' perceptions of peer attitudes towards alcohol and other drugs in those receiving the intensive condition of the Healthy for Life programme. However, by two years follow-up there was no effect.

#### **7.1.4.3 Personal and social skills**

No studies reported on programme effects on personal and social skills.

#### **7.1.4.4 Health and social outcomes relating to alcohol use and sexual health**

Nine studies (Bond et al., 2004; Flay et al., 2004; Harrington et al., 2001; O'Donnell et al., 1999; 2002; Moberg & Piper, 1990; McNeal et al., 2004; Patton et al., 2006; Piper et al., 2000) examined health outcomes relating to sex and relationship or alcohol education from general health education programmes. Only two programmes, the RFH curriculum (O'Donnell et al., 1999; 2002) and the Gatehouse Project (Patton et al., 2006), explored the intervention impact on age of sexual initiation. One programme (O'Donnell et al., 1999; 2002) incorporating a community element showed positive results at medium and long-term follow-up. Two programmes, the RFH curriculum (O'Donnell et al., 1999; 2002) and the Aban Aya project (Flay et al., 2004), incorporated a community element into their programme design and both reported a positive impact on sexual behaviour in their intervention groups exposed to the community element. The All Stars programme showed inconsistent results across two studies (Harrington et al., 2001; McNeal et al., 2004) and also produced an increase in substance use in the specialist condition. The Healthy for Life Programme (Piper et al., 2000) also produced long-term increases in alcohol use at two years follow-up. The Gatehouse Project (Bond et al., 2004; Patton et al., 2006) showed no programme effects for any health outcomes.

#### **Evidence statement 15**

- 15 (d) There is inconsistent evidence from one RCT and one CBA study<sup>1</sup> to determine the effect of general health education programmes on knowledge, attitudes and values relating to sexual health and alcohol use.
- 15 (e) There is moderate evidence from three RCTs<sup>2</sup> to suggest that general health education programmes incorporating an intensive community intervention element in conjunction with a curriculum base may have a positive effect on sexual behaviour and substance use. The evidence may only be partially applicable to the UK as programmes were implemented in the USA and focused primarily on black and minority ethnic groups. As such their generalisability may be limited to the populations studied.
- 15 (f) There is moderate evidence from five RCTs<sup>3</sup> to suggest that curriculum-based, general health education programmes have no impact on, and in some cases may have a negative impact

on, sexual behaviours and alcohol use. Studies were based on two programmes conducted in the USA and Australia and therefore the evidence may not be generalisable beyond the populations studied.

<sup>1</sup> Moberg & Piper, 1990 (CBA +); Piper et al., 2000 (RCT -)

<sup>2</sup> Flay et al., 2004 (RCT ++); O'Donnell et al., 1999, 2002 (both RCT +)

<sup>3</sup> Harrington et al., 2001 (RCT +); McNeal et al., 2004 (RCT +); Piper et al., 2000 (RCT -); Bond et al., 2004 (RCT ++); Patton et al., 2006 (RCT +)

### 7.1.5 Summary tables

**Table 7.2. General health education: short-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Personal/social skills
Bond et al., 2004	RCT ++	Gateway Project n=1,335	No intervention n=1,342	PT (>90%)	-	<b>NS</b> depressive symptoms	<b>NS</b> social relations
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported							

**Table 7.3. General health education: short-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Sexual Health			Alcohol use
					Age of initiation	Frequency/ Number of partners	Contraceptive use	
Bond et al., 2004	RCT ++	Gateway Project n=1,335	No intervention n=1,342	PT (>90%)	-	-	-	<b>NS</b> any drinking <b>NS</b> regular use <b>NS</b> binge drinking
Harrington et al., 2001	RCT +	All Stars Specialist condition, n=269 Teacher condition, n=287	n=739	PT (1 year)	-	<b>NS</b> sexual activity	-	↑ past month substance use (specialist condition only*)
O'Donnell et al., 1999	RCT +	Reach for Health, n=222 <sup>a</sup> Reach for Health + CYS, n=255 <sup>a</sup>	No intervention n=584 <sup>a</sup>	PT n=1,061 (92%)	-	↓ recent sex (RHS + CYS only*) ↓ sexual risk behaviour index (RHS + CYS only*)	-	-
Patton et al., 2006	RCT +	Gateway Project n=1,158	No intervention n=1,428	PT n=NA <sup>c</sup>	<b>NS</b> early initiation	-	-	<b>NS</b> substance use
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported <sup>a</sup> only students who completed both baseline and follow-up surveys; <sup>b</sup> based on eligible sample at 10 <sup>th</sup> grade; <sup>c</sup> follow-up based on cross-sectional surveys								

**Table 7.4. General health education: medium-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Personal/social skills
Bond et al., 2004	RCT ++	Gateway Project n=1,335	No intervention n=1,342	1 year (>90%)	-	<b>NS</b> depressive symptoms	<b>NS</b> social relations
Moberg & Piper, 1990	CBA +	Project Model Health n=115	No intervention n=82	1 year	<b>NS</b> health knowledge	↑ sexual attitudes to postpone sex and use contraception* ↓ substance use and intent index* <b>NS</b> self-esteem	-
Piper et al., 2000	RCT -	Healthy for Life Age appropriate, n=827 Intensive, n=758	No intervention n=898	9 <sup>th</sup> grade	-	↓ perceptions of peer substance use (intensive condition only***)	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 7.5. General health education: medium-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Sexual health outcomes			Alcohol use
					Age of initiation	Frequency/ Number of partners	Contraceptive use	
Bond et al., 2004	RCT ++	Gatehouse Project n=1,335	No intervention control n=1,343	1 year (>90%)	-	-	-	<b>NS</b> Any drinking <b>NS</b> Regular drinker <b>NS</b> Binge drinking
McNeal et al., 2004	RCT +	All Stars Specialist condition, n=NR Teacher condition, n=NR	Normal health education n=NR	1 year n=1822 (72%)	-	<b>NS</b> past month sexual activity	-	↓ past month alcohol use (Teacher condition only*)
Moberg & Piper, 1990	CBA +	Project Model Health n=115	No intervention n=82	1 year (74%)	-	↓ sexual activity, past month**	-	<b>NS</b> alcohol use, past month <b>NS</b> alcohol use, quantity/frequency

Study	Rating	Intervention	Comparator	Follow-up	Sexual health outcomes			Alcohol use
					Age of initiation	Frequency/ Number of partners	Contraceptive use	
Piper et al., 2000	RCT -	Healthy for Life Age appropriate, n=827 Intensive, n=758	No intervention n=898	9 <sup>th</sup> grade (80%)	-	↑ sexual intercourse, past month (age appropriate only <sup>***</sup> )	-	↑ alcohol use, past month (intensive condition only*)
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported								

**Table 7.6. General health education: long-term programme effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge	Attitudes and values	Personal/social skills
Piper et al., 2000	RCT -	Healthy for Life Age appropriate, n=827 Intensive, n=758	No intervention n=898	10 <sup>th</sup> grade (68%)	-	<b>NS</b> perceptions of peer substance use	-
*p≤0.05; **p≤0.01; ***p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported							

**Table 7.7. General health education: long-term programme effects on health and social outcomes**

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes relating to sexual health			Alcohol use
					Age of initiation	Frequency/ Number of partners	Contraceptive use	
Patton et al., 2006	RCT +	Gateway Project n=966 <sup>a</sup>	No intervention n=1,497 <sup>a</sup>	2 years NA <sup>a</sup>	↓ early initiation	-	-	<b>NS</b> substance use
Flay et al., 2004	RCT ++	Aban Aya Social development curriculum, n=204	Health Enhancement Curriculum n=184	3 years	-	<b>NS</b> recent sex	<b>NS</b> condom use	↓ substance use (boys only*)
		Aban Aya School/ community, n=185			-	↓ recent sex (boys only*)	↑ condom use (boys only*)	↓ substance use (boys only*)

Study	Rating	Intervention	Comparator	Follow-up	Health outcomes relating to sexual health			Alcohol use
					Age of initiation	Frequency/ Number of partners	Contraceptive use	
Piper et al., 2000	RCT -	Healthy for Life Age appropriate, n=827 Intensive, n=758	No intervention n=898	10 <sup>th</sup> grade (68%)	-	<b>NS</b> sexual intercourse, past month	-	↑ alcohol use, past month*
O'Donnell et al., 2002	RCT +	RFH + CYS (1 or 2 programme years) n=NR	RFH curriculum only (1 or 2 programme years) n=NR	2 years n=195 (77% <sup>b</sup> )	↓ sexual initiation (1-year CYS*; 2- year CYS**)	↓ recent sex (1-year CYS*; 2- year CYS**)	-	-

\*p≤0.05; \*\*p≤0.01; \*\*\*p≤0.001; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup> follow-up based on cross-sectional surveys

## 8 Discussion

### 8.1 Alcohol and drug education programmes

A total of 119 articles met the criteria for inclusion in the review of alcohol and drug education programmes. Fourteen articles were systematic reviews and meta-analyses, 103 articles reported on the evaluation of an alcohol or substance use education programme, and two articles were economic evaluation studies. Of the 103 articles, 74 reported on evaluations of classroom-based programmes; 20 of which were alcohol specific, and 54 of which focused on substance use including alcohol. Also identified were 15 articles that reported on evaluations of brief or single session interventions, nine articles reporting on two multicomponent school- and community-based programmes and five articles reporting on evaluations of peer support and/or counselling programmes.

#### 8.1.1 Systematic reviews and meta-analyses

A total of 14 systematic reviews and meta-analyses were identified for inclusion. The majority of the reviews identified examined the effectiveness of programmes targeting substance use including alcohol, and only three reviews (Foxcroft et al., 2002; Loveland-Cherry, 2003; Spoth et al., 2008) focused specifically on the prevention of alcohol use. Foxcroft et al (2002) found that there was no consistent evidence to determine which programmes were effective over the short to medium-term, but highlighted three programmes which were effective over the longer term. These included the family-based, Strengthening Families programme, and two school-based programmes, Botvin's LST and a culturally-focused curriculum for Native American students. Spoth et al (2008) highlighted promising evidence from six additional programmes, Keepin it REAL, the Midwest Prevention Project, Project Northland, Healthy School and Drugs, Project ALERT, and SHAHRP. Two reviews (Cuijpers, 2002; Gottfredson and Wilson, 2003) identified evidence to suggest that peer leaders strengthened the effects of school-based interventions, although Gottfredson and Wilson (2003) found that any beneficial effects of peer involvement were lost when they were combined with teacher-led activities. White et al (2004) did not find any evidence to suggest that any particular agency or external contributor was more effective than another.

#### 8.1.2 Classroom-based programmes

A total of 74 articles were identified for inclusion that reported on evaluations of classroom-based programmes. Overall, 20 articles were identified for inclusion that reported on the evaluation of 12 alcohol education programmes across 15 studies and 54 articles were identified that examined 22 classroom-based substance use (including alcohol) prevention programmes across 34 studies.

Of the 15 studies identified for inclusion that examined alcohol education programmes, nine studies were RCTs, three were NRCTs and three were CBA studies. The 12 alcohol education programmes were primarily classroom-based curriculums, but two programmes incorporated additional materials and activities for parents. The programmes identified targeted students across a range of age groups; eight programmes targeted students aged 14 or younger and four programmes were targeted at older

adolescents. Across eight studies (Bagnall, 1990; McBride et al., 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Vogl et al., 2009; Newman et al., 1992; Shope et al., 1996a) that examined intervention effects on knowledge related to alcohol use there were indications that alcohol-specific education programmes generally increased alcohol or curriculum knowledge over the short-term. However, effects on medium- and long-term knowledge acquisition were weaker. Eight studies (Bagnall, 1990; Baumann, 2006; McBride et al., 2004; Morgenstern et al., 2009; Newton et al., 2009; Schnepf, 2002; Vogl et al., 2009; Wilhelmsen et al., 1994) examined young people's alcohol-related attitudes and values, finding non-significant programme effects across the majority of programmes. However, the SHAHRP programme (McBride et al., 2004), which was based on a harm reduction approach, had positive short- and long-term effects on students' alcohol-related attitudes. Short-term increases in safer alcohol-related attitudes were also reported by Wilhelmsen et al (1994) who examined a highly-role specific programme compared to a less-role specific alcohol programme. Few studies examined intervention effects on personal and social skills. Intervention impacts on a range of alcohol-related measures were examined across the included studies. The SHAHRP programme (McBride et al., 2004) appeared to have the most consistent effects on short-term alcohol use, and additionally had effects on hazardous/harmful drinking. Medium- to long-term effects on alcohol consumption were found to be limited. Studies were either methodologically poor, as in the case of the AAPT programme, or reported conflicting or diminished effects. For example, 17-months after delivery of the SHAHRP programme (McBride et al., 2004) the positive short-term effects appeared to be declining. Although intervention effects favoured SHAHRP, differences between intervention and control students in terms of their alcohol consumption and other measures of alcohol use including harmful/hazardous drinking were no longer significant. There were no long-term effects of a longer term version of the AMPS programme (Shope et al., 1996a) on alcohol consumption, but there did appear to be intervention effects on alcohol misuse.

Of the 34 studies, which examined 22 classroom-based substance use (including alcohol) prevention programmes, 23 were based on RCT designs, seven were NRCTs and four were CBA studies. Although all of the programmes were primarily classroom-based, five programmes combined school components with family- and/or community-based components. Two studies (Perry et al., 2003; Spoth et al., 2002, 2005, 2008) combined two originally school-based only programmes (DARE and LST, respectively) with components targeting parents. The majority of programmes targeted students aged 14 or younger. Four studies (Botvin et al., 1990a; Botvin et al., 2001a; Shope et al., 1996b; Cuijpers et al., 2001), including evaluations of LST, AMPS, DARE, and the Healthy School and Drugs Project, respectively, examined programme effects on alcohol-related knowledge. Overall both short and medium-term increases in alcohol knowledge were reported but these were not sustained long-term. Twenty-one studies reported outcomes relating to alcohol or substance use attitudes and behavioural intentions. There were inconsistent effects on attitudes towards alcohol use and peer norms, but eight studies (Botvin et al., 1995b; 1997; 2001a; Caplan et al., 1992; Eisen et al., 2002; Lennox & Cecchini, 2008; Perry et al., 2003; Hecht et al., 2003), which examined behavioural intentions indicated generally positive programme effects on intentions to drink or get drunk. Intervention effects on personal and social skills were examined across a small number of programmes but found to be

inconsistent. Four programmes, the Positive Youth Development Programme, the Unplugged programme a revised version of Project Alert, and the Healthy School and Drug Project had positive short-term programme effects on alcohol use. However, the findings of the Positive Youth Development Programme (Caplan et al., 1992) were limited by the poor quality of the study. Positive longer term effects were demonstrated for two programmes, Keepin It REAL (Hecht et al., 2003) and Be Under Your Own Influence/All Stars (Slater et al., 2006), which combined school and media intervention components. The strongest evidence of effectiveness came from a series of studies which examined Botvin's LST (Botvin et al., 1990a; 1990b; 1995b; 1997; 2001a; Fraguera et al., 2003). Two studies (Botvin et al., 1997; 2001a) found positive short- and medium-term effects on drinking frequency and binge-drinking, and these were sustained long-term (Botvin et al., 1995b; 2001a). However, replication of the programme by other research groups suggests that there may be issues with the transferability of LST to other settings (Fraguera et al., 2003; Smith et al., 2004; Spoth et al., 2005; 2008).

### **8.1.3 Brief behavioural or single session interventions**

A total of 15 articles were identified that reported on evaluations of seven brief or single session intervention approaches across 13 studies. Of the 13 studies, 11 studies were RCTs, one was an NRCT and one was a CBA study. All 13 studies were primarily school-based but six studies examined interventions which incorporated materials targeting parents. A range of providers were utilised including school nurses, physicians, teachers, fitness professionals, consultants, trained research staff and motivational speakers. Two studies were based on mailed intervention materials and therefore did not involve a provider in the delivery.

None of the studies examined intervention effects on knowledge or understanding but 11 studies (Argentos, 1991; Dempster et al., 2006; Werch et al., 1996a; 1996b; 2000a; 2003b; 2005a; 2005b; 2005c; 2008a) examined intervention effects on students' attitudes and values. Across these studies, there was an indication of positive intervention effects in the short-term, resulting in increases in negative views of alcohol and/or its consequences and a decrease in alcohol-related expectancies. Brief behavioural or single session intervention approaches appeared to have inconsistent short- and medium-term effects on student's intentions to drink. Few studies examined intervention effects on personal and social skills, and for two studies (Werch et al., 2003b; 2005b) that impacts on self-control and parent-child relationships intervention effects were mixed. Eight studies (Werch et al., 1996a; 1996b; 1998; 2000a; 2000b; 2003b; 2005a; 2005b) that examined STARS for Families and Project SPORT, two brief intervention approaches based on nurse consultations, indicated mixed, but generally positive effects of this programme approach on alcohol consumption and heavy drinking in the short- to medium-term. An alcohol tailored beverage programme (Werch et al., 2005c) and a brief intervention founded on the Behaviour-Image Model (Werch et al., 2008a) had inconsistent effects on alcohol use, and two further programmes, a single session on the dangers of binge drinking (Dempster et al., 2006), and the one week Programme "Kickoff" (Argentos, 1991), had no effects on alcohol use.

#### **8.1.4 Multicomponent school- and community-based programmes**

Nine studies (Perry et al., 1996; Komro et al., 1999; 2001; 2008; Perry et al., 2002; Williams et al., 1995; Toomey et al., 1996; Johnson et al., 1990; Chou et al., 1998) were identified that examined two multicomponent, school- and community-based programmes: Project Northland and the Midwest Prevention Project. Both programmes were based in communities in the USA and combined comprehensive school-based curriculums, with community-based activities and parental involvement components. All nine studies identified for inclusion were based on an RCT design.

None of the studies examined intervention effects on knowledge or understanding, or personal and social skills. There were no effects of Project Northland on attitudes and values and neither of the studies of the MPP examined intervention effects on these outcomes. Project Northland significantly reduced growth in binge drinking and tendency to use alcohol during Phase I and II of the programme (Perry et al., 1996; 2002; Komro et al., 2001), however, during the interim phase of the programme the growth in alcohol use was greater among intervention students than control students. The three-year MPP (Johnson et al., 1990; Chou et al., 1998) did not have significant effects on alcohol use in one cohort of ninth/tenth grade students, but a short-term secondary prevention effect was reported in a second cohort.

#### **8.1.5 Peer support and counselling programmes**

Five studies examined five peer support and counselling programmes. Of the five studies identified for inclusion, one study was based on an RCT design; two studies were NRCTs; and two studies were based on CBA designs. All five programmes were school-based only and the provider for three peer support programmes (Colnes, 2001; Padget et al., 2005; Webster et al., 2002) was peers alone. The two counselling programmes (Bremberg & Arborelius, 1994; Valentine et al., 1998) were delivered by health counsellors or educational psychology students, respectively.

None of the studies examined intervention effects on knowledge or understanding, or personal and social skills. Three studies (Colnes, 2001; Padget et al., 2005; Bremberg & Arborelius, 1994) examined short-term intervention effects on attitudes and values. For two peer leadership programmes there appeared to be modest impacts on attitudes to alcohol and one study of a counselling programme found that the programme had a positive impact on the number of psychological problems that students attributed to their alcohol use (Bremberg & Arborelius, 1994). Neither of the counselling programmes (Bremberg & Arborelius, 1994; Valentine et al., 1998) was shown to be effective in reducing alcohol consumption, and one programme (Valentine et al., 1998) had potentially harmful effects on high school students' alcohol consumption. There were inconsistent effects of peer support programmes on alcohol use.

#### **8.1.6 Review of published economic evaluations**

Two studies (Swisher et al., 2004; Pentz, 1998) were identified that met the criteria for inclusion in the review of published economic evaluations. Swisher et al (2004) assessed the cost-effectiveness of standard and infused LST, and Pentz (1998) assessed the costs, benefits and cost-effectiveness of the MPP. The standard LST programme was found to be more cost effective than I-LST by \$33.46

per student after 1 year of intervention delivery. In the second year, however, standard LST had no effects and the authors concluded that I-LST was more cost-effective. The 3-year total costs of the two programmes were estimated at \$109,429.04 and \$93,088.17, respectively. The results of the cost-benefit analysis (CBA) of the MPP demonstrated a \$700 net saving per family per year resulting from a reduction in the incidence of monthly drunkenness. Cost benefits ratios were also shown to be favourable (ratio to \$1 spent on prevention to saving is \$1:1.69). Compared to “usual” drug education the ICER of the MPP was reported to be equal to the ratio of its incremental cost per incremental effects, equivalent to \$10 per net reduction in the incidence of monthly drunkenness.

## **8.2 Sex and relationships education**

A total of 75 articles met the criteria for inclusion in the review of sex and relationships education programme. Nine articles were systematic reviews and meta-analyses, 65 articles reported on evaluations of sex and relationships education interventions, and one article was an economic evaluation study.

### **8.2.1 Systematic reviews and meta-analyses**

Nine systematic reviews evaluated abstinence only and abstinence plus safer-sex promotion programmes (Underhill et al., 2007, 2008; Bennett & Assefi, 2005), safer-sex promotion (Oakley et al., 1995; Franklin et al., 2007; Kirby et al., 1994; Pedlow and Carey, 2003; Robin et al., 2004) and sexuality-focused interventions (Sales et al., 2006). Findings from three reviews that examined abstinence-only and abstinence-plus programmes (Underhill et al., 2007, 2008; Bennett and Assefi, 2005) indicated that abstinence-only programmes have limited effects or are ineffective for preventing or reducing sexual risk behaviours. In addition, Oakley et al (1995) found evidence to suggest that abstinence only education may have an adverse effect and actually increase sexual experimentation among students. For programmes that incorporated information on safe sex and use of contraception, there was evidence from five reviews (Underhill et al., 2008; Pedlow & Carey, 2003; Franklin et al., 1997; Kirby et al., 1994; Oakley et al., 1995) to suggest that interventions may have effects on preventing sexual risk behaviours, but that these effects tend to be modest. There was no evidence that sexuality and AIDS education increased sexual activity.

### **8.2.2 UK-based studies**

Twelve UK studies, evaluating seven programmes, were identified that could be defined as predominantly sex and relationships education. Of the 12 studies, six were RCTs, two studies were based on an NRCT design, and five were CBA studies. Seven studies (Henderson et al., 2007; Mellanby et al., 1995; 2001; Stephenson et al., 2004; 2008; Tucker et al., 2007; Wight et al., 2002) reported on evaluations of three comprehensive school-based programmes, A PAUSE, RIPPLE and SHARE, respectively. Two studies (Gillies et al., 1990; Bellingham et al., 1993) reported on evaluations of the Streetwise UK, AIDS education comic, Denman et al (1995) examined a theatre in education programme and two studies (Graham et al., 2002; Magnusson et al., 2004) examined single lessons on emergency contraception and contraceptive services, respectively.

Across four studies (Tucker et al., 2007, Wight et al., 2002; Stephenson et al., 2004; Mellanby et al., 2001) that examined three comprehensive school-based programmes, there were indications that these programmes had significant effects on knowledge about STIs. Three studies (Denman et al., 1995; Bellingham and Gillies, 1993; Gillies et al., 1990) that examined a theatre in AIDS/HIV education programme and the Streetwise UK comic, respectively, had positive impacts on knowledge about HIV, and a teacher-led intervention about emergency contraception (Graham et al., 2002) increased knowledge relating to contraception. The effects of three comprehensive SRE programmes on attitudes were mixed. There were inconsistent or no effects of the peer-led RIPPLE programme and A PAUSE, but there were positive programme effects of the SHARE programme (Tucker et al., 2007) on attitudes concerning condom use and STI prevention, on self-efficacy to use condoms. Other intervention approaches focusing on HIV prevention (Denman et al., 1995; Bellingham and Gillies, 1993; Gillies et al., 1990) and emergency contraception (Graham et al., 2002) had limited impacts on attitudes and values. Results for skills outcomes were limited with few studies reporting on these outcomes. In addition, few of the studies found significant programme effects on health outcomes related to sexual health. There were positive medium- and long-term effects of the A PAUSE (Mellanby et al., 1995) and RIPPLE (Stephenson et al., 2004) programmes on the number of students who reported ever having had sex, although for RIPPLE this effect was only apparent among females at the 18-month follow-up. There were no effects of either the RIPPLE (Stephenson et al., 2004; 2008) or SHARE (Wight et al., 2002) programmes on use of condoms or other forms of contraception. There was mixed evidence on the effects of these programmes on pregnancy. There were no medium-term effects of the SHARE (Wight et al., 2002) or RIPPLE (Stephenson et al., 2004) programmes on rates of unintended pregnancies, however, Stephenson et al (2008) found that at age 20, students who participated in the peer-led RIPPLE programme were less likely to have been pregnant. There were no long-term effects of the RIPPLE (Stephenson et al., 2008) or SHARE (Henderson et al., 2006) programmes on abortion rates. Other intervention approaches focusing on HIV prevention (Denman et al., 1995; Bellingham and Gillies, 1993), and single lessons about emergency contraception (Graham et al., 2002) and contraceptive services (Magnusson et al., 2004), respectively, had no impact on sexual behaviours.

### **8.2.3 Abstinence-only programmes**

Ten articles were identified that evaluated eight programmes defined as abstinence-only programmes across nine studies. These programmes encouraged and promoted abstinence as the best and only way to prevent pregnancy, HIV and other STIs. Of the nine studies, two were RCTs and seven were NRCTs. Four programmes were teacher-led and one was peer-led. The provider for three programmes was not reported. Abstinence-only programmes were generally targeted at students younger than 14 years, with the exception of the Sex Can Wait programme, which consists of upper elementary, middle and high school components.

Knowledge outcomes were reported in six studies (Blake et al., 2001; Borawski et al., 2005; Denny et al., 1999; Denny and Young, 2006; Jorgensen et al., 1993; Trenholm et al., 2008) and overall abstinence-only programmes appeared to be effective at increasing knowledge related to STIs in the

short- to medium-term. Evidence was lacking on the longer term effects on knowledge. Eight studies examined effects on attitudes and values, and abstinence-only programmes were generally found to have had a positive effect on participants' beliefs and attitudes towards abstinence, and no programmes reported an adverse programme effect on attitudes towards abstinence or intentions to have sex. Results from the studies that examined intervention effects on parent-child communication indicated that abstinence-only programmes did not affect communication. Eight studies (Christopher & Roosa, 1990; Blake et al., 2001; Borawski et al., 2005; Denny et al., 1999; Denny & Young, 2006; Jorgensen et al., 1993; Roosa & Christopher, 1990; Trenholm et al., 2008) demonstrated that abstinence-only programmes had non-significant or inconsistent effects on the initiation of sexual activity. Two studies (Borawski et al., 2005; Trenholm et al., 2008) reported outcomes relating to contraception and no impact on contraception use. One abstinence-only programme, Success Express (Christopher and Roosa, 1990), had a negative effect; at follow-up intervention students reported greater lifetime sexual experience than controls. However, in a replication study of this programme (Roosa & Christopher, 1990) there was no difference between intervention and control students on this measure.

#### **8.2.4 Abstinence-plus programmes**

A total of 24 articles were identified that reported on the evaluation of 15 abstinence plus programmes across 18 studies. Abstinence plus programmes were defined as those that reported an emphasis on abstinence as the safest way to avoid HIV/STI infection and pregnancy, but also promoted safer sex through the use of contraceptives. Of the 18 studies identified, ten were RCTs and eight were NRCTs. Two programmes, Safer Choices and YAPP, incorporated activities for parents and one programme, Protection Express, was exclusively peer-led. The programmes identified tended to target older adolescents (>14 years) or students across a range of ages, from the age of 13 years and upwards.

Fourteen studies (Aarons et al 2000; Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; 2001; 2004; Eisen et al., 1990; Kirby et al., 1991; LaChausse, 2006; Siegel et al., 1998; 2001; Walter & Vaughan, 1993; Wright, 1998; Zimmerman et al., 2008) examined intervention effects on sexual health knowledge, finding that abstinence-plus programmes were generally effective in improving sexual health knowledge in the short- and medium-term. In addition, three studies (Coyle et al., 2001; Kirby et al., 1991; Wright, 1998) reported sustained long-term increases in knowledge among students exposed to abstinence plus programmes compared to controls. The results of 14 studies (Aarons et al., 2000; Borawski et al., 2009; Coyle et al., 1999; Coyle et al., 2004; Eisen et al., 1990; Kirby et al., 1991; LaChausse, 2006; Levy et al., 1995; Siegel et al., 1998; 2001; Stanton et al., 2006; Walter & Vaughan, 1993; Wright, 1998; Zimmerman et al., 2008) demonstrated that intervention effects on behavioural intentions, attitudes to sexual behaviour, and self-efficacy were inconsistent and there was no clear indication of the direction of effects. In addition, some programmes, such as Draw the Line/Respect the Line, had differing effects on male and female students. Across five programmes that incorporated skills building activities (Borawski et al., 2009; Boyer & Shafer, 1997; Coyle et al., 1999; 2001; Kirby et al., 1991; Wright, 1998) there were positive short- to medium-term effects on skills relating to sexual risk prevention. There was no indication of short-term intervention

effects on the initiation of sexual involvement and at the medium-term follow-up, programme effects were largely inconsistent with four studies (Borawski et al., 2009; Caron et al., 2004; Kirby et al., 1991; Wright, 1998) reporting no effects on initiation of sexual intercourse. In addition, intervention effects on frequency of sexual intercourse, number of sexual partners and contraceptive use were found to be inconsistent or non-existent in the short-, medium- and long-term. Two studies (Eisen et al., 1990; Kirby et al., 1991) examined the medium- to long-term effects of a HLM-SLT curriculum and Reducing the Risk, respectively, on pregnancy. Neither study identified significant programme effects on this outcome.

### **8.2.5 HIV and sexual risk-reduction programmes**

Overall, 11 studies were identified that examined HIV and sexual risk-reduction programmes. Studies were defined by their specific focus on HIV prevention and HIV risk-behaviour, sexual risk-behaviour or a combination of both. Of the 11 included studies, eight were RCTs, two were NRCT and one was based on a CBA study design. All programmes were delivered in school time however one programme included six computer-based activities to be completed outside of school time. The included studies focused on different ages and school years. One programme targeted students aged 12-14 years, but in general, programmes were targeted at older adolescents.

Seven studies (Borgia et al., 2005; Coyle et al., 2006; Fisher et al., 2002; Larsson et al., 2006; Roberto et al., 2007; Schaalma et al., 1996; Workman et al., 1996) examined intervention effects on general HIV and sexual health knowledge, finding significant effects on knowledge over the short-term. Two studies (Coyle et al., 2006; Larsson et al., 2006), which explored medium- to long-term effects on knowledge of HIV and contraception reported significant effects. Outcomes relating to attitudes were reported by seven studies (Borgia et al., 2005; Coyle et al., 2006; Fisher et al., 2002; Lemieux et al., 2008; Larsson et al., 2006; Roberto et al., 2007; Schaalma et al., 1996). Condom self-efficacy, perception of social norms and condom use/prevention intentions were the outcomes most commonly reported across these studies but intervention effects were found to be inconsistent with no clear direction of effect. Short-term programme effects on personal and social skills were predominantly positive and included positive programme effects on behavioural prevention skills and condom negotiation skills (Borgia et al., 2005; Fisher et al., 2002; Lemieux et al., 2008; Roberto et al., 2007; Workman et al., 1996). However, none of the included studies examined medium- to long-term impacts on skills. Intervention impacts on sexual initiation were explored in four studies (Roberto et al., 2007; Coyle et al., 2006; Kvaem et al., 1996; Mitchell-DiCenso et al., 1997), which overall indicated inconsistent effects on this outcome. Further studies indicated no impact on sexual activity or the numbers of sexual partners. Six studies (Fisher et al., 2002; Lemieux et al., 2008; Coyle et al., 2006; Kvaem et al., 1996; Larsson et al., 2006; Traeen, 2003) showed positive short-term programme effects on condom use and protected intercourse, but longer term programme effects on contraception use appeared to be limited. Limited outcomes were presented on HIV/STI testing, alcohol or drug use and pregnancy.

### **8.2.6 Other school-based approaches**

Seven studies were identified that reported on six different programme approaches relating to sexual health; one was a NRCT, five were CBA studies and one study was based on an interrupted time series design. Two studies examined school-based clinic programmes (Stout et al., 1996; Teitler, 1997), two studies (Somers et al., 2001; 2006) reported findings from one programme using baby simulators (Baby Think it Over), and three studies (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004) examined the effects of combined community and school-based programmes.

None of the studies examined intervention effects on knowledge or understanding. Three studies (Stout et al., 1996; Somers et al., 2001; 2006), which examined school-based health clinics and an infant simulation intervention, respectively, reported inconsistent effects on attitudes towards sexual health and only one study examined programme effects on personal and social skills. There were no effects of the Baby Think it Over infant simulation programme on any of the sexual behaviour measures examined (Somers et al., 2001; 2006). Three studies (Lewis et al., 1999; Paine-Andrews et al., 1999; Vincent et al., 2004) that examined a school and community partnership approach to tackling teenage pregnancy, generally found that although there were reductions in pregnancy rates among 14-17 year olds at the intervention sites, these reductions were not found to be significant compared to non-intervention sites. However, one study (Vincent et al., 2004) that examined pregnancy rates over 20 years concluded that the intervention had had a positive effect on teenage pregnancies. Two studies (Stout et al., 1996; Teitler, 1997), which examined the long-term effects of school-based health centres, found that these programmes did not have consistent effects on participant's sexual behaviour.

### **8.2.7 Review of published economic evaluations**

One study (Wang et al., 2000) was identified that met the criteria for inclusion in the review of published economic evaluations. Wang et al (2000) evaluated the cost-effectiveness and cost benefits of a school-based sex and relationships education programme, Safer Choices. Overall the net benefit of the Safer Choices programmes was \$174,276 and the benefit-cost ratio was 2.65, indicating that for every \$1 spent on the programme, \$2.65 were saved in medical and societal costs. The generalisability of the study to a UK context was unclear as the data used in the evaluation was based on studies conducted in the USA, and utilised other US population estimates. However, the authors state that the methods and data used were conservative and it is possible that the intervention may be cost saving in a UK context.

## **8.3 General health education programmes**

### **8.3.1 Systematic reviews and meta-analyses**

No systematic reviews or meta-analyses were identified for inclusion in the review of general health education programmes.

### 8.3.2 General health education programmes

Overall, nine studies reported on the evaluation of six general health education programmes that reported relevant alcohol and sexual education outcomes. Of the nine studies, eight were RCTs and one was a CBA study. All six programmes were primarily delivered in schools. Four programmes were solely school-based and two programmes incorporated both school and community elements. All six programmes targeted young adolescents aged less than 14 years.

One study (Moberg & Piper, 1990) examined programme effects on knowledge, finding no significant effects of Project Model Health on curriculum-specific knowledge. However, there were positive medium-term effects of this programme on attitudes towards postponing sex and using contraceptives, and attitudes and intentions towards alcohol and other drugs. Piper et al (2000) found a medium-term impact on students' perceptions of peer attitudes towards alcohol and other drugs in those receiving the intensive condition of the Healthy for Life Programme. However, there was no longer term effect of this programme. None of the studies examined intervention effects on personal and social skills. Two programmes, the RFH curriculum (O'Donnell et al., 1999; 2002) and the Aban Aya project (Flay et al., 2004), which incorporated community components, had positive effects on sexual behaviour in the medium- to long-term. Four school-based programmes (Bond et al., 2004; Harrington et al., 2001; McNeal et al., 2004; Patton et al., 2006; Piper et al., 2000) had either no effect or harmful effects on sexual behaviours and alcohol use.

### 8.3.3 Review of published economic evaluations

No published economic evaluation studies were identified for inclusion in the review of general health education programmes.

## 8.4 Strengths and limitations

The review of the effectiveness and cost-effectiveness of PSHE in secondary schools focusing on SRE and alcohol education was based on a comprehensive and systematic literature review. Over 11,000 titles and abstracts were screened for inclusion for the review, and over 900 full text articles were reviewed. In addition, the review has been conducted using a standardised and transparent approach, adhering to protocols for the development of NICE public health guidance.

### 8.4.1 Quality of the included studies

The studies identified for inclusion in the review were based on a range of study designs, with over half of the studies based on an RCT design. The study quality was variable across the included studies and overall one third of the included studies were rated poor quality. Approximately one tenth of studies achieved a good rating (++), with the remainder rated moderate quality (~60%). The vast majority of studies did not describe the source population or source area from which study participants were drawn, and therefore it was not possible to determine the eligibility of the selected populations or area included. Few studies reported how selection bias was minimised. Across the RCTs identified for inclusion the authors reported little more than that randomisation had been undertaken. The actual methods of randomisation and whether allocation had been adequately concealed was rarely reported. For studies that were based on non-random assignment it was also

rarely reported how confounding and bias were minimised or how individuals or clusters were allocated to intervention or control arms. In addition, only two studies, both RCTs, reported whether investigators were blind to intervention and comparison groups. It was difficult to judge whether contamination was acceptably low across the included studies as few studies discussed whether contamination had or was likely to have occurred. For studies that randomised at the classroom or individual level there was the possibility that contamination occurred within schools, but for studies that randomised at the school level the possibility of contamination was minimised. Attrition rates varied across studies and some studies failed to account for all participants at study conclusion. Outcome measures were reported to be reliable in around two thirds of studies, which a proportion of studies reporting inter- or intra-rater reliability scores. Follow-up time varied greatly across the included studies from immediate post-test to over four years of follow-up. Around two-thirds of studies reported what was judged to be a follow-up time of adequate length. A variety of approaches were taken to the analysis of results. Few studies reported that an intention to treat analysis had been undertaken and few authors discussed whether the studies were adequately powered. Analytical methods appeared to be appropriate in the majority of studies, but estimates of effect size were not reported or calculable in some studies. Overall, the reporting quality of the studies was lacking meaning that the criteria on the study quality checklist were often noted as not reported.

#### **8.4.2 Applicability**

As highlighted in previous reviews conducted by the lead author and colleagues (Jones et al., 2007; 2009), there is a lack of prevention initiatives originating from the UK, particularly in the field of alcohol education. UK-based evaluations of a range of intervention approaches to SRE were identified for inclusion in the review and this provides applicable evidence from which to generate recommendations for practice and policy in England. However, the research literature on both SRE and alcohol education continues to be dominated by programmes from the USA, which may have a limited generalisability to the UK context, because of their emphasis on abstinence.

#### **8.4.3 How and why programmes worked**

Due to the short timescales over which the review was conducted and the volume of evidence identified, it was beyond the scope of the review to undertake a full examination of how and why programmes that demonstrated effectiveness worked. However, the systematic reviews identified for inclusion the review highlighted characteristics of interventions that were effective.

For SRE programmes, more effective studies were theoretically based with social cognitive theory the most successfully applied theory (Kirby et al., 1994; Pedlow and Carey, 2003; Sales et al., 2006) and used trained adult educators (Robin et al., 2004; Sales et al., 2006), although it was recognised that trained peer providers could also be effective (Robin et al., 2004). Two reviews reported that successful interventions applied interactive strategies (Robin et al., 2004; Sales et al., 2006) and two highlighted the importance of including highly specific content focusing on reducing sexual risk behaviour such as skills about condom use or refusing sex (Kirby et al., 1994; Robin et al., 2004).

For alcohol education programmes, interactive programmes targeting alcohol have been found to be more effective than non-interactive programmes (Tobler et al., 2000; Cuijpers, 2002). Cuijpers (2002) proposed further quality criteria suggesting that programmes should be based on the social influence model and focus on normative education, commitment not to use substances, and intentions not to use. In addition, Cuijpers (2002) reported that life-skills training and/or the use of peer leaders strengthened the effects of school-based interventions.

## 8.5 Research recommendations

The review has identified a number of gaps in the evidence and future research should aim to address the following key research recommendations:

- There needs to be further evaluation of the effectiveness and cost-effectiveness of PSHE approaches in secondary school focusing on alcohol education, which are currently being delivered or planned in the UK;
- Full economic evaluation studies are required of PSHE approaches focusing on both SRE and alcohol education that consider both the costs and consequences of implementing these types of interventions and programmes.
- Future research should consider the relationship between alcohol use and sexual health.

Improvements in study design and the quality of reporting are required with respect to all types of studies and the following are recommendations to improve the methodology of future studies:

- Improved reporting of methods is required, particularly with regard to methods for the allocation of participants and clusters (e.g. methods of randomisation), allocation concealment, procedures for blinding, and follow-up of participants. Reporting standards could be improved by following guidelines on reporting, such as the CONSORT statement for RCTs and TREND statement for non-randomised studies.
- Standardisation of outcomes is required. Across the included studies a range of attitudinal and behavioural measures were reported and consequently it was not possible to synthesise outcomes across studies. Also when considering which outcomes to incorporate, there needs to be a consideration of the age and level maturity of the sample targeted (e.g. with regard to studies of SRE programmes consideration should be given to the relationship status of participants).
- Some studies were conducted with inadequate sample sizes, and future research studies should be sufficiently powered to detect intervention effects.
- Future research studies should incorporate an adequate length of follow-up.

## 9 Conclusions

### 9.1 Alcohol and drug education programmes

The evidence suggests that classroom-based programmes, regardless of whether the focus is on alcohol alone or as one of a number of substances, may have beneficial effects on alcohol-related knowledge, particularly in the short- to medium-term. Programme effects on attitudes and values were mixed and inconsistent across a range of intervention approaches and the evidence was insufficient to draw conclusions about the impact of these programmes on personal and social skills. Overall, the findings of the review of alcohol and drug education programmes highlight that there is a lack of clear, medium- to long-term evidence for the effectiveness of school-based alcohol education programmes on health and social outcomes relating to alcohol use. In addition, the applicability to a UK context of those programmes that have demonstrated effectiveness, such as LST, STARS for Families and Project SPORT, is limited. There is lack of evidence on which to draw conclusions about the cost-effectiveness of alcohol and drug education programmes. Further good quality UK-based research of promising or novel intervention approaches, including assessment of cost-effectiveness, is required in order to improve the evidence base on which to make UK-based policy and practice recommendations for PSHE focusing on alcohol education.

### 9.2 Sex and relationships education programmes

There were consistently positive programme effects on acquisition of sexual health knowledge, across the SRE education programmes that examined this outcome, regardless of whether the programme emphasised abstinence or not. A range of outcomes were reported with regards to attitudes and values and programme effects were mixed or inconsistent across these measures. It was therefore not possible to draw unequivocal conclusions about the impact of SRE programmes on attitudes and values relating to sexual health. The evidence suggests that while abstinence-only programmes have no effects on health and social outcomes related to sexual health, programmes that incorporate information on safer sex and contraceptive use may have positive, but limited effects on the prevention of sexual risk behaviours, in particular limited effects on contraceptive use. Although the applicability of some of these programmes to a UK context is limited, these conclusions are supported by the evidence drawn from studies conducted in the UK. There is lack of evidence on which to draw conclusions about the cost-effectiveness of SRE programmes. Further good quality UK-based research of promising or novel intervention approaches, including assessment of cost-effectiveness, is required in order to add to the evidence base on which to make UK-based policy and practice recommendations for PSHE focusing on SRE.

### 9.3 General health education programmes

There was a lack of evidence on which to draw clear conclusions about the effects of the general health education programmes on knowledge, and attitudes and values relating to alcohol use and sexual health. The evidence suggests that general health education programmes, which incorporate an intensive community intervention element in conjunction with a curriculum base may have a positive effect on sexual behaviour and substance use. There were no effects, or in some cases

harmful effects on sexual health and alcohol use outcomes for curriculum-based, general health education programmes. In addition, the applicability of these programmes to a UK context was limited.

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## Appendix 2. References to excluded studies

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### Appendix 3. Summary of quality assessment

**Table 10.1** Quality assessment: Randomised controlled trials

	Aarons, et al., 2000	Bellingham, et al., 1993	Blake, et al., 2001	Borawski, et al., 2009	Borgia, et al., 2005	Coyle, 1999	Coyle, 2004	Coyle, 2006	Eisen, 1990
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	NR	-	+	NR	NR	NR	++	NR	++
1.2 Is the eligible population or area representative of the source population or area?	NR	+	++	NR	+	NR	++	-	++
1.3 Do the selected participants or areas represent the eligible population or area?	NR	++	++	NR	+	NR	++	-	NR
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	NR	++	++	+	NR	+	NR
2.2 Were interventions (and comparisons) well described and appropriate?	-	+	++	++	+	++	+	++	++
2.3 Was the allocation concealed?	NR	NR	NR	+	NR	NR	NR	NA	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	-	-	NR	+	NR	NR	NA	NR
2.5 Was the exposure to the intervention and comparison adequate?	-	+	++	++	+	++	++	+	-
2.6 Was contamination acceptably low?	NR	NR	NR	++	++	++	++	NR	NR
2.7 Were other interventions similar in both groups?	NR	NA	++	NR	++	++	++	NR	+
2.8 Were all participants accounted for at study conclusion?	++	++	-	+	+	+	+	+	+
2.9 Did the setting reflect usual UK practice?	+	++	++	NA	+	NR	+	+	NA
2.10 Did the intervention or control comparison reflect usual UK practice?	+	++	+	NA	+	NR	+	+	+
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	NR	++	++	++	++	++	++	+	+

	Aarons, et al., 2000	Bellingham, et al., 1993	Blake, et al., 2001	Borawski, et al., 2009	Borgia, et al., 2005	Coyle, 1999	Coyle, 2004	Coyle, 2006	Eisen, 1990
3.2 Were all outcome measurements complete?	++	++	++	NA	++	NA	+	++	++
3.3 Were all important outcomes assessed?	++	++	++	++	++	++	++	++	++
3.4 Were outcomes relevant?	++	++	++	++	++	++	++	++	++
3.5 Were there similar follow-up times in exposure and comparison groups?	++	++	++	++	++	++	++	++	NR
3.6 Was follow-up time meaningful?	+	-	-	++	+	++	++	++	++
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++	NR	+	++	-	+	++	+	++
4.2 Was Intention to treat (ITT) analysis conducted?	NR	NR	NA	NR	NR	NR	NR	NR	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	+	NR	NR	-	NR	+	NR	NR
4.4 Were the estimates of effect size given or calculable?	++	++	++	-	+	++	NR	++	NR
4.5 Were the analytical methods appropriate?	+	+	++	+	+	++	+	++	++
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	++	NR	-	+	++	++	++	NR
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	+	+	+	+	+	+	+	++	+
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	+	++	+	+	+	-	+	-	+
a RCT based on randomisation at the individual level									
NR – not reported; NA – not applicable									

Table 10.2 Quality assessment: Randomised controlled trials continued

	Flay, et al., 2004	Graham, et al., 2002	Graham, et al., 1990	Harrington, et al., 2001	Komro, et al., 2008	Kulis, et al., 2007	Kvalem, et al., 1996	Lachausse, 2006	Levy, et al., 1995
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	++	++	-	++	+	+	NR	+	NR
1.2 Is the eligible population or area representative of the source population or area?	++	++	-	++	++	++	NR	+	NR
1.3 Do the selected participants or areas represent the eligible population or area?	++	++	-	++	++	++	NR	+	NR
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	++	++	NR	NR	++	NR	+	+	+
2.2 Were interventions (and comparisons) well described and appropriate?	++	++	+	++	++	+	++	++	++
2.3 Was the allocation concealed?	NR	++	NR	NR	NR	NR	NR	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	-	NR	NR	NR	NR	NR	NR	NR
2.5 Was the exposure to the intervention and comparison adequate?	++	++	NR	NR	++	++	+	NR	++
2.6 Was contamination acceptably low?	++	++	NR	NR	++	NR	NR	NR	NA
2.7 Were other interventions similar in both groups?	++	NR	NA	++	++	+	NR	NA	NR
2.8 Were all participants accounted for at study conclusion?	++	NR	NR	NR	++	+	++	+	+
2.9 Did the setting reflect usual UK practice?	-	++	++	++	++	-	NA	++	+
2.10 Did the intervention or control comparison reflect usual UK practice?	++	++	++	++	++	-	NA	++	-
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	++	+	++	++	++	++	NR	++	NR

	Flay, et al., 2004	Graham, et al., 2002	Graham, et al., 1990	Harrington, et al., 2001	Komro, et al., 2008	Kulis, et al., 2007	Kvalem, et al., 1996	Lachausse, 2006	Levy, et al., 1995
3.2 Were all outcome measurements complete?	++	NA	++	++	++	++	NA	++	NA
3.3 Were all important outcomes assessed?	++	+	++	++	++	+	+	++	+
3.4 Were outcomes relevant?	++	++	++	++	++	+	+	++	+
3.5 Were there similar follow-up times in exposure and comparison groups?	++	++	++	++	++	++	++	++	+
3.6 Was follow-up time meaningful?	++	+	++	++	++	++	++	+	-
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++	++	++	++	++	++	+	+	+
4.2 Was Intention to treat (ITT) analysis conducted?	NR	++	NR	NA	++	++	NR	NR	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	++	++	++	++	++	NR	+	NR
4.4 Were the estimates of effect size given or calculable?	++	++	++	++	++	NR	+	++	++
4.5 Were the analytical methods appropriate?	++	++	++	++	++	-	+	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	++	++	++	++	NR	+	-	++	++
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	++	++	-	+	++	+	-	+	+
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	++	++	-	++	++	+	-	+	-
a RCT based on randomisation at the individual level									
NR – not reported; NA – not applicable									

Table 10.3 Quality assessment: Randomised controlled trials continued

	McNeal, et al., 2004	Mitchell-Dicenso, et al., 1997	Morgenstern, et al., 2009	Newton, et al., 2009	O'Donnell, et al., 1999	Patton, et al., 2006	Roberto, et al., 2007	Schaalma, et al., 1996	Shortt, et al., 2007
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	-	+	NR	NR	NR	NR	-	NR	NR
1.2 Is the eligible population or area representative of the source population or area?	++	++	+	NR	-	NR	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	++	++	NR	NR	+	NR	NR	NR	NR
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	NR	+	+	+	NR	+	+	+	+
2.2 Were interventions (and comparisons) well described and appropriate?	++	++	+	++	+	+	+	++	+
2.3 Was the allocation concealed?	NR	NR	+	NR	NR	NR	NR	NR	++
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.5 Was the exposure to the intervention and comparison adequate?	NR	++	+	+	NR	++	+	++	NR
2.6 Was contamination acceptably low?	NR	NR	++	+	NR	++	+	++	++
2.7 Were other interventions similar in both groups?	NA	NA	NR	++	NR	+	NR	NR	NR
2.8 Were all participants accounted for at study conclusion?	NR	+	++	++	-	NA	-	+	++
2.9 Did the setting reflect usual UK practice?	++	++	+	+	+	NA	NA	NA	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	++	++	+	+	+	NA	NA	NA	NR
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	++	++	+	++	NR	+	+	+	++

	McNeal, et al., 2004	Mitchell-Dicenso, et al., 1997	Morgenstern, et al., 2009	Newton, et al., 2009	O'Donnell, et al., 1999	Patton, et al., 2006	Roberto, et al., 2007	Schaalma, et al., 1996	Shortt, et al., 2007
3.2 Were all outcome measurements complete?	++	++	NA	NA	+	NA	NA	NA	NA
3.3 Were all important outcomes assessed?	++	++	++	++	+	+	+	+	++
3.4 Were outcomes relevant?	++	++	++	++	++	+	+	+	++
3.5 Were there similar follow-up times in exposure and comparison groups?	++	++	++	++	NR	+	+	+	+
3.6 Was follow-up time meaningful?	++	++	++	+	-	+	-	-	+
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++	NR	+	+	NR	+	+	NR	NR
4.2 Was Intention to treat (ITT) analysis conducted?	NR	++	++	NR	+	++	NR	-	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	++	++	NR	NR	NR	++	NR	NR	NR
4.4 Were the estimates of effect size given or calculable?	++	++	++	+	+	+	-	+	++
4.5 Were the analytical methods appropriate?	++	++	++	+	+	+	+	++	++
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	++	++	++	+	++	+	-	-	++
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	+	+	++	+	+	+	+	+	+
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	+	+	+	-	+	+	-	-	++
a RCT based on randomisation at the individual level									
NR – not reported; NA – not applicable									

**Table 10.4 Quality assessment: Randomised controlled trials continued**

	Smith, 1994	Spoth, et al., 2008	Stanton, et al., 2006	Stephenson, et al., 2004	Traeen, 2003	Vogl, et al., 2009	Weeks, et al., 1995	Werch, et al., 2008	Werch, et al., 2008
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	NR	NR	NR	-	NR	NR	NR	NR	+
1.2 Is the eligible population or area representative of the source population or area?	NR	++	NR	+	NR	NR	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	NR	NR	+	NR	NR	NR	NR	NR
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	+	++	+	+	+	+	NR
2.2 Were interventions (and comparisons) well described and appropriate?	+	+	+	++	+	++	++	++	+
2.3 Was the allocation concealed?	NR	NR	NR	NR	NR	NR	NR	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR	NR	NR	++	NR	NA	NR
2.5 Was the exposure to the intervention and comparison adequate?	+	++	+	+	NR	+	+	+	++
2.6 Was contamination acceptably low?	-	NR	NR	+	++	NA	NR	NR	-
2.7 Were other interventions similar in both groups?	NR	NA	NR	NR	NR	NR	-	+	+
2.8 Were all participants accounted for at study conclusion?	++	++	+	++	++	++	++	+	+
2.9 Did the setting reflect usual UK practice?	NR	++	NR	++	++	+	+	NA	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	NR	++	NR	+	++	+	+	NA	NR
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	++	++	++	NR	++	++	NR	+	++

	Smith, 1994	Spoth, et al., 2008	Stanton, et al., 2006	Stephenson, et al., 2004	Traeen, 2003	Vogl, et al., 2009	Weeks, et al., 1995	Werch, et al., 2008	Werch, et al., 2008
3.2 Were all outcome measurements complete?	NA	++	NA	+	+	++	+	NA	++
3.3 Were all important outcomes assessed?	+	++	++	++	++	++	+	++	+
3.4 Were outcomes relevant?	+	++	++	++	++	++	++	++	+
3.5 Were there similar follow-up times in exposure and comparison groups?	+	++	++	++	++	++	++	++	++
3.6 Was follow-up time meaningful?	-	++	+	++	++	++	+	+	-
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	+	++	+	+	NR	+	++	+	++
4.2 Was Intention to treat (ITT) analysis conducted?	NR	++	++	-	NR	NR	NR	NR	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	++	NR	NR	+	+	NR	NR	NR
4.4 Were the estimates of effect size given or calculable?	-	++	+	++	+	+	+	+	+
4.5 Were the analytical methods appropriate?	-	++	+	+	++	+	+	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	-	++	+	++	++	+	++	+	NR
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	-	++	+	++	+	+	+	+	+
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	-	++	+	+	+	+	+	-	+
a RCT based on randomisation at the individual level									
NR – not reported; NA – not applicable									

**Table 10.5 Quality assessment: Randomised controlled trials continued**

	<b>Wight, et al., 2002</b>	<b>Workman, et al., 1996</b>	<b>Zimmerman, et al., 2008</b>
<b>Section 1: Population</b>			
1.1 Is the source population or source area well described?	NR	NR	NR
1.2 Is the eligible population or area representative of the source population or area?	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	NR	NR
<b>Section 2: Method of allocation</b>			
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	+
2.2 Were interventions (and comparisons) well described and appropriate?	+	++	++
2.3 Was the allocation concealed?	NR	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR
2.5 Was the exposure to the intervention and comparison adequate?	+	++	++
2.6 Was contamination acceptably low?	NR	NR	NR
2.7 Were other interventions similar in both groups?	NR	NR	NR
2.8 Were all participants accounted for at study conclusion?	++	-	+
2.9 Did the setting reflect usual UK practice?	++	-	+
2.10 Did the intervention or control comparison reflect usual UK practice?	++	-	+
<b>Section 3: Outcomes</b>			
3.1 Were outcome measures reliable?	NR	+	++

	Wight, et al., 2002	Workman, et al., 1996	Zimmerman, et al., 2008
3.2 Were all outcome measurements complete?	+	NA	++
3.3 Were all important outcomes assessed?	++	+	++
3.4 Were outcomes relevant?	++	+	++
3.5 Were there similar follow-up times in exposure and comparison groups?	NR	++	-
3.6 Was follow-up time meaningful?	++	-	++
<b>Section 4: Analyses</b>			
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++	NR	+
4.2 Was Intention to treat (ITT) analysis conducted?	NR	NR	-
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	++	NR	NR
4.4 Were the estimates of effect size given or calculable?	++	-	-
4.5 Were the analytical methods appropriate?	+	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	++	-	++
<b>Section 5: Summary</b>			
<b>5.1 Are the study results internally valid (i.e. unbiased)?</b>	++	-	+
<b>5.2 Are the findings generalisable to the source population (i.e. externally valid)?</b>	+	-	+
a RCT based on randomisation at the individual level			
NR – not reported; NA – not applicable			

**Table 10.6. Quality assessment: Non-randomised controlled trials**

	Borawski, et al., 2005	Boyer, et al., 1997	Caron, et al., 2004	Dempster, et al., 2006	Denman, et al., 1995	Denny, et al., 1999	Denny, et al., 2006	Donnelly, et al., 2001	Fisher, et al., 2002
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	-	++	-	NR	NR	NR	NR	-	NR
1.2 Is the eligible population or area representative of the source population or area?	+	NR	+	NR	NR	NR	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	+	NR	+	NR	NR	NR	NR	NR	NR
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	NR	-	NR	-	-	-	-	NR	-
2.2 Were interventions (and comparisons) well described and appropriate?	+	+	+	+	+	+	+	+	++
2.3 Was the allocation concealed?	NR	NA	NR	NR	NA	NR	-	NR	NA
2.4 Were participants and/or investigators blind to exposure and comparison?	-	NA	-	NR	NA	NR	NA	NR	NA
2.5 Was the exposure to the intervention and comparison adequate?	-	++	+	+	+	NR	NR	NR	++
2.6 Was contamination acceptably low?	-	++	-	NR	-	NR	+	NR	++
2.7 Were other interventions similar in both groups?	+	NA	++	NR	NR	NR	NR	NA	++
2.8 Were all participants accounted for at study conclusion?	+	+	+	NR	+	-	-	NR	-
2.9 Did the setting reflect usual UK practice?	-	+	+	++	NR	NA	NA	-	++
2.10 Did the intervention or control comparison reflect usual UK practice?	-	+	+	++	NR	NA	NA	++	+
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	NR	+	+	+	NR	+	+	+	++
3.2 Were all outcome measurements complete?	+	++	+	NR	NA	NA	NR	NR	++

	Borawski, et al., 2005	Boyer, et al., 1997	Caron, et al., 2004	Dempster, et al., 2006	Denman, et al., 1995	Denny, et al., 1999	Denny, et al., 2006	Donnelly, et al., 2001	Fisher, et al., 2002
3.3 Were all important outcomes assessed?	+	++	+	++	-	+	+	+	++
3.4 Were outcomes relevant?	+	++	++	++	+	+	+	++	++
3.5 Were there similar follow-up times in exposure and comparison groups?	+	++	++	++	+	+	+	++	++
3.6 Was follow-up time meaningful?	+	+	++	-	-	-	+	-	++
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	+	++	++	NR	+	NR	NR	+	++
4.2 Was Intention to treat (ITT) analysis conducted?	NR	NR	NR	NR	NR	-	NA	NA	++
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	NR	+	NR	NR	NR	NR	NR	++
4.4 Were the estimates of effect size given or calculable?	+	++	NR	-	-	+	NR	-	++
4.5 Were the analytical methods appropriate?	+	++	+	+	+	+	+	-	++
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	++	-	-	-	+	NR	-	NR
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	+	+	+	-	-	-	-	-	++
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	+	+	+	-	-	-	-	+	++
a RCT based on randomisation at the individual level									
NR – not reported; NA – not applicable									

Table 10.7. Quality assessment: Non-randomised controlled trials continued

	Hubbard, et al., 1998	Jorgensen, et al., 1993	Kirby, 1991	Larsson, et al., 2006	Lennox, et al., 2008	Magnusson, et al., 2004	Mellanby, et al., 1995	Roosa, et al., 1990	Siegel, 1998
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	-	++	NR	-	NR	NR	++	NR	NR
1.2 Is the eligible population or area representative of the source population or area?	-	++	NR	NR	+	NR	++	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	-	++	NR	NR	+	NR	++	NR	NR
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	+	+	+	NR	+	-	NR	-	-
2.2 Were interventions (and comparisons) well described and appropriate?	+	++	++	+	+	+	NR	-	+
2.3 Was the allocation concealed?	NR	NR	NR	NA	NR	NR	NR	-	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR	NR	NR	NR	-	NR	NR
2.5 Was the exposure to the intervention and comparison adequate?	-	NR	NR	+	NR	+	++	-	+
2.6 Was contamination acceptably low?	NR	NR	+	NA	NR	++	NR	-	++
2.7 Were other interventions similar in both groups?	NR	NA	NR	NR	+	NR	NR	NR	NR
2.8 Were all participants accounted for at study conclusion?	-	NR	-	+	+	+	NA	-	-
2.9 Did the setting reflect usual UK practice?	+	++	+	NA	-	++	++	-	+
2.10 Did the intervention or control comparison reflect usual UK practice?	+	++	+	NA	-	++	+	-	+
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	NR	++	NR	NR	++	NR	+	+	NR

	Hubbard, et al., 1998	Jorgensen, et al., 1993	Kirby, 1991	Larsson, et al., 2006	Lennox, et al., 2008	Magnusson, et al., 2004	Mellanby, et al., 1995	Roosa, et al., 1990	Siegel, 1998
3.2 Were all outcome measurements complete?	+	++	++	NA	++	NA	++	NA	+
3.3 Were all important outcomes assessed?	+	++	+	+	++	+	++	++	+
3.4 Were outcomes relevant?	++	++	++	+	++	+	++	++	++
3.5 Were there similar follow-up times in exposure and comparison groups?	NR	++	+	+	++	+	NR	++	++
3.6 Was follow-up time meaningful?	++	+	++	-	+	-	++	-	+
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++	++	++	+	+	NR	NR	NR	+
4.2 Was Intention to treat (ITT) analysis conducted?	-	NR	NR	NR	NR	NR	NA	NR	-
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	++	NR	+	++	NA	+	NR	NR
4.4 Were the estimates of effect size given or calculable?	++	++	+	+	+	-	++	-	NR
4.5 Were the analytical methods appropriate?	+	++	+	+	+	-	++	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	++	+	+	NR	-	++	-	NR
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	+	+	+	+	+	-	+	-	+
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	+	+	+	-	+	-	++	-	+
a RCT based on randomisation at the individual level									
NR – not reported; NA – not applicable									

**Table 10.8. Quality assessment: Non-randomised controlled trials continued**

	Somers, 2006	Tucker, et al., 2007	Walter, et al., 1993	Wright, 1998
<b>Section 1: Population</b>				
1.1 Is the source population or source area well described?	NR	+	NR	NR
1.2 Is the eligible population or area representative of the source population or area?	NR	NR	NR	NR
1.3 Do the selected participants or areas represent the eligible population or area?	NR	NR	NR	NR
<b>Section 2: Method of allocation</b>				
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	-	NA	+	+
2.2 Were interventions (and comparisons) well described and appropriate?	-	NA	++	++
2.3 Was the allocation concealed?	+	NR	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	NR	NR
2.5 Was the exposure to the intervention and comparison adequate?	+	NR	+	++
2.6 Was contamination acceptably low?	++	NR	NR	++
2.7 Were other interventions similar in both groups?	NR	NR	NR	NR
2.8 Were all participants accounted for at study conclusion?	-	NA	-	++
2.9 Did the setting reflect usual UK practice?	+	++	++	NR
2.10 Did the intervention or control comparison reflect usual UK practice?	-	++	+	NR
<b>Section 3: Outcomes</b>				
3.1 Were outcome measures reliable?	-	NR	NR	++
3.2 Were all outcome measurements complete?	++	++	++	NA

	Somers, 2006	Tucker, et al., 2007	Walter, et al., 1993	Wright, 1998
3.3 Were all important outcomes assessed?	+	++	++	++
3.4 Were outcomes relevant?	++	++	++	++
3.5 Were there similar follow-up times in exposure and comparison groups?	-	+	+	++
3.6 Was follow-up time meaningful?	-	+	-	++
<b>Section 4: Analyses</b>				
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	-	NR	-	++
4.2 Was Intention to treat (ITT) analysis conducted?	NR	NA	NR	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	++	++	NR
4.4 Were the estimates of effect size given or calculable?	+	++	+	-
4.5 Were the analytical methods appropriate?	+	++	++	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	NR	++	++	-
<b>Section 5: Summary</b>				
<b>5.1 Are the study results internally valid (i.e. unbiased)?</b>	-	-	+	+
<b>5.2 Are the findings generalisable to the source population (i.e. externally valid)?</b>	+	+	+	+
a RCT based on randomisation at the individual level				
NR – not reported; NA – not applicable				

**Table 10.9. Quality assessment: Controlled before and after studies**

	Christopher, et al., 1990	Gillies, et al., 1990	Lemieux, et al., 2008	Paine-Andrews, et al., 1999	Mellanby et al., 2001	Somers, et al., 2001	Stout, et al., 1996	Teitler, 1997	Trenholm, et al., 2008
<b>Section 1: Population</b>									
1.1 Is the source population or source area well described?	+	NR	-	+	NR	++	+	NR	+
1.2 Is the eligible population or area representative of the source population or area?	+	NR	NR	NA	NR	+	++	NR	+
1.3 Do the selected participants or areas represent the eligible population or area?	+	NR	NR	NA	NR	+	++	NR	+
<b>Section 2: Method of allocation</b>									
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	-	-	+	-	-	NR	+	NA	+
2.2 Were interventions (and comparisons) well described and appropriate?	++	-	+	+	+	++	-	+	+
2.3 Was the allocation concealed?	NR	NR	-	NA	-	NR	-	NR	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NR	NR	-	NA	-	NR	NR	NR	NR
2.5 Was the exposure to the intervention and comparison adequate?	+	NR	++	+	+	NR	NR	-	+
2.6 Was contamination acceptably low?	-	++	NR	NA	+	NR	NR	NR	-
2.7 Were other interventions similar in both groups?	NR	NR	NR	NA	+	NA	NA	NR	+
2.8 Were all participants accounted for at study conclusion?	-	+	NR	NA	+	NR	NR	NA	+
2.9 Did the setting reflect usual UK practice?	+	NR	NR	NA	+	++	+	+	-
2.10 Did the intervention or control comparison reflect usual UK practice?	-	NR	NR	NA	+	++	+	+	-
<b>Section 3: Outcomes</b>									
3.1 Were outcome measures reliable?	+	NR	+	+	+	+	++	NR	+

	Christopher, et al., 1990	Gillies, et al., 1990	Lemieux, et al., 2008	Paine-Andrews, et al., 1999	Mellanby et al., 2001	Somers, et al., 2001	Stout, et al., 1996	Teitler, 1997	Trenholm, et al., 2008
3.2 Were all outcome measurements complete?	++	NA	+	NA	-	++	++	+	+
3.3 Were all important outcomes assessed?	-	-	++	+	-	++	+	-	+
3.4 Were outcomes relevant?	++	+	++	+	+	++	++	++	+
3.5 Were there similar follow-up times in exposure and comparison groups?	++	+	NR	NR	+	++	NR	++	+
3.6 Was follow-up time meaningful?	-	-	NR	NR	-	+	NR	++	++
<b>Section 4: Analyses</b>									
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	++	+	NR	NR	-	+	+	-	+
4.2 Was Intention to treat (ITT) analysis conducted?	NR	NR	NA	NA	-	NR	NA	NA	NR
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	NR	NR	NA	NR	NR	NR	-	NR
4.4 Were the estimates of effect size given or calculable?	+	-	NR	-	+	++	NR	+	NR
4.5 Were the analytical methods appropriate?	+	+	++	-	+	++	+	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	-	-	+	-	+	++	NR	+	NR
<b>Section 5: Summary</b>									
5.1 Are the study results internally valid (i.e. unbiased)?	-	-	-	-	+	-	-	-	+
5.2 Are the findings generalisable to the source population (i.e. externally valid)?	+	-	+	-	+	-	+	+	+
a RCT based on randomisation at the individual level NR – not reported; NA – not applicable									

**Table 10.10. Quality assessment: Other study types**

	Lewis, et al., 1999	Strange, et al., 2002	Vincent, et al., 2004
<b>Section 1: Population</b>			
1.1 Is the source population or source area well described?	+	NR	++
1.2 Is the eligible population or area representative of the source population or area?	+	NR	+
1.3 Do the selected participants or areas represent the eligible population or area?	NR	++	+
<b>Section 2: Method of allocation</b>			
2.1 Allocation to intervention (or comparison). How was selection bias minimised?	NA	NA	NR
2.2 Were interventions (and comparisons) well described and appropriate?	+	++	-
2.3 Was the allocation concealed?	NA	NA	NR
2.4 Were participants and/or investigators blind to exposure and comparison?	NA	NA	NR
2.5 Was the exposure to the intervention and comparison adequate?	+	NA	NR
2.6 Was contamination acceptably low?	NR	NA	NR
2.7 Were other interventions similar in both groups?	NR	NA	NR
2.8 Were all participants accounted for at study conclusion?	NR	++	NA
2.9 Did the setting reflect usual UK practice?	+	++	-
2.10 Did the intervention or control comparison reflect usual UK practice?	+	++	NR
<b>Section 3: Outcomes</b>			
3.1 Were outcome measures reliable?	NR	NR	NA
3.2 Were all outcome measurements complete?	+	++	++

	Lewis, et al., 1999	Strange, et al., 2002	Vincent, et al., 2004
3.3 Were all important outcomes assessed?	+	-	-
3.4 Were outcomes relevant?	++	+	++
3.5 Were there similar follow-up times in exposure and comparison groups?	NA	NA	++
3.6 Was follow-up time meaningful?	++	-	++
<b>Section 4: Analyses</b>			
4.1 Were exposure and comparison groups similar at baseline? If not, were these adjusted?	NA	NA	NR
4.2 Was Intention to treat (ITT) analysis conducted?	NA	NR	NA
4.3 Was the study sufficiently powered to detect an intervention effect (if one exists)?	NR	+	NR
4.4 Were the estimates of effect size given or calculable?	NA	+	NR
4.5 Were the analytical methods appropriate?	+	+	+
4.6 Was the precision of intervention effects given or calculable? Were they meaningful?	+	-	+
<b>Section 5: Summary</b>			
<b>5.1 Are the study results internally valid (i.e. unbiased)?</b>	-	-	-
<b>5.2 Are the findings generalisable to the source population (i.e. externally valid)?</b>	+	-	+
a RCT based on randomisation at the individual level			
NR – not reported; NA – not applicable			

**Table 10.11. Quality assessment for published economic evaluation studies**

<b>Study identification</b> Include author, title, reference, year of publication		<b>Pentz, 1998</b>	<b>Swisher et al., 2004</b>	<b>Wang et al., 2000</b>
<b>Evaluation criterion</b>				
<b>1.</b>	<b>Was a well-defined question posed in answerable form?</b>	Yes	Partly, the use of a do-nothing comparator is specified in the cluster randomised trial but not really mentioned in the economic evaluation	Yes
1.1	Did the study examine both costs and effects of the service(s) or programme(s)?	Yes	Partly, costs are listed (but not resource use items) but effects are not specified nor quantified.	Yes
1.2	Did the study involve a comparison of alternatives?	Yes	Yes: Infused Life Skill Training (ILST) with Life Skill Training (LST) compared to control (standard practice).	Yes, vs. standard, information only HIV programme
1.3	Was a viewpoint for the analysis stated and was the study placed in any particular decision-making context?	Yes	Yes, a societal viewpoint and set in a school	Private sector in base case, public sector considered in sensitivity analyses
<b>2.</b>	<b>Was a comprehensive description of the competing alternatives given (that is, can you tell who? did what? to whom? where? and how often?)?</b>	Partly	No, especially the ILST description which is vague	Partially
2.1	Were any important alternatives omitted?	The text is a book chapter so alternatives are not mentioned in detail. There is a control intervention in the relevant C-RCT but the intervention may not be the same as that mentioned as an alternative in the ICER.	No clear description of incremental costs	No

<b>Study identification</b> Include author, title, reference, year of publication		<b>Pentz, 1998</b>	<b>Swisher et al., 2004</b>	<b>Wang et al., 2000</b>
2.2	Was (Should) a do-nothing alternative (be) considered?	No	Yes, in the C-RCT, see answer to 1 above	No, not really practical as would likely be some intervention in schools related to HIV
<b>3.</b>	<b>Was the effectiveness of the programmes or services established?</b>	Difficult to say because the results of the C-RCT are not mentioned but a figure of 9% reduction over 3 years of drunkenness is mentioned in the paper.	Yes	Yes
3.1	Was this done through a randomised, controlled clinical trial? If so, did the trial protocol reflect what would happen in regular practice?	There is a discrepancy between the C-RCT results and description of intervention and its effects in the economic evaluation.	Yes a C-RCT. Probably	Yes
3.2	Was effectiveness established through an overview of clinical studies?	No, C-RCT	No primary research	NA
3.3	Were observational data or assumptions used to establish effectiveness? If so, what are the potential biases in results?	Not clear	No	NA
<b>4.</b>	<b>Were all the important and relevant costs and consequences for each alternative identified?</b>	Probably	No	Probably
4.1	Was the range wide enough for the research question at hand?	Probably	Yes	Yes, the authors reported all costs incorporated into the analyses.
4.2	Did it cover all relevant viewpoints? (Possible viewpoints include the community or social viewpoint, and those of patients and third-party payers.)	Yes	Only societal viewpoint	Assumptions made re: societal costs. i.e. for societal costs for PID were 50% of private sector costs

<b>Study identification</b> Include author, title, reference, year of publication		<b>Pentz, 1998</b>	<b>Swisher et al., 2004</b>	<b>Wang et al., 2000</b>
4.3	Were capital costs, as well as operating costs, included?	N/A	No, for good reasons only staff and material costs were considered	Not reported
<b>5.</b>	<b>Were costs and consequences measured accurately in appropriate physical units (for example, hours of nursing time, number of physician visits, lost work-days, gained life-years)?</b>	Yes	Costs were expressed, partly without resource consumption/unit cost breakdown. Effects were not defined (i.e. cost per smoking habit year gained at end of year 2).	Not reported
5.1	Were any of the identified items omitted from measurement? If so, does this mean that they carried no weight in the subsequent analysis?	No	No	No
5.2	Were there any special circumstances (for example, joint use of resources) that made measurement difficult? Were these circumstances handled appropriately?	Not clear	Appeared to be	No
<b>6.</b>	<b>Were costs and consequences valued credibly?</b>	Not clear		Yes
6.1	Were the sources of all values clearly identified? (Possible sources include market values, patient or client preferences and views, policy-makers' views and health professionals' judgements.)	Not clear	No	Yes
6.2	Were market values employed for changes involving resources gained or depleted?	Not clear	Mainly staff salaries and student materials. Impossible to say if valuation was realistic	NR
6.3	Where market values were absent (for example, volunteer labour), or did not reflect actual values (for example, clinic space donated at reduced rate), were adjustments made to approximate market values?	Not clear	Not applicable	NR

<b>Study identification</b> Include author, title, reference, year of publication		<b>Pentz, 1998</b>	<b>Swisher et al., 2004</b>	<b>Wang et al., 2000</b>
6.4	Was the valuation of consequences appropriate for the question posed (that is, has the appropriate type or types of analysis – cost-effectiveness, cost-benefit, cost-utility – been selected)?	Yes	No, not mentioned	NR
<b>7.</b>	<b>Were costs and consequences adjusted for differential timing?</b>	No		Yes
7.1	Were costs and consequences which occur in the future 'discounted' to their present values?	N/A	No	Medical costs discounted at 5%
7.2	Was any justification given for the discount rate used?	N/A	N/A	No
<b>8.</b>	<b>Was an incremental analysis of costs and consequences of alternatives performed?</b>	Yes		No
8.1	Were the additional (incremental) costs generated by one alternative over another compared to the additional effects, benefits or utilities generated?	Yes	Incremental costs were expressed (vaguely compared to standard practice), but no ICERs were calculated	No
<b>9.</b>	<b>Was allowance made for uncertainty in the estimates of costs and consequences?</b>	No		Partially
9.1	If data on costs or consequences were stochastic, were appropriate statistical analyses performed?	No	No	NR
9.2	Were study results sensitive to changes in the values (within the assumed range for sensitivity analysis, or within the confidence interval around the ratio of costs to consequences)?	N/A	Sensitivity analysis presented is a projection to year 3 of costs per student or teacher of each programme.	Yes, appropriate multivariate sensitivity analyses were conducted on key variables
<b>10.</b>	<b>Did the presentation and discussion of study results include all issues of concern to users?</b>	Partly	Partly, the issue of generalisability of results and meaning of the evaluation are not discussed	No

<b>Study identification</b> Include author, title, reference, year of publication		<b>Pentz, 1998</b>	<b>Swisher et al., 2004</b>	<b>Wang et al., 2000</b>
10.1	Were the conclusions of the analysis based on some overall index or ratio of costs to consequences (for example, cost-effectiveness ratio)? If so, was the index interpreted intelligently or in a mechanistic fashion?	Yes	No	No summary benefit measure used
10.2	Were the results compared with those of others who have investigated the same question? If so, were allowances made for potential differences in study methodology?	No	No	Not directly
10.3	Did the study discuss the generalisability of the results to other settings and patient/client groups?	No	No	Yes, briefly considered, acknowledge that the cost-effectiveness of the programme may vary by geographic region.
10.4	Did the study allude to, or take account of, other important factors in the choice or decision under consideration (for example, distribution of costs and consequences, or relevant ethical issues)?	No	No	No
10.5	Did the study discuss issues of implementation, such as the feasibility of adopting the 'preferred' programme given existing financial or other constraints, and whether any freed resources could be redeployed to other worthwhile programmes?	Yes	No	No
<b>OVERALL ASSESSMENT OF THE STUDY</b>				
How well was the study conducted? Code ++, + or –		+	-	+
Are the results of this study directly applicable to the patient group targeted by this guideline?		Possibly. Difficulties in implementation are not discussed.	No, vague text, rural US situation, predominantly white males and low-socio economic status. Absence of description of effects.	Possibly, based on conservative estimates. But programmes based on abstinence-plus approach

**Appendix 4. Summary of quality assessment for studies included in Jones et al (2007)**

**Table 10.12. Quality assessment for systematic reviews and meta-analyses**

- 1.1 The study addresses an appropriate and clearly focused question
- 1.2 A description of the methodology used is included
- 1.3 The literature search was sufficiently rigorous to identify all relevant studies
- 1.4 Study quality is assessed and taken into account
- 1.5 There are enough similarities between the studies selected to make combining them reasonable

Key: ++ Well covered + Adequately covered - Poorly covered NR Not reported N/A Not applicable

Reference(s)	Questions					Coding
	1.1	1.2	1.3	1.4	1.5	
Bruvold 1990	+	-	NR	NR	+	-
Coggan et al., 2003	+	-	++	-	N/A	+
Cuijpers 2002	++	-	-	NR	+	-
Dusenbury et al., 1997	+	-	+	+	N/A	+
Foxcroft et al., 2002	++	++	++	++	N/A	++
Loveland-Cherry 2003	++	+	++	++	+	+
Skara and Sussman 2003	++	++	+	-	+	+
Tobler, 1993	+	+	-	+	+	+
Tobler et al., 1997	+	++	-	++	++	+
Tobler et al., 2000	++	+	-	++	+	+
Werch and Owen 2002	++	+	+	-	*	+
White et al., 2004	++	++	++	+	N/A	++

**Table 10.13. Quality assessment for RCTs**

- 1.1 The study addressed an appropriate and clearly focused question
- 1.2 The assignment of participants to intervention groups is randomised
- 1.3 An adequate concealment method is used
- 1.4 Participants and investigators are kept 'blind' about intervention allocation
- 1.5 The intervention and control groups are similar at the start of the trial
- 1.6 The only difference between groups is the intervention under investigation
- 1.7 All relevant outcomes are measured in a standard, valid and reliable way
- 1.8 What percentage of the participants or clusters recruited into each intervention arm of the study dropped out before the study was completed?
- 1.9 All participants are analysed in the groups to which they were allocated? (ITT)
- 1.10 Where the study is carried out at more than one site, results are comparable for all sites

Key: ✓✓✓ Well covered ✓✓ Adequately covered ✓ Poorly covered ✗ Not addressed NR Not reported N/A Not applicable

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Baumann, 2006	✓✓	✗	✗	N/A	✓	✓	✓✓	42% from intervention and 25% from control	✓	N/A	-
Bennett, 1995	See Clayton et al., 1991, 1996										-
Bond et al., 2004	✓✓✓	✓✓✓	✗	N/A	✓✓✓	✗	✓✓	10%	✓✓✓	✗	++
Botvin et al., 1990a, 1995a	✓✓	✓	✗	N/A	✓✓	✗	✓✓	24% lost at 1 year follow-up	✗	✗	+
Botvin et al., 1990b	✓✓	✓✓	✗	N/A	✓✓	✓✓	✓✓	NR.	✗	✗	+

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Botvin et al., 1995b	✓✓✓	✓✓	NR	N/A	✓✓	✓✓	✓✓	NR	NR	*	+
Botvin et al., 2001a; 2001b; Griffin et al., 2003	✓✓	✓	*	N/A	✓✓	*	✓✓✓	17% not followed up.	*	*	+
Brewer, 1991	✓✓✓	✓✓✓	NR	NR	✓✓✓	✓✓✓	✓✓✓	NR	✓✓✓	N/A	+
Chou et al., 1998	✓✓	✓✓✓	✓	*	✓✓✓	✓✓✓	✓✓✓	Complete cases Intervention (42.72%) control (41.03%)	✓✓✓	✓✓	-
Clayton et al., 1991, 1996	✓✓	✓	*	*	*	*	✓	Overall, 45% rate of attrition.	*	*	-
Colnes 2000	✓✓✓	✓✓	*	N/A	✓✓✓	*	✓✓✓	47%	*	*	+
Dent et al., 2001	✓✓✓	✓	NR	N/A	✓✓	✓✓	✓✓	37%	✓	NR	-
Donaldson et al., 1995, 2000	✓✓	✓	NR	N/A	NR	NR	✓✓✓	NR	NR	N/A	-
Eisen et al., 2002	✓✓	✓	*	N/A	✓✓	NR	✓	16% didn't complete PT survey	*	*	+
Ellickson et al., 1990, 1993a	✓✓	✓✓	NR	NR	✓	✓	✓✓	40%	NR	N/A	+
Ellickson et al., 1993b	✓✓	✓✓✓	NR	NR	✓✓	✓✓	✓✓	125% failed to take 10th or 12th grade survey.	✓✓	✓✓✓	+
Ellickson et al., 2003	✓✓	✓✓	NR	NR	✓✓	✓	✓	9%	✓✓	*	+

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Fearnow-Kenney et al., 2003	✓✓	✓	✗	N/A	✗	✗	✓✓	~20%	✗	✗	-
Graham et al., 1990	✓✓✓	✓	✓	NR	✓	✓✓	✓✓✓	30%	NR	NR	+
Hansen & Graham 1991	✓✓	✓✓	NR	NR	✓✓	✓	✓	20%	NR	N/A	-
Hecht et al., 2003; Gosin et al., 2003	✓✓	✓✓	NR	NR	NR	NR	NR	NR	NR	N/A	-
Johnson et al., 1990	✓✓	✓✓	N/A	N/A	✓✓	✓✓	✓✓	32%	NR	NR	+
Komro et al., 1999	✓✓✓	✓✓	✗	N/A	N/A	N/A	✓✓✓	NR	✓✓	✓✓	+
Kreft 1998	✓✓	✓✓	NR	N/A	NR	NR	✓		NR	N/A	-
Kulis et al., 2005	✓✓✓	✓	✗	N/A	✓	✓✓	✓✓✓	NR	✗	NR	-
Lynam et al., 1999	See Clayton et al., 1991, 1996										
Newman et al., 1992	✓✓✓	✓	NR	N/A	NR	✓	✓✓✓	NR	NR		-
Palmer et al., 1998	✓✓	✓✓	NR	NR	✓✓	✓✓	NR		NR	N/A	-
Perry et al., 1996; Komro et al., 2001	✓✓✓	✓	✗	N/A	✓✓	✗	✓✓	19% lost at end of 8th grade	✓	✗	+
Perry et al., 2003	✓✓	✗	✗	N/A	✓✓	✓	✓✓	0.16	✗	✓	+

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Perry et al., 2002	✓✓✓	✓	✗	✓✓	✓✓	✗	✓✓	15% in 98	✓	✗	+
Piper et al., 2000	✓✓✓	✓	✗	N/A	✓✓	✗	✓✓✓	32%	✗	✗	-
Ringwalt et al., 1991	✓	✗	✗	N/A	✓✓	✗	✓✓	9% drop out	✗	✗	-
Shope et al., 1992	✓✓	✗	✗	N/A	✓	✗	✓	28% at 2.5 yr	✗	✗	-
Shope et al., 1994	✓✓	✗	✗	NR	✓	✗	✓✓	31%	NR	NR	-
Simons-Morton et al., 2005	✓✓✓	✓	✗	N/A	✓	✓✓	✓✓✓	~50% lost to follow-up	✗	NR	+
Slater et al., 2006	✓✓	✓	✗	N/A	✓✓✓	✓✓✓	✓✓✓	31.4% over 2 years	✓✓	✓✓	+
Smith et al., 2004; Vicary et al., 2004	✓✓	✓	✗	N/A	✓✓	✗	✓✓	~10%	✗	✗	+
Spoth et al., 2002; 2005	✓✓✓	✓	✗	N/A	✓✓	✓✓	✓✓	14%	✓	✗	+
Sussman et al., 1998; Sun et al., 2006	✓✓	✓✓	✗	NR	✓✓	✓	✓✓	~45%	NR	N/A	+
Sussman et al., 2003	✓✓	✓✓	✗	N/A	NR	NR	✓✓	~45%	NR	N/A	+
Toomey et al., 1996	See Perry et al., 1996										
Warren et al., 2006	✓✓	✓✓	✗	NR	✓✓	✓✓	✓✓	NR	NR	N/A	+

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Werch et al., 1996a	✓✓✓	✓✓	✗	NR	✓✓✓	✓✓✓	✓✓✓	3.8% dropped out of the intervention group and 1.9% dropped out of the control group.	✓✓✓	N/A	+
Werch et al 1996b	✓✓✓	✓✓	✗	N/A	✓✓✓	✓✓✓	✓✓✓	12% intervention group, and 9% control group.	✓✓✓	N/A	++
Werch et al., 1998	✓✓	✓✓	✗	N/A	✓✓	✓	✓✓	11%	✗	N/A	+
Werch et al., 2000a, 2001, 2003a	✓✓✓	✓	✗	N/A	✓✓	✓✓	✓✓	23% from intervention group and 21% from the control group.	✗	N/A	+
Werch et al., 2000b	✓✓✓	✓✓	NR	N/A	✓✓	✓✓	✓✓✓	NR	✗	N/A	+
Werch et al., 2003b	✓✓✓	✓✓✓	✓✓	N/A	✓✓	✓	✓✓✓	2%	✓✓	N/A	++
Werch et al., 2005a	✓✓✓	✓✓	✗	N/A	✓✓✓	✓✓	✓✓✓	3.3%	✗	N/A	+
Werch et al., 2005b	✓✓✓	✓✓✓	NR	N/A	✓✓✓	✓✓✓	✓✓✓	42 and 48 students dropped out at 12 months from the two arms respectively.	NR	N/A	++
Werch et al., 2005c	✓✓✓	✓	NR	N/A	✓✓	✓✓✓	✓✓✓	13%	NR	N/A	+
Williams et al., 1995	See Perry et al., 1996										

**Table 10.14. Quality assessment for NRCT**

- 1.11 The study addressed an appropriate and clearly focused question
- 1.12 The assignment of participants to intervention groups is randomised
- 1.13 An adequate concealment method is used
- 1.14 Participants and investigators are kept 'blind' about intervention allocation
- 1.15 The intervention and control groups are similar at the start of the trial
- 1.16 The only difference between groups is the intervention under investigation
- 1.17 All relevant outcomes are measured in a standard, valid and reliable way
- 1.18 What percentage of the participants or clusters recruited into each intervention arm of the study dropped out before the study was completed?
- 1.19 All participants are analysed in the groups to which they were allocated? (ITT)
- 1.20 Where the study is carried out at more than one site, results are comparable for all sites

Key: ✓✓✓ Well covered ✓✓ Adequately covered ✓ Poorly covered ✗ Not addressed NR Not reported N/A Not applicable

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Botvin et al., 1997	✓✓	N/A	N/A	N/A	✓✓	✗	✓✓	14%	✗	✗	-
Caplan et al., 1992	✓✓	N/A	N/A	N/A	✓✓	✓	✓✓✓	NR	✗	✗	-
Cuijpers et al., 2001; Smit et al., 2003	✓✓	N/A	N/A	N/A	NR	NR	✓✓✓	32% of intervention group; 20% dropped out from the control group	✗	✗	+
Dedobbeleer & Desjardins, 2001	✓✓	N/A	N/A	N/A	✓✓	✓✓	✓✓✓	60% lost to follow at 30 months	NR	NR	-

Reference(s)	Question										Rating
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	
Ennett et al., 1994;	✓✓✓	N/A	N/A	N/A	✓✓	✓✓	✓	12% not followed up at 2 years (7th/8th grade); attrition at 6 years not clear/	NR	NR	+
Fraguela et al., 2003	✓✓✓	N/A	N/A	N/A	✓✓	✓	✓	60%	×	×	-
McBride et al., 2000, 2003, 2004	✓✓✓	N/A	N/A	N/A	✓	×	✓✓	~25%	×	×	+
Padget et al., 2005	✓✓	N/A	N/A	N/A	✓✓	✓✓	✓✓✓	18%	×	×	+
Rosenbaum al., 1994	See Ennett et al., 1994										
Rosenbaum & Hanson, 1998	See Ennett et al., 1994										
Schnepf, 2002	✓✓	N/A	N/A	N/A	✓✓	×	✓✓	NR	×	N/A	-
Valentine et al., 1998	✓✓✓	N/A	N/A	N/A	✓✓	✓✓	✓✓	71% middle school, 48% high school completed	✓✓✓	N/A	-
Webster et al., 2002	✓✓✓	N/A	N/A	N/A	NR	✓✓✓	✓✓	28% intervention and 19% control students	✓✓✓	×	+
Wilhelmsen et al., 1994	✓✓✓	N/A	N/A	N/A	×	NR	✓✓	Not clear	NR	✓	-

**Table 10.15. Quality assessment for controlled before and after studies**

## 1.1 Contemporaneous data collection

- Score DONE pre and post intervention periods for study and control sites are the same.
- Score NOT CLEAR if it is not clear in the paper, e.g. dates of collection are not mentioned in the text.
- Score NOT DONE if data collection was not conducted contemporaneously during pre and post intervention periods for study and control sites.

## 1.2 Appropriate choice of control site

Studies using second site as controls:

- Score DONE if study and control sites are comparable with respect to dominant reimbursement system, level of care, setting of care and academic status.
- Score NOT CLEAR if not clear from paper whether study and control sites are comparable.
- Score NOT DONE if study and control sites are not comparable.

## 1.3 Baseline measurement

- Score DONE if performance or patient outcomes were measured prior to the intervention, and no substantial differences were present across study groups (e.g. where multiple pre intervention measures describe similar trends in intervention and control groups);
- Score NOT CLEAR if baseline measures are not reported, or if it is unclear whether baseline measures are substantially different across study groups;
- Score NOT DONE if there are differences at baseline in main outcome measures likely to undermine the post intervention differences (e.g. are differences between the groups before the intervention similar to those found post intervention).

## 1.4 Characteristics for studies using second site as control

- Score DONE if the authors state explicitly that the primary outcome variables were assessed blindly OR the outcome variables are objective e.g. length of hospital stay, drug levels as assessed by a standardised test;
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if the outcomes were not assessed blindly.

## 1.5 Blinded assessment of primary outcome(s)

- Score DONE if the authors state explicitly that the primary outcome variables were assessed blindly OR the outcome variables are objective e.g. length of hospital stay, drug levels as assessed by a standardised test;
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if the outcomes were not assessed blindly.

#### 1.6 Protection against contamination

##### Studies using second site as control

- Score DONE if allocation was by community, institution, or practice and is unlikely that the control group received the intervention;
- Score NOT CLEAR if providers were allocated within a clinic or practice and communication between experimental and group providers was likely to occur;
- Score NOT DONE if it is likely that the control group received the intervention (e.g. cross-over studies or if individuals rather than providers were randomised).

#### 1.7 Reliable primary outcome measure(s)

- Score DONE if two or more raters with at least 90% agreement or kappa greater than or equal to 0.8 OR the outcome is obtained from some automated system e.g. length of hospital stay, drug levels as assessed by a standardised test;
- Score NOT CLEAR if reliability is not reported for outcome measures that are obtained by chart extraction or collected by an individual;
- Score NOT DONE if agreement is less than 90% or kappa is less than 0.8.

#### 1.8 Follow up of professionals (protection against exclusion bias)

- Score DONE if outcome measures obtained 80-100% subjects allocated to groups. (Do not assume 100% follow-up unless stated explicitly.);
- Score NOT CLEAR if not specified in the paper;
- Score NOT DONE if outcome measures obtained for less than 80% of individuals allocated to groups.

#### 1.9 Follow up of individuals

- Score DONE if outcome measures obtained 80-100% of individuals allocated to groups or for individuals who entered the study. (Do not assume 100% follow-up unless stated explicitly.);
- Score NOT CLEAR if not specified in the paper;

- Score NOT DONE if outcome measures obtained for less than 80% of individuals allocated to groups or for less than 80% of individuals who entered the study.

Reference(s)	Question									Coding
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	
Argentos et al., 1991	Done	Not clear	Not clear	Not clear	Done	Not clear	Done	Not clear	Not clear	-
Bagnall, 1990	Not clear	Not clear	Not clear	Not clear	Done	Not clear	Done	Not clear	Not clear	-
Bremberg & Arborelius, 1994	Done	Not clear	Done	Done	Done	Not clear	Not clear	Not clear	Not clear	-
Dukes et al., 1996, 1997	Done	Not clear	Not clear	Not clear	Not done	Not clear	Not clear	Not done	Not done	-
Harmon, 1993	Done	Done	Not done	Done	Done	Done	Done	Done	Done	+
Klitzner et al., 1994	Done	Done	Done	Done	Done	Done	Not clear	Not done	Not done	+
Moberg & Piper, 1990	Done	Not clear	Done	Done	Not done	Done	Done	Not clear	Not clear	+
Shope et al., 1996a	Done	Not clear	Done	Not clear	Not done	Done	Not clear	Done	Done	+
Shope et al., 1996b; Shope et al., 1998	Not clear	Not clear	Not clear	Not clear	Done	Done	Done	Not clear	Not clear	-
Snow et al., 1992	Done	Not clear	Not clear	Not done	Not clear	-				
Snow et al., 1997	Not clear	Not clear	Not clear	Not done	Not done	Not clear	Not clear	Not clear	Not clear	-

**Appendix 5. Conversion table for English key stages and US grade equivalents**

Age	England		USA	
		Year		Grade
0-4	Pre-School	-		-
4-5		-	Pre Kindergarten	-
5-6	Primary School (Key Stage 1)	1	Kindergarten	-
6-7		2	Elementary School	1
7-8	3	2		
8-9	4	3		
9-10	5	4		
10-11	6	5		
11-12	Lower Secondary (Key stage 3)	7	Middle School	6
12-13		8		7
13-14		9		8
14-15	Upper Secondary (Key stage 4)	10	High School	9
15-16		11		10
16-17	6th Form College	-		11
17-18		-		12

## **Supplement C**

# **A review of the effectiveness and cost effectiveness of alcohol and sex and relationship education for all children and young people aged 5-19 years in community settings**

## **Final report**

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## Glossary

Abstinence-only programmes	Programmes that encourage and promote abstinence as the best and only way to prevent pregnancy, HIV and other STIs.
Abstinence-plus programmes	Programmes that emphasise abstinence as the safest way to prevent pregnancy, HIV and other STIs, but also promote safer sex through the use of contraceptives.
American school grades	Education is divided into 3 levels: elementary school, junior high (or middle) school and high school.
Benefit-cost ratio	The benefits of a programme divided by its costs. One way of presenting the results of a cost-benefit analysis.
Bias	Deviation of results or inferences from the truth, or processes leading to such deviation. Any trend in the collection, analysis, interpretation, publication or review of data that can lead to conclusions that are systematically different from the truth.
Binge drinking	Consuming large quantities of alcohol over a short period of time. Often associated with drinking to become intoxicated.
Cost-effectiveness analysis	An economic evaluation technique in which outcomes are measured in natural units.
Cluster randomisation	A trial where the unit of randomisation is a cluster of participants (e.g. a school).
Controlled before and after study (CBA)	Intervention groups are tested and data collected before and after the intervention has been administered. Differ from controlled non-randomised trials in that participants are not allocated to intervention or control groups, but rather a 'convenience' control sample is used.
Effect size	Effect size is a term used for a family of indices that measure the magnitude of the relationship between variables or treatment effect. Effect sizes are commonly used in meta-analyses as unlike significance tests these indices are independent of sample size.
Generalisability	The extent to which the results and conclusions from a study may be validity transposed to other situations.
Intention to treat analysis	A method of data analysis in which all participants are analysed in the group they were assigned to at randomisation regardless of treatment adherence.

Internal validity	How well the study has minimised sources of bias and how likely it is that the intervention caused the observed outcomes.
Long-term outcome	Study outcomes evaluated at greater than one year post-intervention.
Medium-term outcome	Study outcomes evaluated at six months to one year post-intervention.
Mass media	Means of communication that reach large numbers of people in a short time, such as television, newspapers, magazines, and radio.
Mean difference	The difference between two means divided by an estimate of the within group standard deviation.
Meta-analysis	The combination of quantitative evidence from a number of studies.
Net present value (NPV)	The benefits of an intervention minus its costs, taking into account the discount rate.
Net (social) benefit	An NPV, which considers social benefits
Non-Randomised Controlled Trial	These are trials where participants or clusters are allocated between intervention and control groups but the allocation is not randomised or quasi-randomised (e.g. alternate allocation).
Odds ratio	The odds of the event occurring in one group (e.g. intervention) divided by the odds of the event occurring in the other group (e.g. control).
Randomised Controlled Trial	Individuals or, defined groups of individuals (clusters) are randomised to either an intervention or a control group. If well implemented, randomisation should ensure that intervention and control groups only differ in their exposure to treatment.
Short-term outcomes	Study outcomes evaluated at less than six months post-intervention.
Systematic review	A method of locating, appraising and synthesising evidence from primary studies, which adheres to a scientific methodology.
Uncontrolled before and after study	Intervention groups are tested and data collected before and after the intervention has been administered. No control group is used for comparison purposes.

## Abbreviations

AESOP	AIDS Evaluation of Street Outreach Project
BPBR	Be Proud! Be Responsible!
CAS	Children's AID Society
CBA	Controlled before and after study
CI	Confidence interval
CTS	Cross-sectional time series
DCSF	Department for Children, Schools and Families
DfES	Department for Education And Skills
DH	Department of Health
ESOL	English Speakers for Other Languages
FOK	Focus on Kids
HEART	Heart Power! For Hispanics
HIV	Human immunodeficiency virus
ImPACT	Informed Parents And Children Together
ISFP	Iowa Strengthening Families Programme
ITT	Intention to treat
LST	Life Skills Training
MDHP	Mother/Daughter Health Promotion curriculum
MDRR	Mother/Daughter HIV risk reduction
NA	Not applicable
NICE	National Institute for Health and Clinical Excellence
NNT	Number needed to treat
NR	Not reported
NRCT	Non-Randomised Controlled Trial
NS	Non-significant
OR	Odds Ratio
PARE	Parent-Adolescent Relationship Education
PATH	Parent Preadolescent Training for HIV Prevention
PDFY	Preparing for the Drug Free Years
PSHE	Personal Social and Health Education
PT	Post-test
PWC	Parents Who Care
RAP	Reaching Adolescents and Parents
RCT	Randomised Controlled Trial
SAAF	Strong African-American Families
SE	Standard error
SHAPE	Sharing Healthy Adolescent and Parent Experiences
SR	Systematic Review
SRE	Sex and relationships education

STAND	Students Together Against Negative Decisions
STI	Sexually transmitted infection
UBA	Uncontrolled before and after study
YPYD	Young People's Youth Development
YUTHE	Youth United Through Health Education

## Executive summary

### BACKGROUND

This review sought to identify effective and cost-effective interventions and programmes that addressed health literacy and personal skills in relation to alcohol use and sexual health in community-based settings, including parent-targeted and family-based approaches.

### METHODS

The methods for the review followed NICE protocols for the development of NICE public health guidance. Eighteen databases were searched for effectiveness and cost-effectiveness studies published since 1990. One reviewer screened all titles and abstracts and full text screening was undertaken independently by two reviewers. Data extraction and quality assessment were undertaken by one reviewer and checked for accuracy by a second reviewer. Each study was also graded (++, + or -) based on the extent to which the design and execution of the study minimised the potential sources of bias. Results of the data extraction and quality assessment for each study of effectiveness and cost-effectiveness were presented in structured tables and as a narrative summary.

### PROGRAMMES TARGETING ALCOHOL USE

Thirty-one articles met the criteria for inclusion in the review of community-based programmes targeting alcohol use by young people. Four articles were systematic reviews and/or meta-analyses, three articles reported on studies that examined intervention or programmes delivered within social, healthcare and community settings, 20 articles reported on studies that examined programmes or interventions delivered to families or parents, and three studies examined interventions or programmes that involved the wider community or mass media. One economic evaluation study was also identified.

#### Systematic reviews and meta-analyses

Four articles covering three systematic reviews and meta-analyses were identified for inclusion. One review examined interventions and programmes aimed at the primary prevention of alcohol use across a range of populations and settings, and two reviews interventions and programmes delivered to parents and families, respectively. One good quality review found that although there was no consistent evidence to determine which programmes were effective over the short to medium-term, one family-based programme, the Iowa Strengthening Families programme (ISFP), was effective over the longer term. The systematic reviews of interventions and programmes delivered to parents and families also highlighted the long-term effectiveness of this programme.

#### Evidence statement 1

There is strong evidence from three systematic reviews to suggest that a family-based programme, Iowa Strengthening Families (ISFP), can produce long-term reductions (greater than 3 years) in alcohol use and heavy alcohol use.

### **Programmes delivered in social, healthcare and community settings**

Three studies were identified that examined interventions and programmes targeting alcohol use, which were delivered in social, healthcare and community settings. All three studies were conducted within youth and after school agencies and were based in the USA. Of the three studies identified, two were cluster RCTs and one was based on CBA design. One study examined an interactive CD-ROM intervention designed to reduce early alcohol use, and two studies examined substance use prevention programmes which targeted migrant families, and adolescents enrolled in after school programmes, respectively. None of the studies examined intervention effects on knowledge and understanding. Short-term increases in perception of harm were reported in two studies of one CD-ROM intervention and one substance use prevention programme, respectively, but this effect was not sustained over the longer term. One study also found no impact of an after-school, youth development programme on participants' drug beliefs and there was no impact of a culturally tailored, substance use prevention programme on participants' susceptibility to alcohol. Intervention effects on personal and social skills were examined in one study of a CD-ROM intervention, which found a short-term intervention impact on assertion skills. Two studies, of a CD-ROM intervention and a culturally tailored, substance use prevention programme, respectively, found no intervention effects on health and social outcomes related to alcohol use. However, substance use remained low among both intervention and control participants throughout these studies. One study, which targeted older children (mean age 15 years) in after school programmes, however, reported a positive short- to medium-term effect on alcohol use.

#### **Evidence statement 2**

- 2 (a) There is inconsistent evidence from two RCTs and one CBA study to determine the effects of interventions and programmes delivered in social, healthcare and community settings on attitudes and values related to alcohol use.
- 2 (b) There is inconsistent evidence from two RCTs and one CBA study to determine the effects of interventions and programmes delivered in social and community settings on alcohol use. However, there is weak evidence from one CBA study to suggest that programmes that target older children may impact on alcohol consumption. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.

### **Programmes delivered to parents and families**

Twenty studies were identified that examined programmes and interventions delivered to parents and families, which targeted adolescent alcohol or substance use. Evaluations of nine programmes delivered to families were reported on across fifteen studies and five studies examined parent-targeted interventions. Eighteen studies were RCTs, one was an NRCT and one was a CBA. A range of intervention approaches were examined across these studies, including home- and community-based interventions. Effects on knowledge and understanding were only examined in one study of a family-based programme and none of the parent-targeted interventions examined this outcome. Short-term intervention effects on attitudes and values related to alcohol use were found for two

family-based programmes but for parent-targeted interventions there was no clear effect on parental attitudes to adolescent drinking. Both family-based and parent-targeted interventions appeared to produce short-term improvements in parent-child communication. Two studies of CD-ROM based interventions showed positive programme effects on family communication skills and involvement skills and a culturally tailored programme had a short-term positive effect on parental communication. Short-term intervention effects on parent-child communication were found for three studies of parent-targeted interventions; two studies reported more frequent or recent parent-child communication about alcohol and one study showed positive long-term effects on parent-child communication regarding family rules about alcohol and alcohol related situations. Eleven studies examined the effects of family-based programmes on health and social outcomes related to alcohol use across eight programmes. Three programmes demonstrated non-significant effects on alcohol use, but across four programmes, short- and long-term positive effects on alcohol use were reported. In addition, six studies of four family-based programmes reported positive intervention effects on initiation of alcohol use in the medium- to long-term. The Iowa Strengthening Families Programme (ISFP) also had long-term positive effects on drunkenness and drinking without parental permission and long-term follow up of the Preparing for the Drug Free Years (PDFY) revealed a positive effect of this programme on women's alcohol abuse in early adulthood. Two studies examined the effects of parent-targeted interventions. One study found no intervention effects but a second study, of a programme that promoted zero tolerance to adolescent alcohol use, reported positive intervention effects on youth drinking and drunkenness.

**Evidence statement 3**

- 3 (a) There is no evidence from one RCT to determine the effect of programmes aimed at families on knowledge and understanding relating to alcohol use
- 3 (b) There is moderate evidence from two RCTs to suggest that programmes delivered to families may have short-term positive effects on attitudes and values related to alcohol. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 3 (c) There is moderate evidence from two RCTs to suggest that programmes delivered to families which target family interaction may have positive effects on family communication, parental monitoring and parental rules about alcohol. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 3 (d) There is moderate evidence from 11 RCTs to suggest that programmes delivered to families may have mixed effects on health outcomes related to alcohol use. Three RCTs showed no intervention effects on alcohol use. One RCT of a brief, family focused intervention (Iowa Strengthening Families Program) showed long-term reductions in alcohol use, initiation of alcohol use, and drunkenness and one RCT of a culturally-tailored family-based programme showed a long-term effect on initiation of alcohol use. In addition, one RCT of a CD-ROM intervention with parental involvement showed long-term reductions in monthly alcohol use.

Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.

- 3 (e) There is weak evidence from one RCT to suggest that physician-led interventions may have a long-term negative impact on alcohol use. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.

#### **Evidence statement 4**

- 4 (a) There is inconsistent evidence from one NRCT and two RCTs to determine the effects of interventions delivered to parents on attitudes and values relating to alcohol. However, there is weak evidence from one RCT to suggest that programmes aimed at parents can have positive short-term effects on young people's attitudes towards family rules and their influence as a deterrent for drinking. These findings may be only partially applicable to the UK as this study was implemented in the USA and may not be generalisable beyond this population.
- 4 (b) There is moderate evidence from two RCTs and one CBA study to suggest that interventions delivered to parents may have a positive short- to potentially long-term effect on parent-child communication about alcohol. These findings may be only partially applicable to the UK as they were not implemented in a UK setting and may not be generalisable beyond the populations studied.
- 4 (c) There is insufficient and inconsistent evidence from one NRCT and one RCT to determine the effect of interventions delivered to parents on health and social outcomes relating to alcohol use among young people.

#### **Programmes involving the wider community or mass media**

Three studies were identified that examined programmes involving the wider community or mass media. All three studies were based on a CBA design. Two studies examined mass media programmes delivered in communities in the USA and New Zealand, respectively, and one study examined a 5-year community-based health promotion programme for adolescents on an American Indian Reservation. None of the included studies examined intervention effects on knowledge and understanding, or on personal and social skills. Only one study examined impacts on attitudes and values towards alcohol use, findings showed no effects of a long-term mass media programme on mediators of alcohol use. In addition, there were no effects of either mass media programme or the community-wide campaign targeting American Indian adolescents on alcohol use.

#### **Evidence statement 5**

- 5 (a) There is weak evidence from one CBA study to suggest interventions and programmes involving mass media have no effect on attitudes and values related to alcohol use. These findings may be only partially applicable to the UK as the study was not implemented in a UK

setting and may not be generalisable beyond the populations studied.

- 5 (b) There is moderate evidence from three CBA studies to suggest that interventions and programmes involving the wider community or mass media have no effects on alcohol use by young people. Findings may only be partially applicable to the UK as the studies were conducted in the USA and New Zealand and may not be generalisable beyond the populations studied.

### **Review of published economic evaluations**

One study was identified that met the criteria for inclusion in the review of published economic evaluations. The study evaluated the cost-effectiveness and net benefits of two brief, family-focused interventions, the ISFP and PDFY, compared to a minimal intervention approach. Overall the net benefit for the ISFP was \$5,923 per family and \$2,697 per family for PDFY. The benefit-cost ratios were 9.60 and 5.85, indicating that for every \$1 spent on the ISFP and PDFY, \$9.60 and \$5.85, respectively, were saved in medical costs. The generalisability of the study to a UK context was unclear as the data used was based on studies conducted in the USA. In addition, projected alcohol use disorder rates were calculated based on US population data.

### **Evidence statement 6**

There is moderate evidence from one economic evaluation study to suggest that programmes delivered to families may be cost-effective and cost saving. This evidence may be of limited applicability to a UK context because cost and benefit estimates were based on data from studies conducted in the USA.

## **PROGRAMMES TARGETING SEXUAL HEALTH**

A total of 49 articles met the criteria for inclusion in the review of community-based programmes targeting young people's sexual health. Nine articles were systematic reviews and/or meta-analyses, 20 articles reported on studies that examined interventions or programmes delivered within social, healthcare and community settings, 15 articles reported on studies that examined programmes or interventions delivered to families or parents, two articles reported on studies that examined interventions or programmes that involved the wider community or mass media, and three articles reported on studies which examined interventions for vulnerable young people. No economic evaluation studies were identified for inclusion.

### **Systematic reviews and meta-analyses**

Nine systematic reviews and meta-analyses were identified that examined the effectiveness of interventions and programmes across a range of settings and populations that targeted young people's sexual health behaviours. One systematic review focused on interventions and programmes that targeted sexual risk taking among young homeless people. Findings from six systematic reviews indicated that community-based programmes can affect sexual risk behaviours of young people. In particular, HIV prevention and sexual risk reduction programmes were effective in increasing condom use and reducing pregnancy. However, these programmes were found to have a limited impact on adolescent sexual activity. According to one systematic review, successful community-based

interventions were theoretically based, tailored to the target population, implemented by trained facilitators, and the content was diverse and delivered using a wide variety of methods.

**Evidence statement 7**

- 7 (a) There is strong evidence from five systematic reviews and meta-analyses to suggest that intervention and programmes delivered in a range of community settings can have a positive impact on young people's sexual risk behaviours, in particular, condom use and pregnancy.
- 7 (b) There is strong evidence from one systematic review to suggest that effective community-based interventions and programmes are: (1) theoretically based; (2) tailored to the target population, (3) implemented by trained facilitators; (4) based on diverse content; and (5) delivered using a wide variety of methods.
- 7 (a) There is strong evidence from one systematic review to suggest that effective clinic-based programmes include: (1) a focus on a single gender or ethnic group; (2) HIV/STI education with skills building activities (e.g. condom application); (3) condom negotiation and sexual communication components; and (4) personalised risk assessments.

**Programmes delivered in social, healthcare and community settings**

Twenty studies were identified that examined interventions or programmes delivered within social, healthcare or community settings. Nine studies examined group education sessions or skills-based training interventions delivered in social and community settings, and five further studies in social and community settings, respectively, examined peer-led interventions, the Children's Aid Society (CAS) Carrera programme and a theatre production designed to inform young people about HIV. Six studies were conducted in healthcare settings including family planning clinics and primary care practices; four of which examined group-based education and/or skills-based interventions for sexually active young women, and two that examined interventions based around a health practitioner-led sexual health consultation. Of the included studies, 15 were RCTs, three were NRCTs, and two were CBA studies.

Across four studies that examined group education sessions or skills-based training interventions in community settings there were positive intervention effects on knowledge and understanding over the short- to medium-term. In addition, the three-year, CAS-Carrera programme had a positive impact on knowledge. There was no effect of a peer counselling intervention on knowledge, but two peer leadership interventions had positive effects on levels of knowledge among the peer leaders themselves. Four studies of interventions that specifically targeted sexually active young females in healthcare settings, reported consistent short- to medium-term improvements in sexual health-related knowledge among intervention participants. In addition, two studies of health practitioner-led sexual health consultations reported significant short-term increases in knowledge among intervention participants relative to controls.

Short-term decreases in intentions to engage in risky sexual intercourse were reported among black male adolescents who participated in an AIDS risk reduction intervention and an abstinence-based HIV risk reduction intervention resulted in short-term reductions in intentions to engage in any sexual intercourse. Across three studies that examined group education sessions and skills-based training interventions in community settings there were short-term increases in intervention participants' perception of their vulnerability to HIV infection. However, this effect was not sustained in the medium-term. Two studies found no effects of a theatre production intervention or peer leadership intervention, respectively, on HIV attitudes at follow-up. There were indications of positive intervention effects of group education sessions and skills-based training interventions delivered in community settings on attitudes and values related to condom use. However, these effects were not consistent, and were not maintained over the medium-term. There were fairly consistent positive intervention effects on condom use attitudes across three studies, which examined group-based education and skills-based interventions for sexually active young women in healthcare settings, and one study that examined a primary care-based sexual risk assessment and education intervention. Two studies found short-term positive intervention effects of a CD-ROM mediated intervention and an abstinence-based HIV risk reduction intervention, respectively, on attitudes towards abstinence. A CD-ROM intervention and education and skills training programme had positive effects on behavioural skills but results from five studies presented mixed findings in relation to effects of programmes and intervention delivered in social, healthcare and community settings on communication.

Across five studies that examined group-based sessions and/or skills training in community settings, short- to medium-term effects on sexual intercourse were reported in four studies; one study reported no programme effects and one poorly conducted study reported a potentially harmful effect. The CAS-Carrera programme had a positive effect on sexual activity among females, but there were no effects of health practitioner-led sexual health consultations or peer interventions. Intervention effects on frequency of sexual intercourse and number of sexual partners were limited. Across four studies conducted in community settings, only one study reported a positive intervention effect and across four studies conducted in healthcare settings, there were inconsistent intervention effects on these outcomes. Intervention effects on condom use and unprotected intercourse were more consistent. Across six studies that examined group-based sessions and skills training in community and healthcare settings, there were positive short- to medium-term intervention effects on measures of condom use, and some evidence from three studies of a positive intervention effect on frequency of unprotected intercourse. There were no effects of an HIV theatre production or peer counselling intervention on contraceptive use or frequency of unprotected sex, but the CAS-Carrera programme positively influenced both condom and hormonal contraceptive use among females. This programmes also had a positive effect on pregnancy, with a reduction in pregnancies among intervention females. There was no effect of a peer counselling intervention or peer leadership programme on pregnancy rates. Three studies examined intervention effects on STI infection and/or diagnosis, finding mixed intervention effects. However, medium-term positive effects on STI diagnosis were reported in one study of a skills-based HIV/STI intervention for sexually active females.

**Evidence statement 8**

- 8 (a) There is moderate evidence from five RCTs, one NRCT and one CBA study to suggest that group-based education and/or skills-based interventions, youth development programmes and peer leadership interventions delivered in social and community settings may have a positive short-to medium-term impact on knowledge and understanding related to sexual health. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (b) There is inconsistent evidence from five RCTs, one NRCT and one CBA study on which to determine the effects of interventions and programmes delivered in social and community settings on attitudes and values related to sexual health. There was moderate evidence from three RCTs to suggest that group-based education and/or skills-based interventions may have positive short-, but not long-term, effects on attitudes and values related to condom use. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.

**Evidence statement 8 continued**

- 8 (c) There is weak evidence from two RCTs to suggest that group-based education and/or skills-based interventions delivered in social and community settings may have a positive short-term impact on behavioural skills related to sexual health. There was no evidence on which to determine intervention effects on communication skills. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (d) There is moderate evidence from four RCTs and one CBA study to suggest that group-based education and/or skills-based interventions may have limited effects on sexual activity. Although reductions in the likelihood of sexual intercourse were reported across four RCTs<sup>6</sup> there was only evidence from one RCT of intervention effects on frequency of sexual intercourse or number of sexual partners. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (e) There is weak evidence from four RCTs to suggest that group-based education and/or skills-based interventions delivered in social and community settings may have positive short-term impacts on condom use and frequency of unprotected intercourse. There is weak evidence from one RCT to suggest that these effects may diminish over the medium term. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (f) There is moderate evidence from one RCT to suggest that youth development programmes that target disadvantaged young people may have a positive impact on sexual behaviours among females, including sexual activity, condom use and pregnancy. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.

**Evidence statement 9**

- 9 (a) There is strong evidence from six RCTs to suggest that interventions and programmes delivered in healthcare settings may produce short- to medium-term improvements in sexual health-related knowledge. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 9 (b) There is strong evidence from three RCTs to suggest that group-based education and/or skills-based interventions specifically targeting sexually active young women in healthcare settings may have short- to medium-term positive effects on condom use attitudes. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.

**Evidence statement 9 continued**

- 9 (c) There is inconsistent evidence from three RCTs on which to determine the effects of interventions and programmes delivered in healthcare settings on sexual health-related communication. However, there is strong evidence from one RCT to suggest that a gender- and culturally-tailored intervention for African American females may have a positive impact on communication with sexual partners and condom use skills. This evidence may only be partially applicable because these studies were conducted in the USA and focused on an ethnic population specific to the USA.
- 9 (d) There is moderate evidence from two RCTs to suggest that interventions and programmes based on health practitioner-led sexual health consultations may have a limited impact on sexual behaviours, including sexual activity and condom and other contraceptive use. This evidence may only be partially applicable because these studies were conducted in the USA.
- 9 (e) There is strong evidence from four RCTs to suggest that group-based education and/or skills-based interventions specifically targeting sexually active young women in healthcare settings may not have a consistent impact on sexual activity or numbers of sexual partners. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 9 (f) There is strong evidence from four RCTs to suggest that group-based education and/or skills-based interventions specifically targeting sexually active young women in healthcare settings may have a short- to medium-term positive impact on condom and other contraceptive use, and unprotected intercourse. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 9 (g) There is inconsistent evidence from three RCTs on which to determine the effects of interventions and programmes delivered in healthcare settings on STIs. However, there is strong evidence from one RCT to suggest that a skill-based HIV/STI intervention may have a positive medium-term impact on STI diagnosis. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations specific to the USA.

**Programmes delivered to parents and families**

Fifteen studies were identified that examined interventions and programmes delivered to parents and families, which targeted adolescent sexual health. Ten studies evaluated seven programmes delivered to adolescents and their families and five studies examined parent-targeted interventions. Programmes and interventions were delivered in a variety of settings, including at home and in community-based settings. Eleven studies were RCTs, two studies were NRCTs, and two were CBA studies. Both family-based and parent-targeted interventions demonstrated positive influences on knowledge related to sexual health in the short-, medium- and long-term, with improvements seen in both parent and adolescent knowledge related to sexual health. Programmes and interventions delivered to families did not appear to be effective at influencing adolescent's attitudes and intentions towards resisting or delaying sex and across three studies that examined parent-targeted

interventions, there were inconsistent effects on intentions. There were mixed effects on parent-child communication across both family-based and parent-targeted interventions. Nine studies that examined family-programmes found no clear intervention effects on communication, but in general positive effects were found across four studies that examined parent-targeted interventions. Across five studies that examined the effects of family-based programmes on health and social outcomes related to sexual health the results suggested that programmes and interventions delivered to families may not affect sexual behaviour. Two studies found no intervention effects on pregnancy rates or sexual behaviour, respectively, and one study of an intervention aimed at mothers and their adolescent children found no long-term effects on abstinence or involvement in intimate sexual behaviours. There were, however, limited but positive effects of this programme on condom use. There were positive short-term effects of two parent education programmes on initiation of sexual activity and behavioural risks related to early sexual initiation, respectively. However, lack of clear intervention effects were reported in two further studies of parent-targeted interventions.

**Evidence statement 10**

- 10 (a) There is moderate evidence from five RCTs and one NRCT to suggest that interventions and programmes delivered to families may improve knowledge in the short- to long-term. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 10 (b) There is moderate evidence from five RCT and one NRCT to suggest that interventions and programmes delivered to families may not influence adolescent's attitudes or intentions regarding abstinence or delaying sex. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 10 (c) There is moderate evidence from seven studies to suggest that programmes and interventions delivered to families may not influence parent-child communication. There is weak evidence from two CBA studies to suggest that intensive, family-focused interventions may have positive short-term effects on family communication. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 10 (d) There is weak evidence from three RCT and two CBA studies to suggest that programmes delivered to families may not have effects on adolescent sexual behaviour. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.

**Evidence statement 11**

- 11 (a) There is moderate evidence from one RCT to suggest that training for mothers to be their daughters' primary HIV educator may produce short-term improvements in sexual health-related knowledge and understanding. The evidence may only be partially applicable to the UK as this study was conducted in the USA and focused on ethnic populations specific to the USA.
- 11 (b) There is inconsistent evidence from three RCTs and one NRCT on which to determine the effects of intervention and programmes delivered to parents on sexual health-related attitudes and values.
- 11 (c) There is weak evidence from three RCTs and one NRCT to suggest that interventions delivered to parents may improve parent-child communication about sexual health topics. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 11 (d) There is inconsistent evidence from four RCTs on which to determine the effects of programme delivered to parents on their children's sexual behaviour.
- 11 (e) There is moderate evidence from one RCT to suggest that delivery of HIV prevention content by mothers may be as equally effective as that of health experts. The evidence may only be partially applicable to the UK as this study was conducted in the USA and focused on ethnic populations specific to the USA.

**Programmes involving the wider community or mass media**

Two studies were identified that examined interventions which involved the wider community or mass media. One study examined a mass media intervention and the second study examined a community outreach programme. Both studies were based on cross-sectional time series. Neither of the included studies examined intervention effects on knowledge, attitudes and skills and both analysed population-level changes in pregnancy and STI rates, respectively, as measures of effectiveness. Both studies reported positive intervention effects at a population level, however the study of the mass media programme did not adequately control for natural fluctuations in the data and therefore it is not clear whether these or intervention effects were responsible for the differences seen in the intervention and control communities.

**Evidence statement 12**

- 12 (a) There is no evidence from two CTS on which to determine the effects of interventions and programmes involving the wider community or mass media on knowledge, attitudes and skills related to sexual health.
- 12 (b) There is weak evidence from one CTS to suggest that a programme of community outreach may have a positive impact on STI rates among young people. Findings may only be partially applicable to the UK as the study was not conducted in a UK setting and may not be generalisable beyond the population studied.

### **Programmes targeting vulnerable groups**

Three studies examined the effectiveness of community-based programmes that targeted vulnerable populations. All three studies examined interventions which specifically targeted young homeless people. Intervention approaches examined were street outreach, a brief group-based sexual health intervention and a community reinforcement approach combined with HIV prevention. Intervention effects on knowledge and skills were examined in only one study and none of the included examined intervention effects on attitudes and values. There were limited effects of a brief sexual health intervention on knowledge related to AIDS and other STIs, and on communication and self-efficacy. Health and social outcomes related to sexual health were examined in all three studies, two of which reported no intervention effects. One study found a positive effect on the frequency of condom use among younger participants in a programme which combined a community reinforcement approach with HIV prevention content.

#### **Evidence statement 13**

13 (a) There is insufficient evidence from one NRCT to determine effects of interventions and programmes targeting vulnerable populations on sexual health-related knowledge and understanding, and personal and social skills.

13 (b) There is weak and inconsistent evidence from two NRCT and one RCT on which to determine effects of interventions and programmes targeting vulnerable populations on health and social outcomes relating to sexual health.

### **PROGRAMMES TARGETING MULTIPLE BEHAVIOURS**

No systematic reviews or meta-analyses were identified for inclusion in the review of programmes targeting multiple health behaviours. Five articles were identified that reported on evaluations of programmes and interventions that addressed both alcohol use and sexual health. Two articles reported on studies that examined interventions or programmes delivered in social, healthcare or community settings and three articles reported on studies that examined interventions or programmes delivered to families or parents.

#### **Programmes delivered in social, healthcare and community settings**

Two studies examined interventions and programmes which targeted both sexual health and alcohol use. One study examined the effects of a sexual activity prevention programme for young people enrolled in Boys and Girls Clubs, which was part of a wider programme designed to prevent substance use, and a second study evaluated an intensive, multicomponent youth development programme. One study was an NRCT and a second study was based on a CBA design. Neither of the included studies examined intervention effects on knowledge and understanding, or on personal and social skills. However, both studies examined intervention effects on attitudes and values. One study of a sexual activity prevention programme found a favourable reduction in sexual attitudes but only among sexually experienced participants who received the intervention without additional booster sessions. The youth development programme had potentially harmful effects on attitudes, with female intervention participants more likely than control participants to report that they expected to be a

parent by age 20. Both studies examined intervention effects on health and social outcomes related to sexual health, and one study also examined intervention effects on alcohol use. The effects of the sexual activity prevention programme were inconsistent across the two intervention conditions examined. The youth development programme had a negative impact on participant's sexual behaviour, particularly among intervention females who were significantly more likely than controls to engage in heterosexual sexual intercourse and more likely to become pregnant. There was no effect of the programme on male participants or on participant's alcohol use.

**Evidence statement 14**

- 14 (a) There is weak and inconsistent evidence from one NRCT and one CBA study on which to determine the effects of programmes delivered in social and community settings on attitudes and values related to sexual health and alcohol use.
- 14 (b) There is weak and inconsistent evidence from one NRCT on which to determine the effects of programmes delivered in social and community settings that seek to address both sexual health and alcohol use.
- 14 (c) There is weak evidence from one CBA study to suggest that youth development programmes, which target young females at behavioural risk, may have a negative effect on sexual behaviours. This evidence is applicable as the study was conducted in the UK.

**Programmes delivered to parents and families**

Five studies examined three programmes delivered to families or parents, which targeted both alcohol use and sexual health, in addition to other risk behaviours. All three were universal prevention programmes that combined parenting, youth and family components. All five studies were conducted in the USA and were based on an RCT design. Two studies examined programmes that specifically targeted African American and Hispanic populations, respectively. None of the included studies examined intervention effects on knowledge and understanding. Across four studies that examined intervention effects on attitudes and values towards risky behaviours there were indications of mixed intervention effects. One study found positive long-term effects of both self-directed and group-based versions of a universal substance use and problem behaviour prevention programme on attitudes towards substance use and there were also long-term positive programme effects of a parental monitoring intervention for African American families on attitudes and values related to a range of risky behaviours. Three studies examined intervention effects on personal and social skills, finding mixed programme effects on parent/family-child communication. One study found positive effects of a culturally-tailored programme on communication, family functioning and positive parenting, and a second study found a positive effect of a parental monitoring intervention for African American families on parent-child communication about HIV/AIDS. Four studies examined intervention effects on health outcomes related to alcohol use and sexual health. Short- to medium-term reductions in alcohol drinking were found for African American families, who received a parental monitoring intervention, but this reduction was not sustained and no other significant programme effects were found for health outcomes related to alcohol use. One study of a culturally-tailored programme reported a long-term decrease in incidence rates for STIs and unsafe sex at last sexual intercourse

among Hispanic adolescents who received an additional parent-targeted component. Although, short-term benefits of a parental monitoring intervention were also reported, these differences were not sustained and over the longer term there were no additional positive effects on sexual behaviour of the parent-targeted intervention among African American adolescents who had received a community-based risk reduction intervention.

**Evidence statement 15**

- 15 (a) There is mixed evidence from four RCTs regarding the effects of interventions and programmes delivered to families and parents on attitudes and values related to risky behaviours.
- 15 (b) There is moderate evidence from two RCTs to suggest that interventions and programmes delivered to families and parents, and which target alcohol use and sexual health, may improve parent-child communication and family functioning. This evidence may only be partially applicable to the UK as these studies were conducted in the USA and focused on ethnic populations specific to the USA.
- 15 (c) There is moderate evidence from two RCTs to suggest that interventions and programmes delivered to parents and which target alcohol use and sexual health may not provide long-term additional benefits in terms of health and social outcomes related to sexual health and alcohol use beyond those conferred through interventions and programmes which directly target young people. This evidence may only be partially applicable to the UK as these studies were conducted in the USA and focused on ethnic populations specific to the USA.

**CONCLUSIONS**

The results of this systematic review suggest that programmes and interventions delivered to families may be effective in reducing adolescent alcohol consumption and that group-based sessions and/or skills training programmes in community and healthcare settings may be effective in increasing condom use and reducing the frequency of unprotected intercourse among adolescents. In addition, programmes and interventions delivered to families and parents appeared to be effective in increasing parent-child communication about alcohol use and sexual health. However, the applicability of the evidence identified may not be generalisable to the UK and good quality UK-based research of promising or novel intervention approaches, including assessment of cost-effectiveness, is required in order to build the evidence base on which to make UK-based policy and practice recommendations.

**Programmes targeting alcohol use**

There was a lack of evidence on which to draw conclusions about the effects of programmes and interventions that targeted adolescent alcohol use on knowledge and understanding. There were positive effects of programmes and interventions delivered to families on attitudes and values related to alcohol use, but programmes and interventions delivered to parents or within social, healthcare and community settings appeared to have no impact on these outcomes. Programmes and interventions delivered to families and parents produced short- and long-term improvements in parent-child communication, and programmes and interventions delivered to families had positive effects on both

alcohol use and initiation of alcohol use. Programme effects on health and social outcomes related to alcohol use were mixed and inconsistent across programmes and interventions delivered to parents, in social, healthcare or community settings, or to the wider community. The family-focused ISFP was highlighted across three systematic reviews as showing particular promise; this programme, which was designed to enhance family protective and resiliency processes and to reduce family-based risk factors associated with child behaviour problems, had positive, long-term effects on a range of outcomes related to alcohol use and has been shown to be cost-effective and potentially cost saving.

### **Programmes targeting sexual health**

The evidence suggests that programmes and interventions delivered in social, healthcare and community settings and to families and parents may have beneficial effects on sexual health-related knowledge in the short- to long-term. A range of outcomes were reported with regards to attitudes and values and programmes effects were mixed across these measures. The evidence suggests that while programme and interventions targeting adolescent sexual health may not impact on attitudes towards sexual intercourse, programme and interventions delivered in healthcare settings may positively impact on condom use attitudes. Programmes and interventions delivered to families and in social, healthcare and community settings had mixed and inconsistent effects on communication, but programmes and intervention delivered to parents appeared to have positive effects on parent-child communication. There appeared to be no effects of programmes and interventions delivered to families and parents on adolescent sexual behaviour, and programmes and interventions delivered in social, healthcare and community settings had limited and inconsistent effects on sexual activity including frequency of intercourse and number of sexual partners. However, the evidence suggests that group-based sessions and/or skills training programmes in community and healthcare settings may increase condom use and reduce the frequency of unprotected sex. In addition, a youth development approach showed promise, with effects on a range of sexual health outcomes for females. There was a lack of evidence on which to draw conclusions about the effects of programmes involving the wider community or mass media or those targeting vulnerable populations.

### **Programmes targeting multiple behaviours**

There was a lack of evidence on which to draw conclusions about the effects of programmes and interventions that targeted multiple behaviours on knowledge and understanding, and there was evidence of mixed and inconsistent effects of these programmes on attitudes and values. Programmes and interventions delivered to parents and families had long-term positive effects on communication, but intervention effects on health and social outcomes related to sexual health were less clear. There was no evidence supporting the effectiveness of programmes and interventions delivered in social, healthcare and community settings and interventions and programmes delivered to parents did not appear to provide additional long-term benefits beyond those conferred through intervention and programmes which directly targeted young people.

# 1 Introduction

## 1.1 Aims and objectives

The aim of the review was to identify effective and cost-effective interventions and programmes that address health literacy and personal skills in relation to alcohol use and sexual health. This was defined as alcohol education and/or sex and relationships education (SRE) delivered in isolation or as part of a wider programme in family, social, healthcare and community settings.

## 1.2 Research question

The review aimed to address the following key research questions:

- 1) What services, interventions, programmes, policies or strategies for children and young people aged 5 years and above are effective and cost-effective in contributing to the achievement of the “Every Child Matters” outcomes related to sexual health and alcohol?
- 2) What elements/components of those services, interventions, programmes, policies or strategies for children and young people aged 5 years and above are effective and cost-effective in contributing to the achievement of the “Every Child Matters” outcomes related to sexual health and alcohol?

## 2 Background

Interventions aiming to prevent, delay or reduce risk-taking behaviours are delivered at several different levels: individual, community and population. However, regardless of the level at which interventions are delivered their effects are rarely limited to just one level (NICE, 2007). This systematic review examined the effectiveness of both alcohol and sexual health interventions delivered in a community setting. Separate from school-based interventions, community-based interventions may include, for example, interventions targeted at families, parents, and young people outside school in after school clubs or youth clubs. Community-based interventions are used to reach young people who may not be in education or training and are also used to target vulnerable groups in the wider community, for example, such young homeless people. The need for interventions involving community-based and outreach initiatives for the prevention of sexual health and the prevention of alcohol use has been previously recognised (MedFASH, 2008)

Young people aged 16-19 years report that lessons at school are their primary source of sexual health information. However, females report parents to be their preferred source of information and for males, parents are reported a close second to school lessons (33.3% compared to 34.4% respectively). The difference between actual sources of information and preferred sources of information is most notable in males; with 1 in 12 reporting parents as their main source of information, compared to 1 in 3 who would prefer their main source of information to be their parents (Wellings et al., 2006). Often difficulty in addressing sensitive issues and a lack of parental communication skills can contribute to an inability for parents and children to openly discuss topics such as alcohol and sex. Poor family relationships and poor parental support have been highlighted as contributing risk-factors for teenage pregnancy (DfES, 2006). Strong family bonds, parental monitoring and family rules have also been cited as important contributing factors to prevention interventions (DfES, 2004) (see Table 2.1).

As young people develop, their primary source of education and information regarding, for example, sexual behaviour and alcohol use can move from parents, to school, to peers, particularly during adolescence and the need to adhere to peer norms can conflict with or override previous influential norms. At this developmentally vulnerable time females with parents who drink show higher rates of initial alcohol use (Duncan et al., 2006). Young people's drinking is predicted more by a mother's drinking behaviour than a father's drinking behaviour, indicating that young peoples' drinking is influenced through modelling (White et al., 2000). Further research has shown that being white, being from a single-parent family, having deviant peers and friends who encourage alcohol use predicts increased rates of alcohol use from age 9-16 years (Duncan et al., 2006). Strict parental rules about drinking alcohol have been shown to have a protective influence on frequent or heavy consumption of alcohol in young people and to delay the initiation of alcohol use (van der Vorst et al., 2005; van der Vorst et al., 2006). However, if parents are permissive regarding, for example, early alcohol use or if they engage in heavy alcohol use themselves then their children are more likely to tend towards early or heavy drinking (van der Vorst et al., 2009).

Similarly, young white teenagers who report sexually permissive peer norms, perceived peer approval of teenage sexual behaviour, perceived peer sexual behaviour and greater levels of sexual communication with peers have a higher susceptibility and higher odds of initiating sexual intercourse (L'Engle & Jackson, 2008). Other studies also support the findings that normative peer sexual behaviour predicts sexual initiation in young teenagers and show that perceived peer values are more strongly related to sexual initiation than actual peer reports of attitudes and values (Sieving et al., 2006). Findings also show that the media can act as a sexual socialising agent for young teenagers (L'Engle & Jackson, 2008) and be a super peer in terms of sexual influences, giving the impression to young girls that early sexual behaviour is acceptable (Brown et al., 2005). Moderating factors for sexual initiation, similar to those from alcohol studies, are stronger parent-child relationships, particularly with the mother. In addition, parental monitoring and strong links to school (e.g. feeling good about being in school, expecting to finish school and go on to further education) can have protective effects.

Although education on alcohol and sexual health features in school curricula, the contribution and support of parents and carers is vital to ensure that consistent and accurate public health messages are conveyed to young people to prevent risk-taking behaviour and facilitate behaviour-change (DfES, 2004; DCSF, 2008). This also includes the provision of parenting support to develop improved communication (DfES, 2006). An example of a well received programme for parent training reported in the UK is 'Speakeasy' which is a community-based education programme solely targeting parents. The aim of the programme is to help parents communicate well with their children about sex, sexual health and relationships by increasing parental knowledge and self-efficacy through group work (Ramm & Coleman, 2008). However, this programme is yet to be evaluated using a control group or with the inclusion of feedback from young people.

Early intervention is necessary, particularly in cases where young people are experiencing behavioural, emotional or social difficulties, which are risk factors for alcohol use and sexual risk-taking. As such parenting programmes are being implemented to help support parents and promote child well-being which could subsequently affect alcohol and sexual behaviour. Parent early intervention pathfinder programme, a DCSF funded programme primarily aimed at addressing anti-social behaviour, recommends a national roll-out of parenting programmes for parents with children aged 8-13 years (Lindsay et al., 2008). Programmes such as those recommended in the pathfinder programme (Strengthening Families, Strengthening Communities and Incredible Years) may precede and complement parenting programmes such as Speakeasy.

A whole school approach to education goes further and emphasises that consistent messages to those taught in schools ought to be conveyed not only through parents and family members but within the wider community also (DfES, 2004). Educational interventions delivered in the community also include media campaigns such as 'want respect, use a condom' and 'know your limits'. In addition community interventions can be supported by population level interventions such as that included in the Alcohol Harm Reduction Strategy to changing labels on alcohol, provide information at point of

sale, review advertising regulations and ensure that alcohol is not used positively in advertisements (The Strategy Unit, 2004).

**Table 2.1. Risks and protective factors associated with drug<sup>1</sup> misuse.**

<b>Vulnerable Groups</b>	<b>Risk Factors</b>	<b>Protective Factors</b>
Homeless Looked after School truants Pupils excluded from schools Sexually abused Prostitutes In contact with mental health or criminal justice system Children of parents with drug problems	Chaotic home environment Parents who misuse drugs or suffer from mental illness Behavioural disorders Lack of parental nurturing Inappropriate or aggressive classroom behaviour School failure Poor coping skills Low commitment to school Friendship with deviant peers Low socio-economic status Early age of first drug use Being labelled as a drug misuser	Strong family bonds Experiences of strong parental monitoring with clear family rules Family involvement in the lives of children Successful school experiences Strong bonds with local community activities A caring relationship with at least one adult

(Source: The Right Responses – Managing and making policy for drug-related incidents in schools [Drugscope, 1999], taken from DfES, 2004)

<sup>1</sup> 'Drugs' refers to all drugs including medicines, volatile substances, alcohol, tobacco and illegal drugs.

### 3 Methodology

#### 3.1 Search strategy

Systematic searches of electronic databases and websites were undertaken to identify studies that examined the effectiveness and/or cost-effectiveness of alcohol education and/or SRE delivered in community settings in isolation or as part of a wider programme of study such as PSHE or its equivalents. Searches were conducted across a range of health, education and social care databases as shown in Box 3.1.

##### Box 3.1. Health, education and social care databases

- ASSIA (Applied Social Science Index and Abstracts)
- CINAHL (Cumulative Index of Nursing and Allied Health Literature)
- Database of Abstracts of Reviews of Effectiveness (DARE)
- The Cochrane Library
- EMBASE
- ERIC
- British Education Index
- Australian Education Index
- HMIC
- MEDLINE
- PsycINFO
- Sociological Abstracts
- Social Science Citation Index
- EPPI Centre databases
- The Campbell Collaboration
- C2-SPECTR & C2-PROT Campbell Collaboration

Economic evaluation studies were identified by searching the following major health economics databases:

- NHS Economic Evaluations Database (NHS EED)
- EconLit

## **3.2 Inclusion and exclusion criteria**

### **3.2.1 Population**

Studies were eligible for inclusion if they included children aged 5 to 19 years old in community and outreach settings.

Studies were eligible for inclusion if they were undertaken in the UK, Western Europe, Australia, New Zealand, Canada and the USA.

### **3.2.2 Interventions**

Studies were eligible for inclusion if they examined interventions that focused on SRE and/or alcohol education. Relevant intervention approaches included:

- Interventions and programmes delivered within social, healthcare or community settings
- Interventions and programmes delivered to families or parents
- Intervention and programmes involving the wider community or mass media

### **3.2.3 Comparator(s)**

Studies were eligible for inclusion if they compared the intervention of interest against a no intervention control or against another intervention approach.

### **3.2.4 Outcomes**

Studies were eligible for inclusion only if they examined the primary outcomes of interest:

- Health and social outcomes relating to alcohol use and sexual health
- Personal and social skills

The following secondary outcomes were assessed but only where a study reported a primary outcome of interest:

- Knowledge and understanding
- Attitudes and values

### **3.2.5 Study design**

Systematic reviews, meta-analyses, randomised controlled trials, controlled non-randomised studies and controlled before and after studies that compared a community-based intervention against no

intervention or another type of intervention were eligible for inclusion in the assessment of effectiveness.

Studies were eligible for inclusion in the assessment of cost-effectiveness if they were economic evaluations conducted alongside trials, modelling studies and analyses of administrative databases. Only full economic evaluations that compared two or more options and considered both costs and consequences (including cost-effectiveness, cost utility and cost-benefit analyses) were included.

### **3.3 Data extraction strategy**

All titles and abstracts retrieved were screened by one reviewer (LJ, GB and JD) according to the inclusion/exclusion criteria described above. Relevant articles were retrieved in full, and full text screening was undertaken independently by two reviewers (LJ, GB, JD, MW, OW, KS and AK). Disagreements were resolved through consensus and where necessary a third reviewer was consulted.

One reviewer (LJ, GB and JD) independently extracted and assessed the quality of the individual studies into an Access database. All data extraction and quality assessment were independently checked for accuracy by a second reviewer. The results of the data extraction are presented in an addendum to this report.

### **3.4 Quality assessment strategy**

The quality of the studies was assessed according to criteria set out in the NICE Centre for Public Health Excellence Methods Manual (2009). Each of the effectiveness and cost-effectiveness studies was graded using a code, ++, + or – based on the extent to which the potential sources of bias had been minimised:

- ++ All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions are thought very unlikely to alter.
- + Some of the criteria have been fulfilled. These criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.
- Few or no criteria have been fulfilled. The conclusions of the study are thought likely or very likely to alter.

Results of the quality assessment are presented in Appendix 4 and 5.

### **3.5 Methods of analysis/synthesis**

#### **3.5.1 Effectiveness studies**

The results of the data extraction and quality assessment for each study of effectiveness are presented in structured tables and as a narrative summary. The possible effects of study quality on the effectiveness data and review findings are also discussed within the text of the review.

Studies are grouped according to (1) focus (alcohol or sex and relationships education) and (2) setting (social, health or community; family; parent; or community-wide or mass-media). Where reported in the original publications, effect sizes (e.g. odds ratios, Cohen's d) are presented. Where effect sizes were not reported significant ( $p < 0.05$ ;  $p < 0.01$ ;  $p < 0.001$ ) and non-significant changes in outcomes of the intervention(s) relative to the comparison group are presented.

Where sufficient data are available, intervention effect sizes will be calculated and presented as odds ratios (OR) for dichotomous data and as mean differences for continuous data in an addendum to this report to be prepared for the PDG meeting in February. Forest plots will be generated for single studies using RevMan (version 5). Heterogeneity between the included studies was assessed by considering differences in (a) the study population, (b) intervention approach, (c) outcome measures, and (d) study quality. However, given the anticipated heterogeneity between the included studies it was judged to be unlikely that pooling would be appropriate or feasible.

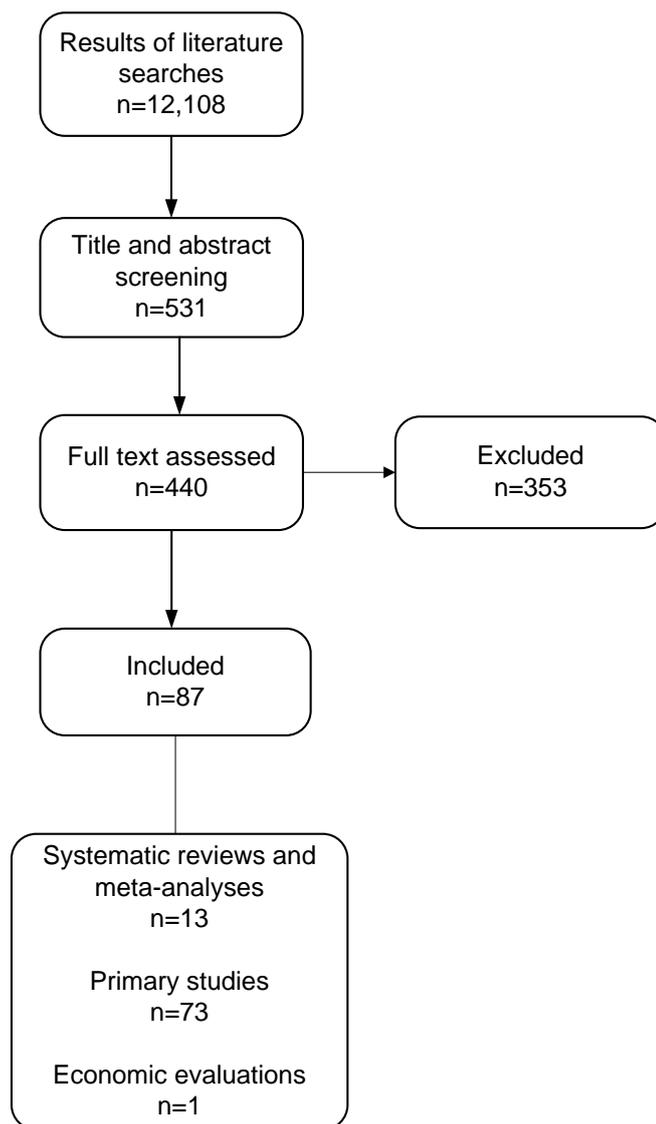
### **3.5.2 Published economic evaluations**

Details of each identified published economic evaluation, together with a critical appraisal of its quality were presented in structured tables and as a narrative summary. For economic studies conducted alongside trials, the validity of the included studies was assessed by considering the source of the resource use and effectiveness data, the methods used to measure and calculate costs, the methods of analysis used and the generalisability of the results to the UK population.

## 4 Summary of study identification

### 4.1 Review of effectiveness and cost-effectiveness

A total of 12,108 references were identified from the literature searches. Following screening of titles and abstracts, 531 articles were identified as potentially relevant and attempts were made to source the full text articles. Of these articles, 91 were not available. These studies were therefore not subject to further screening and a total of 440 full-text articles were screened against the inclusion criteria for the study. The process of study selection is summarised in Figure 1.



**Figure 4.1. Process of study selection**

#### 4.1.1 Included studies

A total of 87 studies met the criteria for inclusion in the review of effectiveness and cost-effectiveness. Of these, 31 studies examined interventions targeting alcohol use, 51 studies examined interventions

targeting sexual health and the remaining five studies examined interventions which targeted both alcohol use and sexual health. Thirteen articles were systematic reviews and/or meta-analyses, 62 studies were based on experimental designs of which 53 used random assignment to allocate participants to intervention and comparison conditions. Eleven observational studies were identified for inclusion including nine controlled before and after (CBA) studies, and two cross-sectional time series (CTS). One economic evaluation study was also identified. A summary of the study designs identified for inclusion in the review is summarised on Table 4.1.

**Table 4.1. Summary of study designs identified from inclusion**

Section	Total	SR/MA	RCT	NRCT	CBA	CTS	Economic evaluation
Alcohol use	31	4	21	1	4	-	1
Sexual health	49	9	27	7	4	2	-
Multiple behaviours	7	-	5	1	1	-	-
Total	87	13	53	9	9	2	1

SR/MA – systematic review or meta-analysis; RCT – randomised controlled trial; NRCT – nonrandomised controlled trial; CBA – controlled before and after; CTS – cross sectional time series

#### 4.1.2 Excluded studies

A total of 353 articles did not meet the criteria for inclusion in the review and were excluded for the following reasons:

- Study design did not meet design criteria for inclusion in the review, n=213
- Population targeted by the intervention(s) did not meet the review criteria, n=75
- Intervention examined was not based in a relevant setting, n=53
- Intervention or intervention was not alcohol education or SRE related, n=9
- Duplicates or foreign language, n=3

References for the excluded studies are presented in Appendix 2.

## 5 Programmes targeting alcohol use

A total of 31 articles met the criteria for inclusion in the review of community-based programmes targeting alcohol use by young people. Four articles were systematic reviews and/or meta-analyses, four articles reported on studies that examined intervention or programmes delivered within social, healthcare and community settings, 19 articles reported on studies that examined programmes or interventions delivered to families or parents, and three studies examined interventions or programmes that involved the wider community or mass media. One economic evaluation study was also identified that examined the cost-effectiveness and cost-benefits of the Iowa Strengthening Families Programme (ISFP) and Preparing for the Drug Free Years (PDFY).

### 5.1 Systematic reviews and meta-analyses

#### 5.1.1 Overview of evidence identified

Four systematic reviews were identified for inclusion that examined community-based interventions and programmes targeting alcohol use among young people. Two publications of the Cochrane review by Foxcroft and colleagues were identified (Foxcroft et al., 2002; 2003). This review sought to identify and summarise rigorous evaluations of psychosocial and educational interventions aimed at the primary prevention of alcohol misuse by young people. One review (Petrie et al., 2007) examined the effectiveness of parenting programmes to prevent tobacco, alcohol or drug abuse in children, and the fourth article identified (Smit et al., 2008) aimed to quantify the effectiveness of family interventions in reducing adolescent drinking through a meta-analysis of RCTs. All three reviews focused primarily on the inclusion of RCTs.

#### 5.1.2 Quality assessment

All three reviews were rated good quality. They addressed appropriate and clearly focused questions and a good description of the methodology used to conduct the reviews was reported. All three reviews were based on rigorous searches of the literature and assessed study quality. The synthesis of study data was undertaken appropriately across all three reviews.

#### 5.1.3 Findings

Of the community-based studies reviewed by Foxcroft and colleagues (2002; 2003), the ISFP was highlighted as showing particular promise over the long-term. The authors conducted an intention-to-treat reanalysis, reporting a number needed to treat (NNT) of 9 for this programme at the four-year follow-up. This indicates that for every 9 individuals who receive the intervention, there will be one fewer person reporting that they have ever used alcohol (NNT 9; 95% CI 5, infinity), used alcohol without permission (NNT 9; 95% CI 5, 160), or ever been drunk (NNT 9; 95% CI 5, 327).

Petrie and colleagues (2007) reported that the strongest evidence supported interventions targeting preteen and early adolescent children. Parenting programmes highlighted as effective included the Iowa Strengthening Families Program (ISFP) and Preparing for the Drug Free Years (PDFY). The authors reported that effective interventions focused on developing strategies to involve adolescents

in family activities, in order to maintain familial bonds and manage conflict. Effective intervention also placed an emphasis on parental engagement in an activity-based programme.

Smit and colleagues (2008) included nine RCTs in their meta-analysis, the main findings of which suggested a favourable effect of family-based interventions on alcohol initiation (OR 0.71; 95% CI 0.54, 0.94) and frequency of alcohol use (Cohen's *d* -0.25; 95% CI -0.37, -0.12) in adolescents. However there was evidence of heterogeneity across the pooled studies on the measure of alcohol initiation. Longitudinal analyses conducted by the authors pointed to the success of the ISFP and PDFY.

#### 5.1.4 Summary and evidence statements

Three systematic reviews and meta-analyses were identified for inclusion. One review (Foxcroft et al., 2002; 2003) examined interventions and programmes aimed at the primary prevention of alcohol use across a range of populations and settings. Two further reviews (Petrie et al., 2007; Smit et al., 2008) examined interventions and programmes delivered to parents and families, respectively.

Foxcroft et al (2002; 2003) found that although there was no consistent evidence to determine which programmes were effective over the short to medium-term, one family-based programme, the Strengthening Families programme, was effective over the longer term. The reviews by Petrie and colleagues (2007) and Smit and colleagues (2008) also highlighted the long-term effectiveness of the Strengthening Families programmes.

##### Evidence statement 1

There is strong evidence from three systematic reviews<sup>1</sup> to suggest that a family-based programme, Strengthening Families, can produce long-term reductions (greater than 3 years) in alcohol use and heavy alcohol use.

<sup>1</sup> Foxcroft et al., 2002; 2003 (SR ++); Petrie et al., 2007 (SR ++); Smit et al., 2008 (SR ++)

**Table 5.1. Summary of findings from systematic reviews and meta-analyses: Programmes targeting alcohol use**

Author (year)	Design	Inclusion/exclusion	Number of studies	Findings
Foxcroft et al (2002; 2003)	SR ++	Psychosocial and educational interventions aimed at the primary prevention of alcohol misuse by young people aged up to 25 years	56 studies	Twenty studies demonstrated evidence of ineffectiveness. No firm conclusions about the effectiveness of prevention in the short and medium-term were possible. But over the longer term (>3 years), the Strengthening Families Programme showed more promise as an effective prevention intervention.
Petrie et al (2007)	SR ++	Parenting programmes to prevent tobacco, alcohol or drug abuse in children	20 studies	Strongest evidence related to interventions and programmes that had been undertaken with preteen and early adolescent children. Effective interventions focussed on developing strategies to involve adolescents in family activities to maintain familial bonds and manage conflict. Also, an emphasis on parental engagement in an activity-based programme.
Smit et al (2008)	SR ++	Family interventions that focused on reducing adolescent drinking.	18 studies	Main findings pointed to a favourable effect of family interventions on alcohol initiation and frequency of alcohol consumption among young people. The effects were maintained over time. Studies that examined group-based interventions and programmes tended to report a stronger intervention effect than interventions targeting individual families.

## 5.2 Programmes delivered within social or community settings

### 5.2.1 Overview of evidence identified

Three studies (Elder et al., 2002; Schinke et al., 2005; Tebes et al., 2007) were identified that examined programmes delivered within social, healthcare or community settings, which targeted alcohol use among young people. These studies were conducted within youth and after school agencies and all three were conducted in the USA. Schinke et al (2005) examined an interactive CD-ROM intervention designed to reduce early alcohol use, and Elder et al (2002) and Tebes et al (2007) examined substance use prevention programmes which targeted migrant families, and adolescents enrolled in after school programmes, respectively.

The theoretical basis for intervention was not reported in two of the three studies. The interactive CD-ROM intervention (Schinke et al., 2005) was based on a combination of theories, including social cognitive theory, problem-behaviour theory, peer-cluster theory and family networks theory.

The number of participants recruited across the included studies ranged from 304 (Tebes et al., 2007) to 660 (Elder et al., 2002) students. One study (Schinke et al., 2005) examined interventions that targeted children aged 10-12 years, and another (Tebes et al., 2007) examined an intervention that targeted students with a mean age of 15 years. The study by Elder et al. (2002) did not specify the age range of the adolescents targeted in their study. One study (Elder et al., 2002) reported long-term follow-up data (>12 months); the study by Tebes and colleagues (2007) reported 12-months of follow-up and Schinke and colleagues (2005) reported immediate post-test results only.

### 5.2.2 Quality assessment

Of the three studies identified, two were cluster RCTs (Elder et al., 2002; Schinke et al., 2005) and one was based on CBA design (Tebes et al., 2007). The RCT by Elder and colleagues (2002) was rated moderate. The authors did not report the number of participants assigned to the intervention and control groups, although other aspects of the study were adequately reported. The RCT by Schinke and colleagues (2005) was rated poor quality as insufficient information was reported to determine whether the analyses were conducted appropriately and whether the outcomes measures were reliable. The quality of the CBA study by Tebes and colleagues (2007) was rated moderate. The intervention and comparison conditions were well described and appropriate, contamination was acceptably low, and all important and relevant outcomes were examined.

### 5.2.3 Findings

#### 5.2.3.1 Knowledge

None of the included studies examined intervention effects on knowledge.

#### 5.2.3.2 Attitudes and values

Three studies (Elder et al., 2002; Schinke et al., 2005; Tebes et al., 2007) examined intervention effects on alcohol and substance-related attitudes. Elder and colleagues (2002) found that there were

no effects of the 'Sembrano Salud' programme, which targeted migrant families, on participant's susceptibility to drinking. The CD-ROM intervention, Thinking not Drinking, examined by Schinke and colleagues (2005) had a positive impact on participant's perception of the harms of alcohol at post-test in comparison to a 'no intervention' control group ( $p < 0.05$ ). A short-term positive intervention effect on participants' perception of the harms of alcohol was also reported in the study by Tebes and colleagues (2007) that examined an after-school, youth development programme, Adolescent Decision-Making for the Positive Youth Development Collaborative (ADM-PYDC), designed to prevent substance use. At post-test, intervention participants reported an increased perception of risk of harm compared with the control group ( $p < 0.01$ ), but there was no difference on this measure at the 12-month follow-up. In addition, there was no significant difference between the intervention and control group in their attitudes towards drugs over follow-up.

### **5.2.3.3 Personal and social skills**

Only one study (Schinke et al., 2005) examined intervention effects on personal and social skills. At immediate post-test, participants who received an interactive CD-ROM intervention scored more positively on the measure of assertion skills compared to their control counterparts ( $p < 0.001$ ).

### **5.2.3.4 Health and social outcomes related to alcohol use**

All three studies examined intervention effects on health and social outcomes related to alcohol use. There were no effects of the interactive CD-ROM intervention (Schinke et al., 2005) on participants' alcohol use at post-test, but the authors reported that the frequency of substance use was low among the study participants, who were a median age of 11 at baseline. Frequency of alcohol prevalence was also reported to be low among those who participated in the evaluation of Sembrano Salud (Elder et al., 2002) and there was no difference between intervention and control groups in terms of 30-day drinking at any follow-up (OR 1.21; 95% CI 0.74, 1.97). The after-school, youth development programme examined by Tebes and colleagues (2007) was found to have had a positive effect on alcohol use. Between baseline and the 1-year follow-up, reductions in alcohol use were found to be significantly greater among the intervention group relative to the control group (OR 0.37; 95% CI 0.15-0.90).

## **5.2.4 Summary and evidence statements**

Three studies were identified for inclusion that examined interventions and programme targeting alcohol use, which were delivered in social, healthcare and community settings. All three studies (Elder et al., 2002; Schinke et al., 2005; Tebes et al., 2007) were conducted within youth and after school agencies and were based in the USA.

None of the studies examined intervention effects on knowledge and understanding. Short-term increases in perception of harm were reported in two studies (Schinke et al., 2005; Tebes et al., 2007), but this effect was not sustained at the 12-month follow-up in the study by Tebes and colleagues (2007). Tebes and colleagues (2007) also found no impact of an after-school, youth development programme on participants' drug beliefs and there was no impact of Sembrano Salud (Elder et al., 2002) on participants' susceptibility to alcohol. One study (Schinke et al., 2007) examined intervention

effects on personal and social skills, finding a short-term intervention impact of an interactive CD-ROM intervention on assertion skills.

Two studies (Elder et al., 2002; Schinke et al., 2005), conducted within youth agencies, reported that there were no intervention effects on health and social outcomes related to alcohol use, and that substance use remained low among participants. However, one study (Tebes et al., 2007), which targeted older children (mean age 15 years) in after school programmes reported a positive short- to medium-term effect on alcohol use.

### **Evidence statement 2**

2 (a) There is inconsistent evidence from two RCTs and one CBA study<sup>1</sup> to determine the effects of interventions and programmes delivered in social, healthcare and community settings on attitudes and values related to alcohol use.

2 (b) There is inconsistent evidence from two RCTs and one CBA study<sup>1</sup> to determine the effects of interventions and programmes delivered in social and community settings on alcohol use. However, there is weak evidence from one CBA study<sup>2</sup> to suggest that programmes that target older children may impact on alcohol consumption. Findings may only be partially applicable to the UK as the study was conducted in the USA and may not be generalisable beyond the populations studied.

<sup>1</sup> Elder et al., 2002 (RCT +); Schinke et al., 2005 (RCT -); Tebes et al., 2007 (CBA +)

<sup>2</sup> Tebes et al., 2007 (CBA +)

**Table 5.2. Summary of programme content: programmes delivered within social, healthcare or community settings**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Elder et al., 2002	RCT (cluster) +	USA n=660 Majority Mexican age NR	School (evenings)	<b>Sembrano Salud:</b> Eight weekly, 2-hour sessions: presentation of information, modelling and behavioural rehearsal; developing parental support through enhanced parent-child communication. Additional components were telephone booster calls and three newsletters.	NR	Mexican American group leaders
Schinke et al., 2005	RCT (cluster) -	USA n=489 54% African American; 30% Hispanic, 11% White; 5% other 10-12 years	Youth agencies	<b>Thinking Not Drinking:</b> Ten weekly, 45 minute sessions. Interactive CD-ROM; goal setting, coping, media literacy, peer pressure, assertiveness training and preventive strategies	Social cognitive theory, problem-behaviour theory, peer-cluster theory and family networks theory	CD-ROM
Tebes et al., 2007	CBA +	USA n=304 76% African American; 20% Hispanic; 4% White; <1% other mean 15 years	Youth agencies	<b>Adolescent Decision-Making for the Positive Youth Development Collaborative (ADM-PYDC):</b> 18 sessions; understanding and coping with stress, decision-making, information about tobacco, alcohol and drugs, and applying decision-making.	NR	Community group leaders

**Table 5.3. Programmes delivered in social, healthcare and community settings: effects on knowledge, skills and attitudes**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Elder et al., 2002	RCT (cluster) +	Sembrano Salud n=NR	First aid/home safety n=NR	PT (97%)	-	<b>NS</b> susceptibility to drinking	-
				1 yr (89%)	-	<b>NS</b> susceptibility to drinking	-
				2 yr (81%)	-	<b>NS</b> susceptibility to drinking	-
Schinke et al., 2005	RCT (cluster) -	Thinking Not Drinking n=329	No intervention n=160	PT (100%)	-	↑ perceived harm of alcohol*	↑ assertion skills***
Tebes et al., 2007	CBA +	ADM-PYDC n=149	Other after-school activities n=155	PT (NR)	-	↑ perception of risk of harm** <b>NS</b> drug beliefs	-
				1 yr (Int 62%; Con 58%)	-	<b>NS</b> perception of risk of harm <b>NS</b> drug beliefs	-

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; †p value not reported; † increase relative to comparator; ‡ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 5.4. Programmes delivered in social, healthcare and community settings: effects on health and social outcomes related to alcohol use**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes		
					Alcohol use	Heavy alcohol use	Other
Elder et al., 2002	RCT (cluster) +	Sembrano Salud n=NR	First aid/home safety educational programme n=NR	PT (97%)	<b>NS</b> 30-day drinking	-	-
				1 yr (89%)	<b>NS</b> 30-day drinking	-	-
				2 yr (81%)	<b>NS</b> 30-day drinking	-	-
Schinke et al., 2005	RCT (cluster) -	Thinking Not Drinking n=329	No intervention n=160	PT (100%)	<b>NS</b> alcohol use	-	-
Tebes et al., 2007	CBA +	ADM-PYDC n=149	Other after-school activities n=155	1 yr (Int 62%; Con 58%)	↓ alcohol use <sup>¶</sup>	-	-

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; <sup>¶</sup>p value not reported; † increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

## 5.3 Programmes delivered to families

### 5.3.1 Overview of evidence identified

Fifteen articles were identified that evaluated nine programmes delivered to families, which focused on alcohol or substance use, all of which were implemented in the USA. Three programmes, evaluated in three studies (Loveland-Cherry et al., 1999; Schinke et al 2004; Schinke et al., 2009), were alcohol use prevention interventions while the remaining seven programmes, examined in twelve studies (Bauman et al., 2000; Brody et al., 2004; 2006; Gerrard et al., 2006; Johnson et al., 1996; Jones et al., 2005; Mason et al., 2009; Murry et al., 2007; Spoth et al., 1999; Spoth et al., 2001; 2004; Stevens et al., 2002), focused on substance use prevention, including alcohol. Four studies (Spoth et al., 1999; 2001; 2004; Mason et al., 2009) reported on the large-scale evaluation of two brief, family-focused programmes, the ISFP and PDFY. Two papers evaluated participants from both programmes (Spoth et al., 2001; 2004), one paper evaluated ISFP participants only (Spoth et al., 1999) and one paper provided a long-term evaluation of the PDFY participants only (Mason et al., 2009). Four studies (Brody et al., 2004; 2006; Gerrard et al., 2006; Murry et al., 2007) reported on an evaluation of the Strong African American Families programme, which targeted parenting practices. Two studies (Jones et al., 2005; Stevens et al., 2002) reported on the Dartmouth Prevention Project that examined the effects of two physician-led interventions delivered in a primary care setting, one of which sought to prevent early drinking and smoking.

Interventions took place in settings including at home, primary care settings and community centres; although for the majority of studies the setting was not detailed. Similarly, the person or persons providing the interventions was poorly reported. Three studies (Spoth et al., 1999; 2001; 2004) examined interventions based on video presentations and two interventions (Schinke et al., 2004; Schinke et al., 2009) were delivered via CD-ROM.

Eight studies (Bauman et al., 2000; Loveland-Cherry et al., 1999; Mason et al., 2009; Schinke et al., 2004; 2009; Spoth et al., 1999; 2001; 2004) reported the theoretical basis for intervention. The ISFP and PDFY programmes (Spoth et al., 1999; Spoth et al., 2001; Mason et al., 2009) were based upon the biopsychosocial model and social development model, respectively. For two CD-ROM based interventions (Schinke et al., 2004; Schinke et al., 2009), a CD-ROM intervention with and without parental involvement component drew on social learning theory, problem behaviour theory and family interaction theory, and a gender-specific, computer mediated intervention was informed by family interaction theory. Bauman and colleagues (2000) reported a combination of social and health theories including the health belief model, social learning theory and social inoculation theory in the development of materials for the Family Matters programme and the alcohol use prevention intervention examined by Loveland-Cherry and colleagues (1999) was based on theories of social cognition and problem behaviours.

The number of participants taking part in studies ranged from 120 adolescents and their parents (Johnson et al., 1996) to 3,111 families (Stevens et al., 2002). Young people taking part in programmes were generally in early adolescence, aged 11-15, with the exception of one alcohol

misuse prevention intervention (Loveland Cherry, 1999) that was implemented in the 4<sup>th</sup> grade (aged 9-10 years). Programme evaluations varied in length. One programme (Schinke et al., 2009) was based on short-term follow-up only, but all other studies included a medium- or- long term evaluation. Long-term evaluations (>12 months follow-up) were provided for the following programmes: SAAF (Brody et al., 2004; 2006), PDFY (Spath et al., 2001; 2004; Mason et al., 2009), ISFP (Spath et al., 2001; 2004), physician-led primary care-based intervention (Jones et al., 2005; Stevens et al., 2002), an alcohol misuse prevention intervention (Loveland-Cherry, 1999) and a CD-ROM intervention (Schinke et al., 2004).

### **5.3.2 Quality assessment**

All 15 studies identified were RCTs and included three studies that were based on individual randomisation (Bauman et al., 2000; Loveland-Cherry 1999; Schinke et al., 2009). The remaining twelve studies were based on cluster randomisation at the level of county (SAAF: Brody et al., 2004; 2006; Gerrard et al., 2006; Murry et al., 2007); family (Johnson et al., 1996); clinic (Jones et al., 2005; Stevens et al., 2002); school (ISFP/PDFY: Mason et al., 2009; Spoth et al., 1999; 2001; 2004) or community site (Schinke et al., 2004). None of the RCTs were rated good quality and three were rated poor quality (Bauman et al., 2000; Johnson et al., 1996; Loveland-Cherry, 1999), with the remainder rated moderate quality. All 12 studies described allocation to intervention and control groups as randomised but failed to detail further methods of randomisation and concealment of allocation was only detailed in the evaluations of the ISFP and PDFY (Mason et al., 2009; Spoth et al., 1999; 2001; 2004). Studies were generally rated as good or moderate for quality relating to outcome measures but two studies did not report on reliability of outcomes (Bauman et al., 2000; Loveland-Cherry et al., 1999) and three studies were rated as not assessing all important outcomes (Bauman et al., 2000; Johnson et al., 1996; Jones et al., 2005). The study by Stevens et al (2002) was generally a good quality study but the authors did not discuss attrition although it was clear that not all participants were followed up. The study was therefore rated moderate. Outcomes across all studies were deemed relevant and only one study (Schinke et al., 2009) was rated moderate for length of follow-up time. However, the length of follow-up was generally good, with medium to long-term follow-up results across all other studies. One study (Loveland-Cherry et al., 1999) did not report on baseline comparability between groups but this was undertaken in the remaining studies. Analytical methods were poorly reported in two studies (Bauman et al., 2000; Johnson et al., 1996) where effect sizes for outcomes were not presented or calculable and levels of significance not presented for all outcomes. In seven studies analytical methods were generally rated as good (Brody et al., 2001; 2004; Mason et al., 2009; Schinke et al., 2004; Spoth et al., 1999; 2001; 2004).

### **5.3.3 Findings**

#### **5.3.3.1 Knowledge and understanding**

One study (Johnson et al., 1996) examined intervention effects on knowledge and understanding. Johnson and colleagues (1996) reported a positive intervention effect ( $p < 0.001$ ) on knowledge of

alcohol and other drugs at post-test and the 12-month follow-up, among those who participated in the community-based, Creating Lasting Connections programme.

### **5.3.3.2 Attitudes and values**

Measures relating to attitudes and values were reported in evaluations of three programmes: SAAF (Brody et al., 2001; 2004); a substance misuse prevention intervention (Jones et al., 2005) and a CD-ROM based intervention (Schinke et al., 2009). Brody and colleagues (2004; 2009) reported finding positive post-test effects of the SAAF on youth protective factors ( $p < 0.05$ ) that included resistance efficacy, goal-directed future orientation, images of drinkers and negative attitudes about sex and alcohol, but these effects were non-significant at the long-term follow-up. Short-term evaluation of a CD-ROM intervention for girls and their mothers (Schinke et al., 2009) suggested positive effects of the intervention on girls' beliefs about underage drinking, intentions not to drink and self-efficacy to avoid alcohol (all  $p < 0.05$ ) compared to control participants. Jones and colleagues (2005) evaluated a physician-led primary care-based intervention. At the 3-year follow-up, the authors found a negative association between intervention group boys and externalizing problem behaviour ( $p < 0.01$ ). Effects for girls were non-significant, as were effects on internalising of problems.

### **5.3.3.3 Personal and social skills**

For four programmes, SAAF (Brody et al., 2001; 2004), Creating Lasting Connections (Johnson et al., 1996) and two CD-ROM based interventions (Schinke et al., 2004; 2009), measures relating to personal and social skills were reported. Brody and colleagues (2004) reported a positive effect of the SAAF on communicative parenting ( $p < 0.05$ ) at post-test, but the effect was no longer significant at long-term follow-up. Two CD-ROM based interventions (Schinke et al., 2004; 2009) produced positive effects on skills outcomes. Schinke and colleagues (2009) reported positive short-term intervention effects on a range of measures including mother and daughter reported parental rules, daughter's reported parental monitoring, family conflict management skills and communication with mother (all  $p < 0.05$ ). Mother-reported communication with daughter and parental monitoring did not significantly differ between intervention and control groups. Long-term evaluation of a CD-ROM intervention with and without a parent involvement component (Schinke et al., 2004) revealed positive intervention effects on levels of family involvement ( $p < 0.05$ ) among those who received the additional parental component, and a positive effect on peer influence outcomes ( $p < 0.001$ ). Johnson and colleagues (2006) reported non-significant effects of the Creating Lasting Connections programme on family communication, and youth- and parent-reported levels of bonding at post-test and long-term follow-up. However, there were positive programme effects on youth involvement in the setting up of rules about alcohol and other drugs ( $p < 0.001$ ) at post-test. This effect was no longer significant by long-term follow-up, and no significant intervention effects were found on the existence of rules about alcohol and other drugs or for non-substance use behaviours.

### **5.3.3.4 Health and social outcomes related to sexual health**

Measures related to alcohol behaviour were evaluated for eight programmes: Family Matters (Bauman et al., 2000); SAAF (Brody et al., 2004; 2006); a physician-led primary care-based intervention (Stevens et al., 2002; Jones et al., 2005); a home-based family intervention (Loveland-

Cherry et al., 1999); ISFP and PDFY (Mason et al., 2009; Spoth et al., 1999; 2001; 2004); a CD-ROM intervention with and without a parent involvement component (Schinke et al., 2004); and a CD-ROM intervention for girls and their mothers (Schinke et al., 2009). Studies examined alcohol use over a period of time and/or initiation of alcohol use.

Eight studies evaluated the impact of seven programmes on alcohol use (Bauman et al., 2000; Stevens et al., 2002; Jones et al., 2005; Loveland-Cherry, 1999; Schinke et al., 2004; 2009; Spoth et al., 2001; Mason et al., 2009). Three of these programmes had no effects on alcohol use among young people who had already initiated alcohol use. There were non-significant effects of the Family Matters programme (Bauman et al., 2000) on past 30-day drinking at 3- and 12-month follow-up, and no long-term effects of a home-based family intervention (Loveland-Cherry et al., 1999). There were positive effects of two CD-ROM interventions (Schinke et al., 2004; 2009). Young people who received a CD-ROM intervention with and without a parental involvement component reported less monthly alcohol use than controls over medium- to long-term follow-up (all  $p < 0.001$ ), and at the 3-year follow-up, participants in the CD-ROM plus parental involvement condition reported less monthly use than those who received the CD-ROM intervention only ( $p < 0.05$ ). In addition, short-term positive effects of a CD-ROM intervention for girls and their mothers (Schinke et al., 2009) were found for alcohol use in the past week ( $p < 0.01$ ), month ( $p < 0.05$ ) and year ( $p < 0.05$ ). Long-term evaluation of the ISFP and PDFY (Spoth et al., 2001) revealed positive long-term effects of both programmes on alcohol use in the past 30 days and on a composite index of alcohol use<sup>2</sup>, compared to controls ( $p < 0.05$  and  $p < 0.01$ , respectively). Mason and colleagues (2009) examined the long-term impact on PDFY on rates of alcohol abuse. Based on ten years of follow-up, women who received the intervention were significantly less likely than controls to report alcohol abuse at age 22 ( $p < 0.05$ ), while the intervention had no significant effect on alcohol abuse among men. There were potentially harmful effects of the intervention examined in the Dartmouth Prevention Project (Stevens et al., 2002; Jones et al., 2005). Participants who received a physician-led health consultation designed to promote parental communication about alcohol and smoking reported significantly higher levels of drinking than participants who received a consultation about bicycle helmet use, seatbelt use or gun storage at both the 24- and 36-month follow-up (24 months: OR 1.27; 95% CI 1.03, 1.55 and 36 months: OR 1.30; 95% CI 1.07, 1.57).

Six studies (Brody et al., 2004; 2006; Loveland-Cherry et al., 1999; Spoth et al., 1999; 2001; 2004) evaluated the impact of four programmes on initiation of alcohol use. At post-test and 24-months follow-up, Brody and colleagues (2004; 2006) found positive effects of the SAAF on initiation of alcohol use ( $p < 0.05$ ) and Loveland-Cherry and colleagues (1999) reported significant long-term effects on alcohol initiation ( $p < 0.05$ ) of a home-based family intervention. Similarly, medium- and long-term evaluations of the ISFP programme (Spoth et al., 1999; 2001) found positive intervention effects on initiation of alcohol use (1-year follow-up:  $p < 0.05$ ; 2-years follow-up:  $p < 0.01$ ; 3-years follow-up:

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<sup>2</sup> Composite measure of three items concerning lifetime behaviours and one concerning recent use: lifetime use, lifetime use without parental permission, lifetime drunkenness, and past month use.

$p < 0.01$ ); although no significant effect was seen among PDFY participants. Spoth and colleagues (2004) also examined the impact of the ISFP and PDFY on growth in initiation of alcohol use over 6 years from the 6<sup>th</sup> to the 12<sup>th</sup> grade (age 11-12 to 17-18 years) finding that the ISFP delayed alcohol initiation among intervention participants ( $p < 0.05$ ). Spoth and colleagues (2001) also found that in 10<sup>th</sup> grade (age 15-16 years), ISFP participants who had initiated alcohol use during the study were less likely to have been drunk and to have drunk without parental permission (both  $p < 0.01$ ), but again no significant programme effects on these behaviours were demonstrated among PDFY participants.

### 5.3.4 Summary and evidence statements

Outcomes relating to knowledge were examined in one study (Johnson et al., 1996), which reported a positive intervention effect at post-test and 1-year follow-up (both  $p < 0.001$ ) on knowledge of alcohol and other drugs among participants in the Creating Lasting Connections programme. Four studies evaluated intervention effects on attitudes and values (Brody et al., 2004; 2009; Jones et al., 2005; Schinke et al., 2009). Positive effects on attitudes about drinking were reported at short-term follow-up for SAAF (Brody et al., 2004) and a CD-ROM intervention for mothers and their daughters (Schinke et al., 2009). However, at long-term follow-up of SAAF (Brody et al., 2009) no significant effects were reported on attitudes. Evaluations of two CD-ROM based interventions (Schinke et al., 2004; 2009) showed positive programme effects on family communication skills and involvement skills. The SAAF (Brody et al., 2004) had a short-term positive effect on parental communication, but this finding was no longer significant at long-term follow-up (Brody et al., 2006). The Creating Lasting Connections programme (Johnson et al., 2006) had non-significant effects on family communication, bonding and rule setting at both short- and long-term follow-up times for all but one measure of youth involvement in rule setting.

Eleven studies examined intervention effects on health and social outcomes related to alcohol use across eight programmes. Three programmes (Bauman et al., 2000; Jones et al., 2005; Loveland-Cherry, 1999) demonstrated non-significant effects on alcohol use, but across four programmes (Schinke et al., 2004; 2009; Spoth et al., 2001; Mason et al., 2009), short- and long-term positive effects on alcohol use were reported. In addition, six studies (Brody et al., 2004; 2006; Loveland-Cherry et al., 1999; Spoth et al., 1999; 2001; 2004) of four programmes reported positive intervention effects on initiation of alcohol use in the medium- to long-term. In addition, to its effects on alcohol use and initiation of alcohol use, the ISFP had long-term positive effects on drunkenness and drinking without parental permission (Spoth et al., 2004). Long-term follow-up of the PDFY (Mason et al., 2009) revealed a positive programme effect on women's alcohol abuse in early adulthood.

#### Evidence statement 3

- 3 (a) There is no evidence from one RCT<sup>1</sup> to determine the effect of programmes aimed at families on knowledge and understanding relating to alcohol use
- 3 (b) There is moderate evidence from two RCTs<sup>2</sup> to suggest that programmes delivered to families may have short-term positive effects on attitudes and values related to alcohol. Findings may

only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.

- 3 (c) There is moderate evidence from two RCTs<sup>3</sup> to suggest that programmes delivered to families which target family interaction may have positive effects on family communication, parental monitoring and parental rules about alcohol. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 3 (d) There is moderate evidence from 11 RCTs<sup>4</sup> to suggest that programmes delivered to families may have mixed effects on health outcomes related to alcohol use. Three RCTs<sup>5</sup> showed no intervention effects on alcohol use. One RCT<sup>6</sup> of a brief, family focused intervention (Iowa Strengthening Families Program) showed long-term reductions in alcohol use, initiation of alcohol use, and drunkenness and one RCT<sup>7</sup> of a culturally-tailored family-based programme (Strong African American Families) showed a long-term effect on initiation of alcohol use. In addition, one RCT<sup>8</sup> of a CD-ROM intervention with parental involvement showed long-term reductions in monthly alcohol use. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 3 (e) There is weak evidence from one RCT<sup>9</sup> to suggest that physician-led interventions may have a long-term negative impact on alcohol use. Findings may only be partially applicable to the UK as the study was conducted in the USA and may not be generalisable beyond the populations studied.

<sup>1</sup> Johnson et al., 1996 (RCT -)

<sup>2</sup> Brody et al., 2004 (RCT +); Schinke et al., 2009 (RCT +)

<sup>3</sup> Schinke et al., 2004 (RCT +); Schinke et al., 2009 (RCT +)

<sup>4</sup> Bauman et al., 2000 (RCT -); Brody et al., 2004; 2006 (RCT +); Jones et al., 2005 (RCT +); Loveland-Cherry, 1999 (RCT -); Schinke et al., 2004 (RCT +); Schinke et al., 2009 (RCT +); Spoth et al., 1999 (RCT +); Spoth et al., 2001; 2004 (RCT +); Mason et al., 2009 (RCT +)

<sup>5</sup> Bauman et al., 2000 (RCT -); Jones et al., 2005 (RCT +); Loveland-Cherry, 1999 (RCT -)

<sup>6</sup> Spoth et al., 1999 (RCT +); Spoth et al., 2001; 2004 (RCT +)

<sup>7</sup> Brody et al., 2004; 2006 (RCT +)

<sup>8</sup> Schinke et al., 2004 (RCT +)

<sup>9</sup> Stevens et al., 2002 (RCT +)

**Table 5.5. Summary of programme content: programmes delivered in families**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Bauman et al., 2000	RCT (individual) -	USA n=203 families 73% White; 13% Black; 9% Hispanic; 5% other 12-14 years	Family	<b>Family Matters:</b> families received four booklets aimed at preventing the onset of substance use	Theories of socialisation; value expectancy theory; health belief model; social learning theory; social inoculation theory	NR
Brody et al., 2004; 2006; Gerrard et al., 2006; Murry et al., 2007	RCT (cluster) +	USA n=332 100% African American mean 11.2 years	Family	<b>Strong African American Families Program:</b> seven two-hour meetings to prevent drinking including separate and joint parent and child components.	NR	NR
Johnson et al., 1996	RCT (cluster) -	USA n=120 families 16% African American 12-14 years	Family; church communities	<b>Creating Lasting Connections:</b> three training modules for parents and adolescents and case-management services focusing on delaying the onset and reducing the frequency of alcohol and other drug use	NR	NR
Jones et al., 2005	RCT (cluster) +	USA n=2153 families 97% White mean 11 years	Family	Substance use prevention education and family communication intervention; family discussion and mailed brochures and quarterly newsletters	NR	Physician and nurse
Stevens et al., 2002	RCT (cluster) +	USA n=3,111 Ethnicity=NR mean 11 years	Primary care (paediatric)	<b>Dartmouth Prevention Project:</b> Single session health consultation and 12 newsletters over 36 months; child and parent discussions about alcohol and tobacco use; family signed contract agreeing to talk about the risks at home and develop a family policy; mailed print materials; biannual telephone call and incentives.	NR	Physician
Loveland-Cherry et al., 1999	RCT (individual) -	USA n=892 families 86% European American 10-11 years	Family; in the home	Alcohol misuse prevention intervention including three-hour sessions at home; family meetings and phone calls; booster sessions; semi-annual newsletters	Social cognitive theory; problem behaviour theory	NR

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Schinke et al., 2004	RCT (cluster) +	USA n=514 youths 54% black, 30% Hispanic, 11% white, 5% Asian or other mean 12 years	Family	CD-ROM based alcohol prevention intervention for adolescents including 10 45-minute sessions plus booster sessions. The parent intervention consisted of a video and two newsletters plus a workshop booster session. A second intervention group were not exposed to the parent intervention.	Family interaction theory; social learning theory; problem behaviour theory	CD-ROM
Schinke et al., 2009	RCT (individual) +	USA n=202 mother and daughter (mean age 12.2 years) dyads 67.8% White, 14.1% Latina, 9.5% Black, .5% Asian, 8% other	Family; in the home	Computer modules aiming to reduce underage alcohol consumption through improving mother-daughter relationships and teaching skills to avoid drinking. Dyads undertook 14 modules over 3 weeks focusing on communication; relationships; conflict management; alcohol refusal skills; peer norms and the media	Family interaction theory; social learning theory	CD-ROM
Spoth et al., 1999; Spoth et al., 2001; 2004	RCT (cluster) +	USA n=446 families 10-12 years 98% White	Family	<b>Iowa Strengthening Families Program (ISFP):</b> Seven weekly two-hour sessions aiming to prevent substance use. Parents and children attended separate and joint sessions where they were exposed to a skills-based curriculum and engaged in activities to increase family cohesiveness	Biopsychosocial model	Video
Spoth et al., 2001; 2004 Mason et al., 2009	RCT (cluster) +	USA n=429 families 10-12 years 98% White	Family	<b>Preparing for the Drug Free Years (PDFY):</b> Parents attended four education and skill-based sessions and were accompanied by their children for one additional session	Social development model	Video

**Table 5.6. Programmes delivered in families: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Brody et al., 2004; 2006	RCT +	SAAF n=182	Received 3 leaflets n=150	PT n=NR	-	↑ youth protective factors*	↑ communicative parenting**
				24 months n=305 (92%)	-	<b>NS</b> youth protective factors	<b>NS</b>
Johnson et al., 1996	RCT -	Creating Lasting Connections n=59 (Post-test n given only)	Received no intervention n=61 (Post-test n given only)	PT n=120	↑ alcohol and other drug knowledge***	-	↑ youth involvement in setting up AOD rules*** <b>NS</b> family communication or bonding with mother, father or siblings (youth and parent reports), family meeting practices
				12 months n=120	↑ alcohol and other drug knowledge***	-	<b>NS</b> family meeting practices, family rules about ATOD, family rules about non-AOD youth behaviour, youth involvement in setting non-AOD rules, family communication (parent or youth report), bonding with mother (parent report), bonding with father (youth report), bonding with siblings (parent report)
Jones et al., 2005	RCT +	Physician-led intervention n=1,235 families <sup>a</sup>	Discussed safety issue n=918 families <sup>a</sup>	36 months n=2,153 (70%)	-	↓ externalizing of problems (boys) <b>NS</b> externalizing of problems (girls) <b>NS</b> internalizing of problems	-
Schinke et al., 2004	RCT +	CD ROM + parent intervention n=NR	No intervention n=NR	3 years n=469 (91%)	-	-	↑ family involvement* ↑ peer influence outcomes***

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Schinke et al., 2009	RCT +	NR n=NR	Waiting list control group n=NR	2 months n=199 (99%)	-	↑ girls' beliefs about underage drinking* ↑ girls' self-efficacy for avoiding alcohol* ↑ intention not to drink alcohol until adulthood*	↑ girls' communication with mother* ↑ girls reported parental rules about drinking* ↑ girls reported parental monitoring* ↑ girls reported family conflict management skills* ↑ girls' alcohol refusal skills* ↑ mother reported rules about drinking* <b>NS</b> mother reported communication; parental monitoring
*p<0.05; **p<0.01; ***p<0.001; †p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported <sup>a</sup> Follow-up sample							

**Table 5.7. Programme delivered to families: effects on health and social outcomes related to alcohol use**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes		
					Alcohol use	Heavy alcohol use	Other
Bauman et al., 2000	RCT -	Family Matters n=99 families	No intervention n=104 families	3 mo n=NR	<b>NS</b> past 30 day drinking	-	-
				12 mo n=74 (71%)	<b>NS</b> past 30 day drinking	-	-
Brody et al., 2004; 2006	RCT +	Strong African American Families Program n=182	Received 3 leaflets n=150	PT n=NR	↓ alcohol initiation*	-	-
				24 mo n=305 (92%)	↓ alcohol initiation*	-	-
Stevens et al., 2002	RCT (cluster) +	Dartmouth Prevention Project n=1,780	Consultation on bicycle helmet, seatbelt use or gun storage n=1,331	12 mo (NR)	<b>NS</b> drinking	-	-
				24 mo (NR)	↑ drinking <sup>†</sup>	-	-
				36 mo (NR)	↑ drinking <sup>†</sup>	-	-
Jones et al., 2005	RCT +	NR At FU n=1,235 families	Discussed with doctor an unrelated safety issue At FU n=918 families	36 mo n=2,153 (70%)	<b>NS</b> alcohol use	-	-
Loveland- Cherry et al., 1999	RCT -	NR n=90 at FU	No intervention n=338 at FU	4 yrs n=428 (48%)	↓ alcohol initiation** <b>NS</b> alcohol use (among prior drinkers)	-	-
Schinke et al., 2004	RCT +	CD ROM + parent intervention n=NR	No intervention n=NR	3 yrs n=469 (91%)	↓ past 30-day alcohol use***	-	-
Schinke et al., 2009	RCT +	NR n=NR	Waiting list control group n=NR	2 mo n=199 (99%)	↓ past week alcohol consumption** ↓ past month alcohol consumption* ↓ past year alcohol consumption**		

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes		
					Alcohol use	Heavy alcohol use	Other
Spoth et al., 1999	RCT +	ISFP n=238	Minimal contact n=208	1 yr n=317 (71%)	↓ alcohol initiation index scores*	-	-
				2 yrs n=294 (66%)	↓ alcohol initiation index scores**	-	-
Spoth et al., 2001	RCT +	ISFP n=238	Minimal contact n=208	4 yrs <sup>a</sup> n=447 (67%)	↓ alcohol initiation** ↓ past 30-day alcohol use* ↓ alcohol composite use index score**	↓ new user ever been drunk**	↓ new user drank without parental permission**
Spoth et al., 2004	RCT +	ISFP n=238	Minimal contact n=208	6 yrs <sup>a</sup> n=304 (46%)	↓ growth in lifetime alcohol use*	-	-
Spoth et al., 2001	RCT +	PDFY n=221	Minimal contact n=208	4 yrs <sup>a</sup> n=447 (67%)	<b>NS</b> alcohol initiation ↓ past 30-day alcohol use* ↓ alcohol composite use index score*	<b>NS</b> new user ever been drunk	<b>NS</b> new user drank without parental permission;
Spoth et al., 2004	RCT +	PDFY n=221	Minimal contact n=208	6 yrs <sup>a</sup> n=304 (46%)	<b>NS</b> growth in lifetime alcohol use	-	-
Mason et al., 2009	RCT +	PDFY n=221	Minimal contact n=208	10 yrs <sup>a</sup> n=313 (73%)	-	-	↓ rate of alcohol abuse (women only*)

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; <sup>†</sup>p value not reported; † increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup>Follow-up from baseline

## 5.4 Programmes delivered to parents

### 5.4.1 Overview of evidence identified

A total of five studies (Beatty et al., 2008; Carlson et al., 2000; Cohen and Rice, 1995; Koutakis et al., 2008; Toomey et al., 1996) reported on alcohol prevention programmes which targeted parents. Three studies were conducted in North America (Carlson et al., 2000; Cohen and Rice, 1995; Toomey et al., 1996), one was conducted in Australia (Beatty et al., 2008) and one was conducted in Sweden (Koutakis et al., 2008).

Two programmes were delivered solely in the home; Carlson and colleagues (2000) examined information postcards that addressed alcohol risk and protective factors (Carlson et al., 2000) and Beatty and colleagues (2008) examined a parent-directed intervention designed to encourage parent-child communication. Two programmes used home-delivered materials in conjunction with community-based group sessions (Koutakis et al., 2008; Toomey et al., 1996) and one programme was delivered in schools to parents (Cohen and Rice, 1995).

No theoretical base for intervention was reported for two studies (Koutakis et al., 2008; Toomey et al., 1996). Diffusion of Social Innovations theory and social cognitive theory underpinned the intervention examined by Beatty and colleagues (2008), whilst cognitive behavioural theory was used in an unnamed alcohol prevention programme (Cohen and Rice, 1995) and social cognitive theory was used in conjunction with the health belief model in the STARS for Families programme (Carlson et al., 2000).

The overall number of participants recruited in the included studies ranged from 478 (Carlson et al., 2000) to 2,278 (Cohen and Rice, 1995). Overall, two studies (Beatty et al., 2008; Cohen and Rice, 1995) were based on samples of over 1,000 parents, however, one other study (Toomey et al., 1996) included a sample student population over 1,000. The use of power calculations or an appropriate sample size to detect a significant effect was discussed in only one study (Beatty et al., 2008), a further two studies provided enough information to determine that sample sizes were appropriate (Koutakis et al., 2008; Toomey et al., 1996). However, two additional studies (Cohen and Rice, 1995; Carlson et al., 2000) did not provide sufficient information to determine if the sample was sufficiently powered.

The included studies focused primarily on parents of young people aged between 10-13 years old. However one study (Koutakis et al., 2008) was aimed at parents with children aged 13-16 years. Follow-up times varied with two studies (Cohen and Rice, 1995; Koutakis et al., 2008) reporting post-test data using mean longitudinal data; one (Carlson et al., 2000) reported a short follow-up time of two months; another study (Beatty et al., 2008) did not clearly report the follow-up time used and one study reported findings at post-test and after one year (Toomey et al., 1996).

## 5.4.2 Quality assessment

Of the five included studies three were RCTs, one was based on an NRCT design and one was a CBA study. All three RCTs (Beatty et al., 2008; Cohen and Rice, 1995; Toomey et al., 1996) were based on cluster randomisation with randomisation conducted at school level in all three studies. The unit of analysis did not match the unit of allocation in two studies (Beatty et al., 2008; Cohen & Rice, 1995); Beatty and colleagues (2008) examined the effect of clustering but within-school correlations were not found to be significant and no adjustments were made, while Cohen and Rice (1995) did not describe how any potential clustering effect was accounted for. One study (Koutakis et al., 2008) was rated good quality presenting a high quality matched study design which controlled for study bias and clearly presented study details. One RCT (Beatty et al., 2008) was rated moderate quality providing details of power calculations and accounting for attrition levels. Three studies (Carlson et al., 2000; Cohen and Rice, 1995; Toomey et al., 1996) were rated poor quality (- rating). Methodological data were limited and in some instances the internal validity of the study was not clear. Outcome measures were reported to be reliable in four studies (Beatty et al., 2008; Carlson et al., 2000; Cohen and Rice, 1995; Toomey et al., 1996) and relevant in all studies.

## 5.4.3 Findings

### 5.4.3.1 Knowledge

None of the included studies examined intervention effects on knowledge and understanding.

### 5.4.3.2 Attitudes and values

Three studies (Cohen and Rice, 1995; Koutakis et al., 2008; Toomey et al., 1996) examined intervention effects on alcohol-related attitudes and values. Cohen and Rice (1995) examined effects on attitudes and values among two cohorts. In relation to the impact of the intervention on parental attitudes and values, there was no difference in parenting behaviours between groups across time. When children's perceptions of parenting behaviours were stratified by the onset of children's alcohol use (drinker vs. non-drinker), children who became drinkers showed larger declines in parental respect, parental rapport and parental monitoring compared with children who remained non-drinkers. However, parents whose children reported having substance-using peers consistently perceived their parents-child relationship as having higher indexes of rapport ( $p < 0.001$ ), respect ( $p < 0.001$ ), and monitoring ( $p < 0.001$ ). Comparing drinkers to non-drinkers across the two cohorts revealed an increase in students' perceptions of parents' respect for their child and students' perceptions of parental monitoring (Cohort 1:  $p < 0.001$ ,  $p < 0.01$ ; Cohort 2: both  $p < 0.01$  respectively). However, within cohort 1 there were no programme effects on students' perceptions of parent-child rapport, whereas cohort 2 showed a significant increase in perception ( $p < 0.01$ ). There were no programme effects on students' perceptions of their parents' knowledge of their friends in either cohort. Koutakis and colleagues (2008) found significant programme effects of a zero tolerance alcohol prevention programme (the Örebro Prevention Programme) on the maintenance of strict parental attitudes towards underage drinking in the intervention group compared to the control group ( $p < 0.001$ ). The Amazing Alternatives! Home Programme (Toomey et al., 1996) showed no effect on parental attitudes

regarding young people aged 18-20 drinking; allowing teens to drink when they are seniors in school; family rules about drinking; perception of how many parents of their children's friends they knew; their contact with other parents regarding alcohol-related issues; rules or systems for unsupervised periods; the frequency at which they check parties have adult supervision; and whether they always monitored their teen's whereabouts. At post-test no programme effects were seen on students' alcohol use intentions for the next week, month, year or when they were 21 years old. Furthermore, no intervention effects were seen on students' views that their parents would allow them to drink alcohol when they were high school seniors. At post-test students reported significant increases in family rules against drinking ( $p<0.01$ ); talking about the consequences if caught drinking ( $p<0.05$ ) and parents' rules as a reason not to drink alcohol ( $p<0.05$ ). However, these effects were not sustained at the long-term follow-up (>1 year).

#### **5.4.3.3 Personal and social skills**

Three studies (Beatty et al., 2008; Carlson et al., 2000; Toomey et al., 1996) reported intervention effects on personal and social skills. All outcome measures for personal and social skills focused on communication. Beatty and colleagues (2008) reported greater parent-child discussion about drinking alcohol; recent discussion about alcohol; more alcohol-related topics discussed in the intervention group compared to the control. Furthermore, the intervention group reported a greater perception of engagement with their child. Findings from the STARS programme (Carlson et al., 2000) showed short-term effects on the frequency at which parents spoke to their child about avoiding alcohol ( $p<0.05$ ) and on how recently parents had spoken to their child (last 30 days;  $p<0.05$ ). At long-term follow-up (>1 year) Toomey and colleagues (1996) found that more parents reported a higher proportion of parent-child discussion about the consequences if caught drinking ( $p<0.05$ ); alcohol-related situations ( $p<0.01$ ); alcohol messages in the mass media ( $p<0.01$ ); and encouraged their child and friends to gather at home ( $p<0.05$ ). Students also reported a higher proportion of parent-child discussion related to family rules about alcohol ( $p<0.001$ ); consequences for breaking the rules ( $p<0.01$ ); and problems they could have with alcohol use ( $p<0.05$ ). However, students reported non-significant changes in discussions about having friends over to the house; alcohol messages in the mass media; good eating habits and sex education.

#### **5.4.3.4 Health outcomes related to alcohol use**

Two studies (Koutakis et al., 2008; Toomey et al., 1996) reported alcohol-related health outcomes. The Örebro Prevention Programme (Koutakis et al., 2008) was found to result in a decrease in reported youth drinking, drunkenness and past 30 day drunkenness ( $p<0.001$ ) in the intervention group. Furthermore, subgroup analysis revealed that of those categorised as early starters in alcohol use, those in the intervention group reported lower rates of drunkenness ( $p<0.01$ ). The Amazing Alternatives! Home Program (Toomey et al., 1996) found no programme effects on lifetime alcohol use; past year alcohol use; or past month alcohol use at either post-test or at long-term follow-up.

#### 5.4.4 Summary and evidence statements

Five studies (Beatty et al., 2008; Carlson et al., 2000; Cohen and Rice, 1995; Koutakis et al., 2008; Toomey et al., 1996) were identified that examined alcohol prevention interventions aimed at parents of young people. Two studies (Carlson et al., 2000; Toomey et al., 1996) were primarily delivered using postcards or booklets and one additional study (Beatty et al., 2008) used information tools in conjunction with workshops. The remaining two studies (Cohen and Rice, 1995; Koutakis et al., 2008) used trained facilitators or project workers to deliver the programme.

None of the included studies presented outcomes relating to knowledge or understanding. Three studies (Cohen and Rice, 1995; Koutakis et al., 2008; Toomey et al., 1996) examined programme effects on attitudes and values. Intervention effects on parental attitudes towards underage drinking were seen in one study (Koutakis et al., 2008). However, Toomey and colleagues reported no programme effects on parental attitudes to young people's drinking. Improvements in parents' perceptions of their parent-child monitoring and parental respect for their child were reported in one study (Cohen and Rice, 1995). Short-term intervention effects on parent-child communication about alcohol and family rules were reported in one study (Toomey et al., 1996). However, effects were not maintained long-term. Three studies (Beatty et al., 2008; Carlson et al., 2000; Toomey et al., 1996) reported intervention effects on personal and social skills relating to alcohol use. All three studies reported increases in parent-child communication about alcohol. Two studies (Beatty et al., 2008; Carlson et al., 2000) either increased frequency or reported more recent parent-child communication about alcohol. One study (Toomey et al., 1996) showed positive long-term effects on parent-child communication regarding family rules about alcohol and alcohol related situations (reported by both parents and their children).

Two studies (Koutakis et al., 2008, Toomey et al., 1996) reported health outcomes relating to alcohol use. No programme effects were reported by Toomey and colleagues. However, Koutakis and colleagues reported positive intervention effects on youth drinking, past month drunkenness and drunkenness. Positive intervention effects on drunkenness also extended to a subgroup categorised as early starters in alcohol use.

#### Evidence statement 4

- 4 (a) There is inconsistent evidence from one NRCT and two RCTs<sup>1</sup> to determine the effects of interventions delivered to parents on attitudes and values relating to alcohol. However, there is weak evidence from one RCT<sup>2</sup> to suggest that programmes aimed at parents can have positive short-term effects on young people's attitudes towards family rules and their influence as a deterrent for drinking. These findings may be only partially applicable to the UK as this study was implemented in the USA and may not be generalisable beyond this population.
- 4 (b) There is moderate evidence from two RCTs and one CBA study<sup>3</sup> to suggest that interventions delivered to parents may have a positive short- to potentially long-term effect on parent-child communication about alcohol. These findings may be only partially applicable to the UK as they

were not implemented in a UK setting and may not be generalisable beyond the populations studied.

- 4 (c) There is insufficient and inconsistent evidence from one NRCT and one RCT<sup>4</sup> to determine the effect of interventions delivered to parents on health and social outcomes relating to alcohol use among young people.

<sup>1</sup> Koutakis et al., 2008 (NRCT ++); Toomey et al., 1996 (RCT -); Cohen and Rice, 1995 (RCT -)

<sup>2</sup> Toomey et al., 1996 (RCT -)

<sup>3</sup> Beatty et al., 2008 (RCT -); Toomey et al., 1996 (RCT -); Carlson et al., 2000 (CBA -)

<sup>4</sup> Koutakis et al., 2008 (NRCT ++); Toomey et al., 1996 (RCT -)

**Table 5.8. Summary of programme content: programmes delivered to parents**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Beatty et al., 2008	RCT (cluster) +	Australia n=1,201 Ethnicity=NR 10-11 years	Home, community	Self-directed intervention; parents received five communication sheets containing self-help information and activities.	Diffusion of social innovation theory	Communication sheets/Peer leaders
Carlson et al., 2000	CBA -	USA n=478 parents 65% Black, 30% White, 5% Other 6 <sup>th</sup> grade	Home	<b>STARS for Families:</b> 10 postcards were mailed, two per week. With parents using an average of 6.49 cards to facilitate discussion.	Health belief model, Social cognitive theory	Postcards
Cohen and Rice, 1995	RCT (cluster) -	USA Cohort 1= 1,034; 15% Asian, 32% Hispanic, 38% White, 4 % black, 11% other 5 <sup>th</sup> Grade Cohort 2 = 1,244, 15% Asian, 27% Hispanic, 40% White, 4% Black, 15% Other NR	Schools	Substance use prevention focusing on parental skills training around substances; Drug refusal skills, family rules about drugs. It incorporated 4 sessions for cohort 1 and 3 sessions for cohort 3.	Cognitive-behavioural model	Facilitators
Koutakis et al., 2008	NRCT ++	Sweden n= 811 children; n= 651 parents, 13-16 yrs old Ethnicity=NR	Schools	<b>The Örebro Prevention Programme:</b> An alcohol prevention programme promoting zero-tolerance to alcohol use, promoting leisure activities, parental influence on adolescents, parent-child contracts. Conducted over five semesters, with one 30 minute long meeting per semester.	Not reported	External project workers
Toomey et al., 1996	RCT (cluster) -	USA n=1,028 children n=521 parents, grade 7 Primarily White	Home, community	<b>Amazing Alternatives! Home Programme:</b> Aim was to improve communication between parents and their 7th graders concerning alcohol-related issues, to improve parenting skills like monitoring and to reduce underage drinking. The intervention was delivered in four booklets to parents and two focus groups with parents.	Not reported	Booklets/other

Table 5.9. Programmes delivered to parents: effects on knowledge, attitudes and skills

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Beatty et al., 2008	RCT (cluster) +	Self-directed intervention n=353 (29%)	No intervention n=848 (71%)	1 mo n=830 (69%)	-	-	↑ discussions with child about drinking alcohol*** ↑ spoken with child about alcohol recently*** ↑ perceived engagement with child** ↑ discussion alcohol-related topics***
Carlson et al., 2000	CBA-	STARS n=237 (parents)	No intervention n=237 (parents)	2 mo (NR)	-	-	↑ talked to their child about avoiding alcohol 10+ times in the past year* ↑ talked to their child in past 30 days*
Cohen & Rice, 1995	RCT (cluster) -	Cohort 1 n=NR (drinkers vs. non-drinkers)	No intervention n=NR	PT, annually over 4 years (NR)	-	↑ perception of parent respect for child*** <b>NS</b> perception of parent-child rapport ↑ perception of parental monitoring*** <b>NS</b> perception of parent's knowledge of children's friends	-
		Cohort 2 n=NR (drinkers vs. non-drinkers)			-	↑ perception of parent respect for child** ↑ perception of parent-child rapport** ↑ perception of parental monitoring** <b>NS</b> perception of parent's knowledge of children's friends	-
Koutakis et al., 2008	NRCT ++	Örebro Prevention Programme n= 393 children; n= 339 parents	No intervention n=418 students; n=312 parents	PT (Mean over time) (students=85%; parents=71%)	-	↑ strict parental attitudes towards underage drinking***	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Toomey et al., 1996	RCT (cluster) -	Amazing Alternatives! Home Program n=257 parents (49%)	No intervention n= 264 parents (51%)	PT	-	<p><b>NS</b> parental attitudes<sup>a</sup></p> <p>↑ young person's attitudes to: family rules against youth drinking**;</p> <p>talked about consequences if caught drinking*;</p> <p>parents' rules as a reason not to use alcohol*</p> <p><b>NS</b> My parents will allow me to drink when I am a high school senior;</p> <p><b>NS</b> alcohol use intentions</p>	-
				>1 year (students=83%; parents=>90%)	-	<p><b>NS</b> young person's attitudes</p> <p><b>NS</b> alcohol use intentions</p>	<p>↑ parental discussion with child: consequences if caught drinking*;</p> <p>alcohol-related situations**;</p> <p>alcohol messages in the mass media**;</p> <p>encourage child and friends to gather at home*</p> <p>↑ young person's discussion with parent: family rules about alcohol***; consequences for breaking rules**;</p> <p>problems could have with alcohol use*;</p> <p>(<b>NS</b> having friends over to house; <b>NS</b> alcohol messages in the mass media; <b>NS</b> good eating habits; <b>NS</b> sex education)</p>

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; <sup>†</sup>p value not reported; † increase relative to comparator; ‡ decrease relative to comparator; **NS** not significant; - outcome not reported

<sup>a</sup>Included: not allowing teens to drink when senior; family rules against drinking; how many parents of your child's friends do you know?; how often do you contact other parents about alcohol-related situations?; special rules or systems for unsupervised periods; check parties for adult supervision; always monitor teen's whereabouts

**Table 5.10. Programmes delivered to parents: effects on health and social outcomes related to alcohol use**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes		
					Alcohol use	Heavy alcohol use	Other
Koutakis et al., 2008	NRCT ++	Örebro Prevention Programme students= 1,183; parents= 1,022	No intervention students=122; parents= 999	PT (Mean over time) students=85%; Parents=71%)	↓ youth drinking***	↓ drunkenness*** ↓ past month drunkenness*** Early starters - ↓ drunkenness**	-
Toomey et al., 1996	RCT (cluster) -	Amazing Alternatives! Home Program youth= NR; parents= 257	No intervention youth= NR; parents= 264	PT	<b>NS</b> lifetime alcohol use <b>NS</b> past year alcohol use <b>NS</b> past month alcohol use	-	-
				>1 year (students=83%; parents=>90%)	<b>NS</b> lifetime alcohol use <b>NS</b> past year alcohol use <b>NS</b> past month alcohol use	-	-

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; †p value not reported; † increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

## **5.5 Programmes involving the wider community or mass media**

### **5.5.1 Overview of the evidence identified**

Three studies (Cheadle et al., 1995; Flynn et al., 2006; Kypri et al., 2005) were identified that examined programmes involving the wider community or mass media. Cheadle and colleagues (1995) examined a 5-year community-based health promotion programme for adolescents on an American Indian Reservation. Programme components included classes, skills development programmes, alcohol- and drug-free events and a public information campaign. Flynn and colleagues (2006) and Kypri and colleagues (2005) examined mass media intervention programmes delivered in communities in the USA and New Zealand, respectively. The campaign examined by Flynn and colleagues (2006) was delivered over four years and included television and radio messages directed at young people, in addition to messages directed at parents and training videos for alcohol retailers. The focus of the campaign examined by Kypri and colleagues (2005) was on highlighting the risks of supplying alcohol to young people. The campaign lasted one and half months and included advertisements and publicity via local media outlets in addition to media events.

Only one study reported the theoretical base for intervention. The mass media programme examined by Flynn et al., (2006) was based on social cognitive theory. Two studies examined programmes that were targeted at the wider community (Cheadle et al., 1995; Kypri et al., 2005) and Flynn and colleagues (2006) examined a mass media intervention directed towards young people as they matured from Grades 4-5 into Grades 7-8 (approximately from age 10 to age 12-14 years).

### **5.5.2 Quality assessment**

All three studies (Cheadle et al., 1995; Flynn et al., 2006; Kypri et al., 2005) were based on a CBA design and the quality of all three studies was rated moderate. The interventions and comparisons examined were well described and appropriate, contamination was acceptably low, and all three studies examined important and relevant outcomes.

### **5.5.3 Findings**

#### **5.5.3.1 Knowledge and understanding**

None of the included studies examined intervention effects on knowledge.

#### **5.5.3.2 Attitudes and values**

One study (Flynn et al., 2006) examined intervention effects on alcohol-related attitudes and values. There were no effects of the media campaign on mediators of alcohol use, which included expectations related to alcohol use, perceived parental and peer norms, perceived peer prevalence, perceived access to alcohol and whether or not participants felt confident refusing offers of alcohol.

#### **5.5.3.3 Personal and social skills**

None of the included studies examined intervention effects on personal and social skills

#### 5.5.3.4 Health and social outcomes related to alcohol use

There were no effects of either mass media programme (Flynn et al., 2006; Kypri et al., 2005) on alcohol use and the community-wide campaign targeting American Indian adolescents also failed to show any effects on alcohol consumption.

#### 5.5.4 Summary and evidence statements

Three studies (Cheadle et al., 1995; Flynn et al., 2006; Kypri et al., 2005) were identified that examined programmes involving the wider community or mass media. Two studies (Flynn et al., 2006; Kypri et al., 2005) examined mass media intervention programmes delivered in communities in the USA and New Zealand, respectively, and one study (Cheadle et al., 1995) a 5-year community-based health promotion programme for adolescents on an American Indian Reservation.

None of the included studies examined intervention effects on knowledge and understanding, or on personal and social skills. There were no effects of a long-term mass media programme (Flynn et al., 2006) on mediators of alcohol use. There were no effects of either mass media programme (Flynn et al., 2006; Kypri et al., 2005) or a community-wide campaign targeting American Indian adolescents on alcohol use.

#### Evidence statement 5

- 5 (a) There is weak evidence from one CBA study<sup>1</sup> to suggest interventions and programmes involving mass media have no effect on attitudes and values related to alcohol use. Findings may only be partially applicable to the UK as the study was conducted in the USA and may not be generalisable beyond the populations studied.
- 5 (b) There is moderate evidence from three CBA studies<sup>2</sup> to suggest that interventions and programmes involving the wider community or mass media have no effects on young people's alcohol use. Findings may only be partially applicable to the UK as all the studies were set outside the UK and may not be generalisable beyond the populations studied.

<sup>1</sup> Flynn et al., 2006 (CBA +)

<sup>2</sup> Flynn et al., 2006 (CBA +); Kypri et al., 2005 (CBA +); Cheadle et al., 1995 (CBA +)

**Table 5.11. Summary of programme content: programmes involving the wider community or mass media**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Flynn et al., 2006	CBA +	USA n=16 school districts Ethnicity=NR 12-14 years	Mass media	32 television and 23 radio messages over 4 years; directed to youth as they matured from Grades 4-5 into Grades 7-8; radio messages directed toward their parents; training video for retail clerks	Social cognitive theory	NA
Kypri et al., 2005	CBA +	New Zealand n=872 New Zealand European (82%), Maori (8%), Samoan (1%), Chinese (1%) and Other (9%) 15-19 years	Mass media	<b>'Think before you buy under-18s drink' campaign:</b> Local newspaper and radio advertisements; radio and print media interviews with community workers; media events, billboard advertisements, distribution of printed material and presentation of campaign information at point of sale.	NR	NA
Cheadle et al., 1995	CBA +	USA n=6 communities Ethnicity not fully reported but included American Indian, White Hispanic and Asian 9th and 12th grade	American Indian Reservation	Classes, skills development programs, alcohol- and drug-free events, and public campaigns.	NR	Various

**Table 5.12. Programmes involving the wider community or mass media: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Flynn et al., 2006	CBA +	Media campaign n=8 school districts	No intervention n=8 school districts	Annual surveys (NA)	-	<b>NS</b> mediators of alcohol use	-
*p<0.05; **p<0.01; ***p<0.001; <sup>1</sup> p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported							

**Table 5.13. Programmes involving the wider community or mass media: effects on health and social outcomes related to alcohol use**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes		
					Alcohol use	Heavy alcohol use	Other
Cheadle et al., 1995	CBA +	Unnamed n=1 community	No intervention n=5 nonurban, communities	Annual surveys over 3 years (NA)	<b>NS</b> alcohol use measures	-	-
Flynn et al., 2006	CBA +	Media campaign n=8 school districts	No intervention n=8 school districts	Annual surveys (NA)	<b>NS</b> beer drinking	-	-
Kypri et al., 2005	CBA +	Media campaign n=2 communities	No intervention n=1 community	PT (NA)	-	<b>NS</b> binge drinking	<b>NS</b> supplied alcohol for unsupervised drinking
*p<0.05; **p<0.01; ***p<0.001; <sup>1</sup> p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported							

## 5.6 Review of published economic evaluations

One study (Spath et al., 2002) was identified that met the criteria for inclusion in the review of published economic evaluations. Spoth and colleagues (2002) evaluated the cost-effectiveness and net benefits of the ISFP and PDFY.

### 5.6.1 Review of Spoth and colleagues (2002)

#### 5.6.1.1 Overview

The purpose of the study was to evaluate two interventions designed for general populations by estimating: (1) the cost per case of alcohol-use disorder prevented; (2) benefit-cost ratios; and (3) net benefits per participating family.

#### 5.6.1.2 Summary of effectiveness data

Effectiveness estimates were drawn from a cluster randomised trial of two universal, family focused interventions, the seven-session ISFP and the five-session PDFY (Spath et al., 1999). At the end of the 4-year study (Spath et al., 2004), data were available from 478 (72%) of the original participants (study details and effectiveness data are presented in section 5.3)

Estimates of the number of alcohol-use disorder cases prevented per 100 families treated were calculated. For each age, the total number of children who had initiated alcohol use was multiplied by the proportion of future alcohol-use disorders expected among persons who initiated alcohol use at that age (taken from Grant & Dawson, 1997). The rate of future alcohol-use disorders expected for each condition was calculated by dividing the number of cases expected by the total number of persons assigned to each condition and multiplying by 100 to give the number of alcohol use disorder cases expected per 100 families treated. To estimate the number of future alcohol-use disorder cases prevented per 100 families, the rate for each intervention group was subtracted from the rate for the control condition. The projected disorder rate for participants who had not reported alcohol-use onset by the 4-year follow-up was calculated as the average of all of the rates associated with ages 18 and older (also taken from Grant & Dawson, 1997).

The projected lifetime alcohol use disorder rate calculated for the two intervention and control groups were: ISFP 37.65% (SE 3.59); PDFY 40.46% (SE 3.74); and control 43.17% (SE 3.68). Therefore the number of alcohol use disorder cases prevented per 100 families treated was estimated to be 5.53 for the ISFP and 2.72 for the PDFY.

#### 5.6.1.3 Summary of resource utilisation and cost data

Both direct and indirect costs were assessed and expressed in dollars spent per participant (adjusted for inflation into 1992 dollar equivalents). Facility costs were not included, and the authors ignored the costs of providing informational materials to the minimal contact control group (\$1.25 per family) as they considered there to be no appreciable opportunity costs associated with participation in the control arm of the study. Intervention costs are summarised in Table 5.11. Intervention costs per 100 families for ISFP and PDFY were \$68,856 and \$55,567, respectively.

**Table 5.14. Summary of intervention costs (Spath et al., 2002)**

Cost source	Intervention cost <sup>a</sup>	
	ISFP <sup>b</sup>	PDFY <sup>c</sup>
Facilitator ads	\$550	\$550
Facilitator training <sup>d</sup>	\$25,758	\$32,648
Family training materials <sup>e</sup>	\$2,776	\$10,602
Family participation incentives <sup>f</sup>	\$13,620	\$10,994
Site management <sup>g</sup>	\$5,385	\$3,715
Programme facilitation <sup>h</sup>	\$31,972	\$10,875
Child care	\$4,620	\$2,948
Parent travel	\$455	\$483
Total costs (1994 \$)	\$85,136	\$72,815
Inflation adjusted costs (1992 \$) <sup>i</sup>	\$80,562	\$68,903

<sup>a</sup>Intervention costs include those incurred by additional participating families who did not complete study assessments. <sup>b</sup>Among pretested families, 117 participated in the ISFP. <sup>c</sup>Among pretested families, 124 participated in the PDFY. <sup>d</sup>Includes trainer travel, time and lodging; facilitator travel, time and meals; training materials (manuals and videotapes). <sup>e</sup>For ISFP, duplication of materials in facilitator manuals and supplies; for PDFY, cost of family activity books. <sup>f</sup>Grocery and video rental coupons, snacks. <sup>g</sup>Local staff providing access to rooms where training held, setting up rooms, making arrangements for audiovisual equipment. <sup>h</sup>Preparation, facilitator time, travel. <sup>i</sup>Adjustment accounts for increases in the Consumer Price Index of 3.0% from 1992 to 1993 and 2.6% from 1993 to 1994 (Bureau of Labor Statistics, 2000).

Reproduced from Spoth and colleagues (2002)

#### 5.6.1.4 Summary of cost-effectiveness data

The cost per case prevented was calculated by dividing the number of alcohol-use disorder cases prevented per 100 families into the cost per 100 families treated. For the ISFP, the estimated cost for each case of alcohol-use disorder prevented was \$12,459 (\$68,856/5.53). Corresponding costs for the PDFY condition were \$20,439 (\$55,567/2.72).

The present value of the total lifetime benefit realised by the prevention of a single alcohol-use disorder was calculated to be \$119,633. The benefit-cost ratio equalled the benefit per case prevented, divided by the cost per case prevented. For the ISFP the benefit-cost ratio was 9.60 (i.e. \$ 9.60 was saved for every dollar invested). For PDFY, the benefit-cost ratio equalled 5.85.

The net benefit in the ISFP condition was \$5,923 per family (0.0553 cases prevented per family treated x \$119,633 benefit per case prevented - \$689 in intervention costs per family treated). The corresponding net benefit in the PDFY condition was \$2,697 per family (0.0272 x \$119,633 - \$556).

#### 5.6.1.5 Comments

The economic evaluation answered a well-defined question, evaluating the cost-effectiveness and net benefits of two brief, family-focused interventions, the ISFP and PDFY, compared to a minimal intervention approach. Effectiveness estimates were drawn from a good-quality cluster RCT and used to estimate the impact of the programme on adult alcohol use disorder. The authors reported that the methods used in their analyses were likely to have resulted in a conservative estimate of the number of future alcohol use disorder cases. Costs were considered from a societal perspective, but although

the costs included were reported there was little description of how costs were valued. The generalisability of the study to a UK context is unclear as the data used in the evaluation is based on studies conducted in the USA. In addition, projected alcohol use disorder rates were calculated based on US population data.

### **5.6.2 Summary and evidence statements**

One study (Spoth et al., 2002) was identified that met the criteria for inclusion in the review of published economic evaluations. Spoth and colleagues (2002) examined the cost-effectiveness and cost benefits of two family-focused interventions, the ISFP and the PDFY. Evaluations of the effectiveness of these programmes were identified and are included in Section 5.3.

Overall the net benefit was \$5,923 per family for the ISFP and \$2,697 per family for PDFY. The benefit-cost ratios were 9.60 and 5.85, indicating that for every \$1 spent on the ISFP and PDFY, \$9.60 and \$5.85, respectively, were saved in medical costs.

#### **Evidence statement 6**

There is moderate evidence from one economic evaluation study<sup>1</sup> to suggest that programmes delivered to families may be cost-effective and cost saving. This evidence may be of limited applicability to a UK context because cost and benefit estimates were based on data from studies conducted in the USA.

<sup>1</sup> Spoth et al., 2002 (CEA/CBA +)

## 6 Programmes targeting sexual health

A total of 49 articles met the criteria for inclusion in the review of community-based programmes targeting young people's sexual health. Nine articles were systematic reviews and/or meta-analyses, 20 articles reported on studies that examined intervention or programmes delivered within social, healthcare and community settings, 15 articles reported on studies that examined programmes or interventions delivered to families or parents, two articles reported on studies that examined interventions or programmes that involved the wider community or mass media, and three articles reported on studies which examined interventions for vulnerable young people.

### 6.1.1 Systematic reviews and meta-analyses

#### 6.1.2 Overview of evidence identified

Nine systematic reviews and meta-analyses were identified that examined the effectiveness of interventions and programmes that targeted young people's sexual health behaviours. One review (Arnold and Rotheram-Borus, 2007). All nine reviews examined interventions and programmes delivered across a range of settings.

#### 6.1.3 Quality assessment

Four reviews (DiCenso et al., 2002; Franklin et al., 1997; Underhill et al., 2007; 2008) were rated good quality (++ rating) and covered all of the criteria on the quality assessment tool indicating a high standard of methodology. Four reviews (Guyatt et al., 2000; Pedlow & Carey, 2003; Robin et al., 2004; Sales et al., 2006) were rated moderate quality (+ rating), which although generally good quality, did not assess and/or take into account the quality of the included studies. One review (Arnold and Rotheram-Borus, 2009) was rated poor quality as the authors did not provide a detailed description of the methodology used, and it was not clear whether the literature searches undertaken were sufficiently rigorous. In addition, this review neither assessed nor took into account the quality of the included studies.

#### 6.1.4 Findings

DiCenso and colleagues (2002) concluded from the findings of their review that primary prevention strategies do not delay the initiation of sexual intercourse or improve the use of birth control among young men and women. However, across three reviews (Franklin et al., 1997; Robin et al., 2004; Sales et al., 2006) there was consensus that HIV prevention and sexual risk reduction programmes were effective in increasing condom use and reducing pregnancy, but that there was a limited impact of these programmes on adolescent sexual activity. There were different findings across these three reviews in relation to the impact of setting on effectiveness. Franklin and colleagues (1997) reported that community-based programmes were more effective than school-based programmes in terms of increasing contraceptive use and reducing pregnancy, and that clinic-based programmes more effectively influenced contraceptive behaviour outcomes than non-clinic programmes. However, Robin and colleagues (2004) concluded from the findings of their review that no key study features or programme characteristics clearly distinguished studies with positive, null, and negative effects from

each other. Sales and colleagues (2006) didn't examine the relative comparability of setting but did highlight features of successful community- and clinic-based interventions and programmes. Successful community-based interventions were theoretically based, tailored to the target population, implemented by trained facilitators, and the content was diverse and delivered using a wide variety of methods. The characteristics of successful clinic-based programmes included a focus on a single gender or ethnic group, HIV/STI education with skills building activities (e.g. condom application), condom negotiation and sexual communication components, and personalised risk assessments. The reviews conducted by Underhill and colleagues (2007; 2008) and Pedlow and Carey (2003) lent further support to the evidence that community-based programmes can affect risk behaviours.

Guyatt and colleagues (2000) compared the results of RCTs and observational studies of interventions to prevent adolescent pregnancy in order to explore study design as a possible determinant of outcome. They found that observational studies yielded systematically greater estimates of treatment effects than RCTs. The authors cautioned that where feasible, recommendations for practice should be derived from randomised trials.

Arnold & Rotheram-Borus (2009) included evaluations of six programmes in their review of HIV prevention programmes for young homeless people. The authors reported that all six programmes identified were relatively intensive, including a range of 5 to 35 sessions (minimum of 5) and all programmes supported the notion that homeless youth are in need of intensive and prolonged help. All six programmes were designed as adjuncts to existing services, and intervention approaches included a runaway shelter, services delivered by mental health providers or social services and community outreach. The authors found that programmes which demonstrated success in recruiting and retaining youth were present/future-oriented, skill-based interventions aimed at increasing the youth's ability to reduce behaviours that lead to HIV.

### **6.1.5 Summary and evidence statements**

Nine systematic reviews and meta-analyses were identified that examined the effectiveness of interventions and programmes across a range of settings and populations that targeted young people's sexual health behaviours. One review (Arnold & Rotheram-Borus, 2007) focused on interventions and programmes that targeted sexual risk taking among young homeless people.

Findings from six reviews (Franklin et al., 1997; Pedlow & Carey, 2003; Robin et al., 2004; Sales et al., 2006; Underhill et al., 2007; 2008) indicated that community-based programmes can affect sexual risk behaviours of young people. In particular, HIV prevention and sexual risk reduction programmes were effective in increasing condom use and reducing pregnancy (Franklin et al., 1997; Robin et al., 2004; Sales et al., 2006). However, they may have a limited impact on adolescent sexual activity. According to Sales and colleagues (2006) successful community-based interventions were theoretically based, tailored to the target population, implemented by trained facilitators, and the content was diverse and delivered using a wide variety of methods.

**Evidence statement 7**

7 (b) There is strong evidence from five systematic reviews and meta-analyses<sup>1</sup> to suggest that interventions and programmes delivered in a range of community settings can have a positive impact on young people's sexual risk behaviours, in particular, condom use and pregnancy.

7 (c) There is strong evidence from one systematic review<sup>2</sup> to suggest that effective community-based interventions and programmes are: (1) theoretically based; (2) tailored to the target population, (3) implemented by trained facilitators; (4) based on diverse content; and (5) delivered using a wide variety of methods.

7 (d) There is strong evidence from one systematic review<sup>2</sup> to suggest that effective clinic-based programmes include: (1) a focus on a single gender or ethnic group; (2) HIV/STI education with skills building activities (e.g. condom application); (3) condom negotiation and sexual communication components; and (4) personalised risk assessments.

<sup>1</sup> Franklin et al., 1997 (SR +); Pedlow & Carey, 2003 (SR +); Robin et al., 2004 (SR +); Sales et al., 2006 (SR ++); Underhill et al., 2007; 2008 (both SR ++)

<sup>2</sup> Sales et al., 2006 (SR ++)

**Table 6.1. Summary of findings from systematic reviews and meta-analyses: Sexual health**

Author (Year)	Design	Inclusion/exclusion	Number of studies	Findings
Arnold & Rotheram-Borus, 2009	SR -	Programmes that had an HIV prevention focus and targeted homeless youth.	6 studies	Programmes with demonstrated success in recruiting and retaining youth are present/future-oriented, skill-based interventions aimed at increasing the youth's ability to reduce behaviours that lead to HIV.
DiCenso et al., 2002	SR ++	Primary prevention strategies aimed at delaying sexual intercourse, improving use of birth control and reducing incidence of unintended pregnancy in adolescents	26 studies	Primary prevention strategies do not delay the initiation of sexual intercourse or improve the use of birth control among young men and women.
Franklin et al., 1997	SR +	Studies with a primary focus on the primary prevention of adolescent pregnancy	32 studies	Programmes had a greater effect on contraceptive use and pregnancy rates, than on sexual activity. Contraceptive knowledge building programmes and contraceptive distribution programmes are more effective than other sex education programmes (e.g. abstinence-only programmes).
Guyatt et al., 2000	SR +	Randomised trials and observational studies of interventions to prevent adolescent pregnancy	30 studies	Summary odds ratios for the observational studies showed a significant intervention benefit ( $p < 0.05$ ) while the randomised trials did not show a benefit for any outcome in either females or males. Observational studies yield systematically greater estimates of treatment effects than randomized trials of adolescent pregnancy prevention interventions.
Pedlow & Carey, 2003	SR +	HIV risk reduction interventions targeting teenagers	22 studies	HIV risk reduction interventions have been shown to be effective but are associated with small effect sizes. Most effective studies emphasised a theoretical framework, most often Social Cognitive Theory. Interventions with multiple sessions or long doses have been no more successful than those with shorter doses.
Robin et al., 2004	SR +	Behavioural interventions targeting HIV, STI, and pregnancy for young people aged 13 years or younger	39 studies; 2 community-based; 2 clinic-based; 1 home based; 4 mixed settings	Programmes that produced positive effects: (1) used trained adult facilitators, and two other programmes with positive effects also used trained peer facilitators; (2) included content that was specific to reducing sexual risk behaviour such as refusal of unwanted sex and condom-use skills; and (3) commonly employed interactive and participatory educational strategies.
Sales et al., 2006	SR ++	School, community or clinic based interventions or interventions developed for special populations	24 studies; 12 clinic-based; 9 special populations; 5 community-based	Most successful community based interventions were theoretically based, tailored to the target population, implemented by trained facilitators, and the content was diverse and delivered using a wide variety of methods.

<b>Author (Year)</b>	<b>Design</b>	<b>Inclusion/exclusion</b>	<b>Number of studies</b>	<b>Findings</b>
Underhill et al., 2007	SR ++	Abstinence-only interventions with HIV prevention as stated goal	2 family-based studies; 1 community-based study	No evidence that abstinence-only programs can effectively encourage abstinent behaviour; although programs did not appear to cause harm. Overall, programmes were ineffective for preventing or decreasing sexual activity.
Underhill et al., 2008	SR ++	Abstinence-plus programs designed to influence behaviour change on at least one outcome measure related to HIV transmission	21 community-based studies; 5 family-based studies	No conclusive evidence that abstinence-plus programmes can reduce STI incidence and limited evidence that abstinence-plus programmes can reduce pregnancy incidence; however, direction of effects consistently favoured abstinence-plus programmes. Programmes had mixed effects on sexual behaviour. Authors reported that the results from the studies of community-based programmes suggest that a number of community-based abstinence-plus programs can affect risk behaviour

## 6.2 Programmes delivered within social and community settings

### 6.2.1 Overview of evidence identified

Fourteen studies examined interventions or programmes delivered within social and community setting that focused on preventing risky sexual behaviours among young people. These studies were conducted within various community-based agencies including youth agencies (Di Noia & Schinke, 2007; Elliott et al., 1996; Ferguson, 2000; Kipke et al., 1993; Philliber, 2002; Postrado & Nicholson, 1992), schools (Jemmott et al., 1992; 1998; Pearlman et al., 2002; Smith et al., 2000; Villarruel et al., 2006), recreation centres (Stanton et al., 1996; 1997) and a housing development (Sikkema et al., 2005).

Of the 14 studies, seven (Di Noia & Schinke, 2007; Jemmott et al., 1992; Jemmott et al., 1998; Postrado & Nicholson, 1992; Stanton et al., 1996; 1997; Villarruel et al., 2006) examined interventions based on group education sessions targeting risky sexual behaviours and two (Kipke et al., 1993; Sikkema et al., 2005) examined skills-based training interventions. Three studies (Ferguson, 2000; Pearlman et al., 2002; Smith et al., 2000) examined peer-led interventions, including a peer counselling programme (Ferguson, 2000) and peer-led leadership programmes (Pearlman et al., 2002; Smith et al., 2000), respectively. Philliber and colleagues (2002) examined the Children's AID Society (CAS) Carrera programme that focused on youth development for young people enrolled in after school programmes and Elliott and colleagues (1996) examined a theatre production designed to inform young people about HIV.

The theoretical basis for intervention was not reported in seven studies (Elliott et al., 1996; Ferguson, 2000; Jemmott et al., 1992; Pearlman et al., 2002; Philliber et al., 2002; Postrado & Nicholson, 1992; Sikkema et al., 2005). Interventions examined in five studies (Di Noia & Schinke, 2007; Jemmott et al., 1998; Kipke et al., 1993; Smith et al., 2000; Villarruel et al., 2006) were based on multiple theories. The most commonly applied theories were the theory of reasoned action and the theory of planned behaviour. The intervention examined by Stanton and colleagues (1996; 1997) was based on a single theory, protection motivation theory.

The number of participants recruited ranged from 74 (Smith et al., 2000) to 1,172 (Sikkema et al., 2005) adolescents. A range of different age groups were targeted across the included studies. The youngest age targeted was 9 years (Stanton et al., 1996; 1997) and the oldest age targeted was 18 (Villarruel et al., 2006). Eight studies (Di Noia & Schinke, 2007; Elliott et al., 1996; Ferguson, 2000; Jemmott et al., 1992; Kipke et al., 1993; Pearlman et al., 2002; Postrado & Nicholson, 1992; Sikkema et al., 2005) were based on short-term follow-up only (<6 months), three studies (Jemmott et al., 1998; Smith et al., 2000; Villarruel et al., 2006) were based on medium-term follow-up (up to 12 months) and two studies (Philliber et al., 2002; Stanton et al., 1996; 1997) reported long term results (>12 months).

## 6.2.2 Quality assessment

Of the 14 studies identified, nine were RCTs (Di Noia and Schinke, 2007; Jemmott et al., 1992; 1998; Kipke et al., 1993; Philliber et al., 2002; Sikkema et al., 2005; Stanton et al., 1996; 1997; Villarruel et al., 2006), three were NRCTs (Elliott et al., 1996; Ferguson, 2000; Pearlman et al., 2002), and two were CBA studies (Postrado & Nicholson, 1992; Smith et al., 2000). Of the nine RCTs, four were based on cluster randomisation (Di Noia and Schinke, 2007; Sikkema et al., 2005; Stanton et al., 1996; 1997); two studies (Di Noia and Schinke, 2007; Sikkema et al., 2005) randomised at the community site level and two studies (Stanton et al., 1996; 1997) of the Focus on Kids programme randomised groups of friends. Two well-reported and conducted RCTs (Jemmott et al., 1998; Villarruel et al., 2006) based on individual randomisation, were rated strong for quality. These studies appropriately allocated participants to intervention and control conditions, reported a range of relevant and reliable outcomes and conducted appropriate analyses. Seven RCTs (Jemmott et al., 1992; Kipke et al., 1993; Philliber et al., 2002; Di Noia and Schinke, 2007; Sikkema et al., 2005; Stanton et al., 1996, 1997), including four cluster RCTs were rated moderate quality. Although these studies were generally well-reported and reported appropriate methods for allocation, and relevant and reliable outcomes, none of these studies reported whether they were sufficiently powered to detect an intervention effect and only one (Stanton et al., 1996) reported that an ITT analyses had been undertaken. The quality of the three NRCTs was moderate and they were generally well reported. However, the study by Elliott et al (1996) was subject to large losses to follow-up and only reported short-term follow-up and was consequently rated poorly. The two CBA studies (Postrado and Nicholson, 1992; Smith et al., 2000) were rated poorly. The study conducted by Postrado and Nicholson (1992) was at risk of bias as participants self-selected into the intervention and control conditions, and the method of allocation was not clear in the study by Smith et al (2000).

## 6.2.3 Findings

### 6.2.3.1 Knowledge and understanding

Ten studies (Di Noia and Schinke, 2007; Elliott et al., 1996; Ferguson, 2000; Jemmott et al., 1992; 1998; Kipke et al., 1993; Pearlman et al., 2002; Philliber et al., 2002; Smith et al., 2000; Stanton et al., 1996) examined intervention effects on knowledge across a range of follow-up periods. For four of the five studies that examined group education sessions or skills-based interventions there were positive intervention impacts on knowledge. The Keepin' it Safe CD-ROM intervention (Di Noia and Schinke, 2007), which specifically targeted females, was shown to have improved knowledge at post-test among intervention participants compared to wait-list controls ( $p < 0.001$ ). At post-test and the 3-month follow-up, black male adolescents who participated in the BPBR programme (Jemmott et al., 1992) had greater knowledge about AIDS than controls who received a career opportunities intervention ( $p < 0.001$  and  $p < 0.01$ , respectively). In a second evaluation of the BPBR programme (Jemmott et al., 1998), African American male and female adolescents who received a safer sex education version of the programme had significantly higher condom use knowledge compared to those who received the control or an abstinence only version of the programme (both  $p < 0.001$ ). Participants in both the abstinence and safer sex intervention groups reported significantly greater knowledge about HIV risk

reduction than controls (both  $p < 0.001$ ). Kipke and colleagues (1993) reported that adolescents who participated in the ARREST programme had significantly higher levels of knowledge at post-test than controls ( $p < 0.001$ ). Only one programme failed to have an impact on knowledge. Stanton et al (1996) found that there was no difference in knowledge at either the 6- or 12-month follow-up among African American adolescents who participated in the Focus on Kids programme and controls who received weekly HIV prevention sessions.

Three studies examined peer-led interventions. There was no effect of a peer counselling programme for African American females (Ferguson et al., 2000) on knowledge at post-test, and at the 3-month follow-up, control participants reported a significant increase in knowledge compared to the intervention group ( $p < 0.01$ ). Pearlman et al (2002) found an effect of a peer leadership intervention on knowledge among the peer leaders themselves. At 9-months, new peer leaders reported significantly higher levels of knowledge about HIV/AIDS than comparison youth ( $p < 0.01$ ). In addition, Smith et al (2000) found that a peer leadership intervention, Students Together Against Negative Decisions (STAND), had a significant effect on participants knowledge of risk behaviours relative to comparison students ( $p < 0.05$ ). There were no effects of a theatre production on participants' knowledge about HIV (Elliott et al., 1996). Philliber and colleagues (2002) found that gains in knowledge were significantly greater among Carrera programme participants than controls ( $p < 0.001$ ).

#### **6.2.3.2 Attitudes and values**

Seven studies (Di Noia and Schinke, 2007; Elliott et al., 1996; Jemmott et al., 1992; 1998; Kipke et al., 1993; Stanton et al., 1996; Smith et al., 2000) examined programme effects on attitudes and values. This included four studies (Di Noia and Schinke, 2007; Jemmott et al., 1992; 1998; Stanton et al., 1996) that examined interventions based on group education sessions targeting risky sexual behaviours and one study (Kipke et al., 1993) that examined a skills-based intervention.

Di Noia and Schinke (2007) examined a CD-ROM mediated HIV prevention intervention for adolescent females. At post-test, intervention participants reported higher scores on the following attitudinal measures: perceived vulnerability to HIV ( $p < 0.01$ ), perceived efficacy and enjoyment of condoms ( $p < 0.01$  and  $p < 0.05$ , respectively), and perceived efficacy and enjoyment of abstinence ( $p < 0.01$  and  $p < 0.001$ , respectively). There was no difference between groups on the measure of partner norms or participants' self-efficacy for low-risk activities. At post-test, compared to a career opportunities intervention, Black male adolescents who participated in the BPBR programme (Jemmott et al., 1992) expressed less favourable attitudes toward risky sexual behaviours ( $p < 0.01$ ) and reported weaker intentions to engage in such behaviours ( $p < 0.001$ ). At 3-months, BPBR participants reported weaker intentions to engage in risky sexual behaviour in the next 3 months compared to control participants ( $p < 0.01$ ), but there was no difference in attitudes regarding risky sexual behaviours. In a further study of the BPBR programme, Jemmott and colleagues (1998) examined two versions of the programme. At post-test, compared to participants in the control group and those who received the safer-sex intervention, adolescents in the abstinence group believed more strongly that practicing abstinence would prevent pregnancy and AIDS ( $p < 0.001$  and  $p < 0.05$ , respectively), expressed less favourable attitudes toward sexual intercourse ( $p < 0.001$  and  $p < 0.01$ ,

respectively) and reported weaker intentions of having sexual intercourse (both  $p < 0.05$ ) in the next 3 months. There was no difference between abstinence and control participants on attitudinal measures related to condom use. However, participants who received the safer sex intervention were more likely than participants in the control and abstinence groups to report condom prevention beliefs (both  $p < 0.001$ ), condom hedonistic beliefs (both  $p < 0.001$ ), condom availability control beliefs ( $p < 0.05$  and  $p < 0.001$ , respectively). They also reported significantly higher impulse beliefs than controls and higher self-efficacy to use condoms (both  $p < 0.05$ , respectively). There was no effect of either the abstinence or safer sex intervention on participant's intentions to use condoms compared to controls. At post-test, adolescents who received AIDS education and skills training in the ARREST programme (Kipke et al., 1993) reported a significant decrease in negative attitudes towards AIDS compared to the control group, ( $p < 0.05$ ) and an increase in the perception that adolescents are at risk of becoming HIV infected ( $p < 0.01$ ). At the 6-month follow-up, compared to control participants, African American adolescents who participated in Focus on Kids (FOK; Stanton et al., 1996) were significantly more likely to report an intention to use condoms ( $p < 0.05$ ). However this difference was not apparent at the 12 month follow-up. The authors also examined perceptions, finding that intervention participants perceived greater peer use of condoms ( $p < 0.05$ ) and perceived themselves as more vulnerable to HIV infection at the 6-month, but not the 12-month follow-up. There were no differences between intervention and control students at either follow-up on other attitudinal measures, which included perceptions of extrinsic and intrinsic rewards relevant to condom use, vulnerability and self-efficacy.

Elliott and colleagues (1996) examined the effects of a theatre production designed to teach young people about HIV. There was no impact of the intervention on attitudes at post-test or 2-month follow-up. Smith et al (2000) examined the effects of a peer leadership intervention, but at follow-up there were no differences on the HIV Prevention Attitude Scale or on the Condom Attitude Scale between intervention and control participants. However, STAND participants had significantly greater gains in condom use self-efficacy compared to the comparison group ( $p < 0.01$ ), but there was no difference in refusal skills self-efficacy.

### **6.2.3.3 Personal and social skills**

Three studies (Di Noia and Schinke, 2007; Kipke et al., 1993; Smith et al., 2000) examined programme effects on skills. Di Noia and Schinke (2007) examined the effects of a CD-ROM intervention on sexual assertiveness and sexual communication. Females who received the intervention reported higher scores at post-test on sexual assertiveness than wait-list controls ( $p < 0.001$ ), but there was no difference between the groups in levels of communication. Kipke and colleagues (1993) found that compared to controls, ARREST participants had increased behavioural skills at post-test for giving a reason for refusing to engage in risk-related activities ( $p < 0.001$ ) and for proposing alternative lower risk activities ( $p < 0.001$ ). Young people who participated in the peer leadership programme, STAND (Smith et al., 2000), were significantly more likely than comparison students to report speaking with their friends about birth control/condoms and STIs (both  $p < 0.01$ ), but there was no difference in the frequency of conversations with parents or other adults, or on the Dyadic Sexual Communication Scale or Health Protection Communication Scale.

#### 6.2.3.4 Health and social outcomes related to sexual health

Eight studies (Jemmott et al., 1992; Jemmott et al., 1998; Kipke et al., 1993; Postrado and Nicholson, 1992; Stanton et al., 1996; 1997; Sikkema et al., 2005; Villarruel et al., 2006) that tested the effects of interventions based on group education sessions or skills training examined their effects on health outcomes related to sexual health. Controlling for pre-intervention behaviour, at 3-months follow-up, black adolescents who participated in the BPBR programme (Jemmott et al., 1992) were less likely than controls to report having engaged in risky sexual behaviours ( $p < 0.01$ ). Across different sexual behaviours the effects of the intervention were fairly consistent. There was no difference between groups in whether participants had sex, but intervention participants reported having sex on fewer days, with fewer women, and with fewer women who were involved in sexual relationships with other men. Intervention participants also reported fewer occasions of sex without a condom and were less likely to report having had anal intercourse with women. In a further evaluation of the effects of the BPBR programme, Jemmott and colleagues (1998) examined an abstinence and safer sex version of the programme. At 3-months follow-up, abstinence intervention participants were significantly less likely to report having sexual intercourse compared to controls (OR 0.45; 95% CI 0.23, 0.86;  $p < 0.05$ ) but not safer sex intervention participants (OR 0.54; 95% CI 0.28, 1.07). At the 3-month follow-up, those who received the safer sex intervention were more likely to report consistent condom use relative to the control group (OR 3.38; 95% CI 1.25, 9.16;  $p < 0.05$ ) and the abstinence group (OR 3.10; 95% CI 0.99, 9.73;  $p < 0.05$ ). In addition, safer sex intervention participants reported a higher frequency of condom use than controls ( $p < 0.05$ ), were less likely to report having unprotected sexual intercourse (OR 0.35; 95% CI 0.13, 0.95;  $p < 0.05$ ) and reported fewer days of unprotected intercourse ( $p < 0.05$ ). At the 6-month follow-up there were no significant differences between adolescents in the abstinence group and adolescents in the control or safer sex group on any of the sexual behaviour measures (in past 3 months), except that adolescents in the safer sex group reported a higher frequency of condom use relative to controls ( $p < 0.05$ ). At 12-months follow-up, compared to adolescents in the control group, there was a higher frequency of condom use among adolescents in both the abstinence group ( $p < 0.05$ ) and the safer sex group ( $p < 0.01$ ). Postrado and Nicholson (1992) examined interventions targeting young females enrolled in Girls Incorporated member organisations. Girls who did not participate in the Growing Together programme were more likely to have initiated sexual intercourse at post-test than those who did participate (OR 2.6;  $p < 0.05$ ). Participation in the Will Power Won't Power programme was not associated with initiation of sexual intercourse. There was no difference in risk-related sexual behaviours between participants who received the ARREST education and skills training programme (Kipke et al., 1993) and the control group on the following measures: number of sexual encounters, number of sexual partners, and use of condoms. Sikkema and colleagues (2005) examined the effects of an HIV prevention intervention, with and without the addition of a community-level intervention. At long-term follow-up, adolescents who received the additional community intervention were more likely to have remained abstinent compared to the comparison group (adjusted OR 1.97; 95% CI 1.06, 3.67;  $p < 0.05$ ), although the difference between community and workshop participants was not significant (OR 1.72; 95% CI 0.94, 3.16). In addition, compared to the comparison group, condom use rates were higher in both the community (OR 2.50;

95% CI 1.01, 6.22) and workshop (OR 2.23; 95% CI 0.99, 5.03) condition groups. The difference between the community and workshop groups was not significant. Stanton and colleagues (1996) examined the effects of the Focus on Kids programme on self-reported condom use. At the 6-month follow-up, condom use was significantly greater overall among intervention participants than control participants ( $p < 0.05$ ), but at 12-months this difference was no longer significant. Further analysis of the data up to the 18 months follow-up found that at 6- and 18-months follow-up, control youth were more likely than intervention youths to have engaged in unprotected sex, and cumulatively in the post-intervention period, intervention youth were less likely to have engaged in unprotected sex than control youths. Villarruel and colleagues (2006) examined the ¡Cuidate! programme, an adaptation of the BPBR programme for Latino adolescents. At 12-months follow-up, adolescents who participated in the programme were less likely to report sexual intercourse (OR 0.66; 95% CI 0.46, 0.96), multiple partners (OR 0.53; 95% CI 0.31, 0.90), fewer days of unprotected intercourse (RR 0.47; 95% CI 0.26, 0.84) and more likely to report using condoms consistently (OR 1.91; 95% CI 1.24, 2.93). There were no significant effects of the intervention on condom use at last sex (OR 1.45; 95% CI 0.97, 2.15) or the proportion of days of protected sex.

Three studies (Ferguson, 2000; Pearlman et al., 2002; Smith et al., 2000) examined the effects of peer-led programmes on health and social outcomes related to sexual health. Ferguson (2000) examined the impact of peer counselling in a pregnancy prevention programme. At the 3-month follow-up, none of the participants in either the intervention or control group had become pregnant. There was no significant delay in sexual intercourse for participants in either group and there was no difference between groups in the use of effective methods of contraception. There were also limited effects of a peer leadership intervention examined by Pearlman and colleagues (2002). At 9-months follow-up, there were no significant differences between new peer leaders and a comparison group on a measure of sexual risk taking behaviour. Smith and colleagues (2000) examined STAND, a peer leadership programme targeting high school students. At the 8-month follow-up, there was no significant difference between the intervention and comparison groups in the number of participants who were 'non-virgins' at follow-up. However, STAND participants were more likely to be 'consistent' condom users ( $p < 0.05$ ). There was no difference in the number of participants who reported condom use at last intercourse or in the number of condom-protected or unprotected instances of intercourse. In addition, there was no difference in the number of participants who reported being involved in a pregnancy, but STAND participants were less likely to have been diagnosed with an STI ( $p < 0.01$ ). Alcohol and other drug use in conjunction with intercourse were not frequently reported in either the intervention or comparison group.

Philliber and colleagues (2002) examined the effects of the CAS-Carrera youth development programme which targeted disadvantaged adolescents. At the end of the three year programme, the odds of becoming pregnant (or causing pregnancy) were significantly reduced among female, but not male, programme participants compared with controls (OR 0.31;  $p < 0.01$ ). Female programme participants were also less likely to be sexually active (OR 0.52;  $p < 0.05$ ) and were more likely to have

used a condom and a hormonal method at last intercourse (OR 2.37;  $p < 0.05$ ). There were no significant programme effects on males.

There were no significant effects of a theatre production on the number of participants who reported having unprotected sex in the previous 2-months (Elliott et al., 1996). However, at the 2-month follow-up, significantly more theatre participants than seminar participants reported changing their behaviour in response to the intervention ( $p < 0.01$ ). Those reporting a behavioural change in both groups said that they had become more cautious about sex or at least bought and carried condoms more than before.

#### **6.2.4 Summary and evidence statements**

Fourteen studies examined interventions or programmes delivered within social and community setting that focused on preventing risky sexual behaviours among young people. Nine studies (Di Noia and Schinke, 2007; Jemmott et al., 1992; Jemmott et al., 1998; Kipke et al., 1993; Postrado and Nicholson, 1992; Sikkema et al., 2005; Stanton et al., 1996; 1997; Villarruel et al., 2006) examined group education sessions or skills-based training interventions. Three studies (Ferguson, 2000; Pearlman et al., 2002; Smith et al., 2000) examined peer-led interventions, including a peer counselling programme (Ferguson, 2000) and peer leader leadership programmes (Pearlman et al., 2002; Smith et al., 2000), respectively. Philliber and colleagues (2002) examined the CAS-Carrera programme that focused on youth development for disadvantaged young people enrolled in after school programmes and Elliott et al (1996) examined a theatre production designed to inform young people about HIV.

Across four studies (Di Noia and Schinke, 2007; Jemmott et al., 1992; 1998; Kipke et al., 1993), that examined group education sessions or skills-based training interventions there were positive intervention effects on knowledge and understanding over the short- to medium-term. In addition, the three-year, Carrera programme (Philliber et al., 2002) had a positive impact on knowledge. There was no effect of a peer counselling intervention (Ferguson, 2000) on knowledge, but two peer leadership interventions (Pearlman et al., 2002; Smith et al., 2000) had positive effects on levels of knowledge among the peer leaders themselves.

Seven studies (Di Noia and Schinke, 2007; Elliott et al., 1996; Jemmott et al., 1992; 1998; Kipke et al., 1993; Stanton et al., 1996; Smith et al., 2000) examined intervention effects on a range of attitudes and values related to sexual health. Short-term decreases in intentions to engage in risky sexual intercourse were reported in the study of the BPBR programme which targeted black male adolescents (Jemmott et al., 1992) and an abstinence-based version of the programme resulted in short-term reductions in intentions to engage in any sexual intercourse. Across three studies (Di Noia and Schinke, 2007; Kipke et al., 1993; Stanton et al., 1996) there were short-term increases in intervention participants' perception of their vulnerability to HIV infection. However, this effect was not sustained in the medium-term (Stanton et al., 1996). Two studies (Elliott et al., 1996; Smith et al., 2000) found no effects of a theatre production intervention or peer leadership intervention, respectively, on HIV attitudes at follow-up. Across four studies (Di Noia and Schinke, 2007; Jemmott

et al., 1998; Smith et al., 2000; Stanton et al., 1996) there were indications of positive intervention effects on attitudes and values related to condom use. However, these effects did not appear to be consistent and were not maintained over the medium-term (Stanton et al., 1996). Two studies (Di Noia and Schinke, 2007; Jemmott et al., 1998) found short-term positive intervention effects of a CD-ROM mediated intervention and an abstinence-based version of the BPBR curriculum, respectively, on attitudes towards abstinence.

Intervention effects on personal and social skills were examined across three studies (Di Noia and Schinke, 2007; Kipke et al., 1993; Smith et al., 2000). A CD-ROM intervention (Di Noia and Schinke, 2007) and education and skills training programme (Kipke et al., 1993) had positive effects on behavioural skills but results from two studies (Di Noia and Schinke, 2007; Smith et al., 2000) presented mixed findings in relation to effects on communication.

Eight studies (Ferguson, 2000; Jemmott et al., 1992; 1998; Philliber et al., 2002; Postrado and Nicholson, 1992; Sikkema et al., 2005; Smith et al., 2000; Villarruel et al., 2006) examined intervention effects on sexual activity. Across five studies (Jemmott et al., 1992; 1998; Postrado and Nicholson, 1992; Sikkema et al., 2005; Villarruel et al., 2006) that examined group-based sessions and/or skills training, short- to medium-term effects on sexual intercourse were reported in four studies (Jemmott et al., 1992; Postrado and Nicholson, 1992; Sikkema et al., 2005; Villarruel et al., 2006), and one study (Jemmott et al., 1998) reported no programme effects. The Carrera programme (Philliber et al., 2002) had a positive effect on sexual activity among females but there were no effects of two peer interventions (Ferguson, 2000; Smith et al., 2000). Intervention effects on frequency of sexual intercourse and number of sexual partners was limited. Across four studies (Jemmott et al., 1998; Kipke et al., 1993; Pearlman et al., 2002; Villarruel et al., 2006) that examined these outcomes only one study (Villarruel et al., 2006) reported a positive intervention effect. Nine studies (Elliott et al., 1996; Ferguson, 2000; Jemmott et al., 1998; Kipke et al., 1993; Philliber et al., 2002; Sikkema et al., 2005; Smith et al., 2000; Stanton et al., 1996; Villarruel et al., 2006) examined intervention effects on contraceptive use. Across four of the five studies that examined group-based sessions and/or skills training, there were positive short-term intervention effects on measures of condom use (Jemmott et al., 1998; Sikkema et al., 2005; Stanton et al., 1996; Villarruel et al., 2006), and some evidence from two studies (Jemmott et al., 1998; Villarruel et al., 2006) of a positive intervention effect on frequency of unprotected intercourse. However, over the longer term, intervention effects appeared to diminish. There were no effects on a HIV theatre production (Elliott et al., 1996) or peer counselling intervention (Ferguson, 2000) on contraceptive use or frequency of unprotected sex, but the Carrera programme (Philliber et al., 2002) positively influenced both condom and hormonal contraceptive use among females. There was no effect of a peer counselling intervention (Ferguson, 2000) or peer leadership programme (Smith et al., 2000) on pregnancy rates, but again the Carrera programme (Philliber et al., 2002) had a positive effect, with a reduction in pregnancies among intervention females.

**Evidence statement 8**

- 8 (a) There is moderate evidence from five RCTs, one NRCT and one CBA study<sup>1</sup> to suggest that group-based education and/or skills-based interventions, youth development programmes and peer leadership interventions delivered in social and community settings may have a positive short- to medium-term impact on knowledge and understanding related to sexual health. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (b) There is inconsistent evidence from five RCTs, one NRCT and one CBA study<sup>2</sup> on which to determine the effects of interventions and programmes delivered in social and community settings on attitudes and values related to sexual health. There was moderate evidence from three RCTs<sup>3</sup> to suggest that group-based education and/or skills-based interventions may have positive short-, but not long-term, effects on attitudes and values related to condom use. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (c) There is weak evidence from two RCTs<sup>4</sup> to suggest that group-based education and/or skills-based interventions delivered in social and community settings may have a positive short-term impact on behavioural skills related to sexual health. There was no evidence on which to determine intervention effects on communication skills. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (d) There is moderate evidence from four RCTs and one CBA study<sup>5</sup> to suggest that group-based education and/or skills-based interventions may have limited effects on sexual activity. Although reductions in the likelihood of sexual intercourse were reported across four RCTs<sup>6</sup> there was only evidence from one RCT<sup>7</sup> of intervention effects on frequency of sexual intercourse or number of sexual partners. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (e) There is weak evidence from four RCTs<sup>8</sup> to suggest that group-based education and/or skills-based interventions delivered in social and community settings may have positive short-term impacts on condom use and frequency of unprotected intercourse. There is weak evidence from one RCT<sup>9</sup> to suggest that these effects may diminish over the medium term. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 8 (f) There is moderate evidence from one RCT<sup>10</sup> to suggest that youth development programmes that target disadvantaged young people may have a positive impact on sexual behaviours among females, including sexual activity, condom use and pregnancy. This evidence may only be partially applicable because these studies were conducted in the USA and focused on

ethnic populations, specific to the USA.

- <sup>1</sup> Di Noia and Schinke, 2007 (RCT +); Jemmott et al., 1992 (RCT +); Jemmott et al., 1998 (RCT ++); Kipke et al., 1993 (RCT +); Pearlman et al., 2002 (NRCT +); Philliber et al., 2002 (RCT +); Smith et al., 2000 (CBA -)
- <sup>2</sup> Di Noia and Schinke, 2007 (RCT +); Elliott et al., 1996 (NRCT -); Jemmott et al., 1992 (RCT +); Jemmott et al., 1998 (RCT ++); Kipke et al., 1993 (RCT +); Stanton et al., 1996 (RCT +); Smith et al., 2000 (CBA -)
- <sup>3</sup> Di Noia and Schinke, 2007 (RCT +); Jemmott et al., 1998 (RCT ++); Stanton et al., 1996 (RCT +)
- <sup>4</sup> Di Noia and Schinke, 2007 (RCT +); Kipke et al., 1993 (RCT +)
- <sup>5</sup> Jemmott et al., 1992 (RCT +); Jemmott et al., 1998 (RCT ++); Postrado and Nicholson, 1992 (CBA -); Sikkema et al., 2005 (RCT +); Villarruel et al., 2006 (RCT ++)
- <sup>6</sup> Jemmott et al., 1992 (RCT +); Jemmott et al., 1998 (RCT ++); Sikkema et al., 2005 (RCT +); Villarruel et al., 2006 (RCT ++)
- <sup>7</sup> Villarruel et al., 2006 (RCT ++)
- <sup>8</sup> Jemmott et al., 1998 (RCT ++); Sikkema et al., 2005 (RCT +); Stanton et al., 1996 (RCT +); Villarruel et al., 2006 (RCT ++)
- <sup>9</sup> Stanton et al., 1996 (RCT +)
- <sup>10</sup> Philliber et al., 2002 (RCT +)

**Table 6.2. Summary of programme content: programmes delivered in social and community settings**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Di Noia and Schinke, 2007	RCT (cluster) +	USA n=204 females 29% Hispanic; 54% Black; 4% White or other; 15% NR 11-14 years	Youth agencies	<b>Keepin' it Safe:</b> Six weekly sessions; HIV/AIDS knowledge and perceived vulnerability to HIV infection, sexual decision making, self-efficacy, sexual communication and assertiveness, and risk reduction skills building.	Health Belief Model, theory of reasoned action, theory of planned behaviour, self-efficacy theory	CD-ROM
Elliott et al., 1996	NRCT -	UK n=10 projects Ethnicity NR mean 15-16 years	Youth agency	Theatre production designed to inform young people about HIV, especially the modes of transmission; explore attitudes and emotional issues associated with HIV and inform participants about safer sex practices, in particular proper condom use.	NR	Theatre company
Ferguson, 2000	NRCT -	USA n=63 females 100% African American 12-16 years	Youth agency	Eight weekly, 2-hour peer counselling sessions including group discussions and role play. Focus on sexual behaviour, reproduction, STIs, contraceptives and hygiene.	NR	Trained peer counsellors
Jemmott et al., 1992	RCT (individual) +	USA n=157 males 100% Black mean 15 years	School (weekends)	<b>Be Proud! Be Responsible! (BPBR):</b> Five hour AIDS risk reduction course covering information about risks associated with intravenous drug use and specific sexual activities	NR	Trained facilitators
Jemmott et al., 1998	RCT (individual) ++	USA n=659 100% African American mean 12 years	School (weekends)	<b>BPBR:</b> Eight, 1-hour modules delivered over consecutive Saturdays; (1) abstinence intervention designed to increase HIV/STI knowledge, strengthen behavioural beliefs and skills supporting abstinence; (2) safer sex intervention designed to increase HIV/STI knowledge and condom use.	Social cognitive theory, reasoned action, theory of planned behaviour.	Adult facilitator or peer co-facilitator
Kipke et al., 1993	RCT (individual) +	USA n=87 59% Latino; 41% African American 12-16 years	Youth agencies	<b>ARREST (AIDS Risk Reduction Education and Skills Training):</b> Three training sessions; AIDS education; instruction on how to use condoms; and decision-making, communication and assertiveness skills training. Take home exercises.	Health Belief Model, Social Learning Theory	NR
Pearlman et al., 2002	NRCT +	USA n=168 36% Hispanic; 28% White; 17% Black; 18% other mean 15-16 years	School	<b>Project Teen Health:</b> peer leadership course; ongoing group work with an adult advisor to learn about HIV and related skills	NR	NR

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Philliber et al., 2002	RCT (individual) +	USA n=484 56% Black; 42% Hispanic; 2% other 13-15 years	Youth agencies	<b>Children's AID Society-Carrera programme:</b> Five days/week over the school year; Work-related intervention; academic component; comprehensive family life and sexuality education; arts component; individual sports component. Supplemented by mental health care and medical care.	NR	Community organisers
Postrado and Nicholson, 1992	CBA -	USA n=412 females 75% Black; 15% White; 11% Hispanic or other 12-17 years	Youth agency	<b>Will Power/Won't Power (WPWP):</b> 6 sessions; Group-building exercises, introduction to relationships and basic assertiveness skills <b>Growing Together (GT):</b> 5 sessions; one parents only session; other sessions focused on physical and emotional changes during puberty, anatomy of reproduction, myths and facts about sexuality and getting pregnant, and other related topics.	NR	NR
Sikkema et al., 2005	RCT (cluster) +	USA n=1,172 51% African American; 20% Asian; 10% East African; 5% White; 3% Hispanic; 11% other mean 15 years	Housing developments	Two, three-hour training sessions; (1) Workshop intervention; HIV/STI education, skills training, sexual negotiation skills, condom use skills, and risk behaviour self-management; (2) Community-level intervention; as workshop condition, followed by a multi-component community intervention	NR	NR
Smith et al., 2000	CBA -	USA n=74 58% African American; 39% White; 3% other mean 16 years	School (evenings)	<b>STAND:</b> Peer leadership programme; 36 hours over 4 months; team-building exercises, contraceptive demonstrations, visit to local health department, skills practice, visits from an AIDS specialist physician and nurse, and optional parent/teen activities	Diffusion of innovations theory, transtheoretical model	AIDS Education Specialist, middle school counsellor, college interns
Stanton et al., 1996; 1997	RCT (cluster) +	USA n=383 100% African American 9-15 years	Recreation centres	<b>Focus on Kids:</b> Eight weekly meetings; sessions focused on one or more Protection Motivation Theory constructs from difference perspectives. Facts regarding AIDS, STIs, contraception and human development were also provided, as were condoms.	Protection Motivation Theory	Interventionists
Villarruel et al., 2006	RCT (individual) ++	USA n=656 100% Latino 13-18 years	School (weekends)	<b>¡Cuidate!</b> : Eight hours over two consecutive Saturdays; abstinence and condom use were presented as culturally accepted and effective ways to prevent STIs.	Social cognitive theory, theories of reasoned action and planned behaviour.	Trained facilitators

**Table 6.3. Programme delivered in social and community settings: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Di Noia and Schinke, 2007	RCT (cluster) +	Keepin' it Safe n=111	Wait list control n=93	PT (75%)	↑***	↑ vulnerability to HIV** ↑ condom use efficacy** ↑ enjoyment of condoms* ↑ abstinence efficacy** ↑ enjoyment of abstinence***	↑ sexual assertiveness*** <b>NS</b> communication
Elliott et al., 1996	NRCT -	HIV theatre production n=132	Health education seminars n=85	PT (NR)	<b>NS</b>	<b>NS</b> attitudes	-
				2 mo (int=34%; con=43%)	<b>NS</b>	<b>NS</b> attitudes	-
Ferguson, 2000	NRCT -	Peer counselling n=33	No intervention n=30	PT (NR)	<b>NS</b>	-	-
				3 mo (int=91%; con=73%)	↑**	-	-
Jemmott et al., 1992	RCT (individual) +	Be Proud! Be Responsible! n=85	Career opportunities n=72	PT (NR)	↑ AIDS***	↓ favourable attitudes toward risky sexual behaviours** ↓ intentions to engage in risky sexual behaviours***	-
				3 mo (NR)	↑ AIDS**	<b>NS</b> favourable attitudes toward risky sexual behaviours** ↓ intentions to engage in risky sexual behaviours**	-
Jemmott et al., 1998	RCT (individual) ++	Be Proud! Be Responsible! Safer sex, n=218	Health promotion control n=214	PT (NR)	↑ condom use*** ↑ HIV risk reduction***	↑ condom prevention beliefs*** ↑ condom hedonistic beliefs*** ↑ condom availability control beliefs* ↑ impulse control beliefs* <b>NS</b> negotiation skills beliefs <b>NS</b> technical skills beliefs ↑ condom use self-efficacy* <b>NS</b> condom use intentions <b>NS</b> abstinence-related outcomes	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Jemmott et al., 1998	RCT (individual) ++	Be Proud! Be Responsible! Abstinence, n=215	Health promotion control n=214	PT (NR)	NS condom use ↑ HIV risk reduction***	↑ abstinence prevention beliefs*** ↑ abstinence goal-attainment beliefs* ↓ attitudes toward sexual intercourse*** ↓ intentions to have sexual intercourse, next 3 mo* NS condom-related outcomes	-
Jemmott et al., 1998	RCT (individual) ++	Be Proud! Be Responsible! Safer sex, n=218	Be Proud! Be Responsible! Abstinence, n=215	PT (NR)	↑ condom use*** ↑ HIV risk reduction***	↓ abstinence prevention beliefs* NS abstinence goal-attainment beliefs ↑ attitudes toward sexual intercourse** ↑ intentions to have sexual intercourse* ↑ condom prevention beliefs*** ↑ condom hedonistic beliefs*** ↑ condom availability control beliefs*** NS impulse control beliefs NS negotiation skills beliefs NS technical skills beliefs NS condom use self-efficacy NS condom use intentions	-
Kipke et al., 1993	RCT (individual) +	ARREST n=41	Wait list control n=46	PT (99%)	↑***	↓ negative attitudes towards AIDS* ↑ perception that adolescents are at risk of becoming HIV infected	↑ behavioural skills***
Pearlman et al., 2002	NRCT +	Project Teen Health n=97	Usual sex education n=71	PT (NR)	↑**	↑ perception of oneself as a 'change agent'**	-
Philliber et al., 2002	RCT (individual) +	CAS-Carrera programme n=242	Regular youth programme n=242	3 yr (81%)	↑ <sup>¶</sup>	-	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Smith et al., 2000	CBA -	STAND n=21	NR n=53	PT, 8 mo (NR)	↑ risk behaviour*	<b>NS</b> HIV prevention attitudes <b>NS</b> condom attitudes ↑ condom use self-efficacy** <b>NS</b> refusal skills self-efficacy	<b>NS</b> communication with parents, other adults or partners
Stanton et al., 1996; 1997	RCT (cluster) +	Focus on Kids n=206	Weekly HIV prevention sessions n=177	6 mo (79%)	<b>NS</b>	↑ condom use intentions* ↑ perception of peer condom use <sup>¶</sup> ↑ perceived vulnerability to HIV infection <sup>¶</sup>	-
				12 mo (73%)	<b>NS</b>	<b>NS</b> condom use intentions <b>NS</b> perception of peer condom use <b>NS</b> perceived vulnerability to HIV infection	-

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; <sup>¶</sup> p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 6.4. Programme delivered in social and community settings: effects on health and social outcomes related to sexual health**

Study	Rating	Intervention	Comparator	Follow-up	Sexual health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions	Other
Elliott et al., 1996	NRCT -	HIV theatre production n=132	Health education seminars n=85	2 mo (int=34%; con=43%)	-	-	NS unprotected sex	-	↑ changed behaviour in response to intervention**
Ferguson, 2000	NRCT -	Peer counselling n=33	No intervention n=30	PT (NR)	NS delay in sexual intercourse	-	NS use of effective methods of contraception	NS pregnancy	-
				3 mo (int=91%; con=73%)	NS delay in sexual intercourse	-	NS use of effective methods of contraception	NS pregnancy	-
Jemmott et al., 1992	RCT (individual) +	BPBR n=85	Career opportunities n=72	3 mo (NR)	↓ risky sexual behaviour**	-	-	-	-
Jemmott et al., 1998	RCT (individual) ++	BPBR Safer sex, n=218	Health promotion control n=214	3 mo (int=99%; con=97%)	NS sexual intercourse	NS frequency of intercourse	↑ consistent condom use* ↑ frequency of condom use* ↓ unprotected sex* ↓ frequency of unprotected sex*	-	-
				6 mo (int=95%; con=99%)	NS sexual intercourse	NS frequency of intercourse	NS consistent condom use ↑ frequency of condom use* NS unprotected sex NS frequency of unprotected sex	-	-

Study	Rating	Intervention	Comparator	Follow-up	Sexual health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions	Other
Jemmott et al., 1998	RCT (individual) ++	BPBR Safer sex, n=218	Health promotion control n=214	12 mo (int=94%; con=95%)	NS sexual intercourse	NS frequency of intercourse	NS consistent condom use ↑ frequency condom use** NS unprotected sex NS frequency of unprotected sex	-	-
Jemmott et al., 1998	RCT (individual) ++	BPBR Abstinence, n=215	Health promotion control n=214	3, 6, 12 mo (int=93%; con=95%)	↓ sexual intercourse (3 mo only*)	NS frequency of intercourse	NS consistent condom use ↑ frequency condom use (12 mo only*) NS frequency of unprotected sex	-	-
Jemmott et al., 1998	RCT (individual) ++	BPBR Safer sex, n=218	Be Proud! Be Responsible! Abstinence, n=215	3, 6, 12 mo	NS sexual intercourse	NS frequency of intercourse	↑ consistent condom use (3 mo only*) NS frequency condom use NS frequency unprotected sex	-	-
Kipke et al., 1993	RCT (individual) +	ARREST n=41	Wait list control n=46	PT (99%)	-	NS number of sexual partners NS number of sexual encounters	NS use of condoms	-	-
Pearlman et al., 2002	NRCT +	Project Teen Health n=97	Usual sex education n=71	PT (NR)	-	NS sexual risk taking behaviour	-	-	-

Study	Rating	Intervention	Comparator	Follow-up	Sexual health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions	Other
Philliber et al., 2002	RCT (individual) +	Carrera programme n=242	Regular youth programme n=242	3 yr (81%)	↓ sexually active (females only <sup>†</sup> )	-	↑ condom use at last intercourse (females only <sup>†</sup> ) ↑ hormonal contraceptive at last intercourse (females only <sup>†</sup> )	↓ pregnancy (females only <sup>†</sup> )	-
Postrado and Nicholson, 1992	CBA -	WPWP n=257	No intervention n=155	PT (NR)	<b>NS</b> initiation of sexual intercourse	-	-	-	-
		GT n=84	No intervention n=328	PT (NR)	↓ initiation of sexual intercourse*	-	-	-	-
Sikkema et al., 2005	RCT (cluster) +	HIV prevention intervention Workshop, n=428 Community, n=392	Standard AIDS education session n=352	2 mo (65%)	↑ abstinence (Community vs. control*)	-	↑ condom use (community vs. control <sup>†</sup> ; workshop vs. control <sup>†</sup> )	-	-
Smith et al., 2000	CBA -	STAND n=21	NR n=53	PT, 8 mo (NR)	<b>NS</b> 'non-virgins'	-	↑ consistent condom use*	↓ STI diagnosis** <b>NS</b> pregnancy	-
Stanton et al., 1996; 1997	RCT (cluster) +	Focus on Kids n=206	HIV prevention n=177	6 mo (79%)	-	-	↑ condom use*	-	-
				12 mo (73%)	-	-	<b>NS</b> condom use	-	-

Study	Rating	Intervention	Comparator	Follow-up	Sexual health outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions	Other
Villarruel et al., 2006	RCT (individual) ++	iCuidate! n=312	Health promotion control n=344	12 mo (84%)	↓ sexual intercourse	↓ multiple partners	↑ consistent condom use <b>NS</b> condom use at last intercourse ↓ days of unprotected intercourse <b>NS</b> proportion of days of unprotected sex	-	-
*p<0.05; **p<0.01; ***p<0.001; † p value not reported; † increase relative to comparator; ‡ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported									

## 6.3 Programmes delivered within healthcare settings

### 6.3.1 Overview of the evidence identified

Six studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) were identified that examined interventions and programme delivered in healthcare settings including family planning clinics and primary care practices.

DiClemente and colleagues (2004) and Morrison-Beedy and colleagues (2005) both examined group education sessions for sexually active young females attending family planning clinics. Two other studies based in healthcare settings (Downs et al., 2004; Jemmott et al., 2005) also specifically targeted sexually experienced young females. Downs and colleagues (2004) examined an interactive video intervention and Jemmott and colleagues (2005) examined a skills-based HIV prevention intervention. Two studies (Boekeloo et al., 1999; Danielson et al., 1990) examined interventions based on health consultations. Boekeloo and colleagues (1999) examined a sexual risk assessment and education intervention and Danielson and colleagues (1990) examined a reproductive health consultation and slide tape programme, which specifically targeted young males.

The number of participants included in the studies ranged from 62 (Morrison-Beedy et al., 2005) to 682 (Jemmott et al., 2005), and a range of different age groups were targeted. The youngest age targeted was 12 years (Boekeloo et al., 1999; Jemmott et al., 2005) and the oldest was 19 (Morrison-Beedy et al., 2005; Jemmott et al., 2005). Five of the six studies examined gender specific interventions, with four studies (DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) focusing on interventions targeting females, and one study (Danielson et al., 1990) focusing on an intervention for males. Two studies (DiClemente et al., 2004; Jemmott et al., 2005) targeted African American, and African American and Latino adolescents, respectively. One study (Morrison-Beedy et al., 2005) was based on short-term follow-up only (<6 months) and four studies (Boekeloo et al., 1999; DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005) were based on medium-term follow-up (up to 12 months). The length of follow-up for the study by Danielson and colleagues (1990) was not reported.

### 6.3.2 Quality assessment

All six studies were RCTs and based on individual randomisation. Two well-reported and conducted studies (DiClemente et al., 2004; Jemmott et al., 2005) were rated strong for quality. These studies appropriately allocated participants to intervention and control conditions, reported a range of relevant and reliable outcomes and conducted appropriate analyses. Three studies (Boekeloo et al., 1999; Downs et al., 2004; Morrison-Beedy et al., 2005) were rated moderate quality. Although these studies were generally well-reported and reported appropriate methods for allocation, and relevant and reliable outcomes, none of these studies reported whether they were sufficiently powered to detect an intervention effect or whether an ITT analyses had been undertaken. One study (Danielson et al., 1990) was rated poor quality. The authors did not report the overall sample size for the study, the length of follow-up was not clear and the authors did not discuss attrition.

### 6.3.3 Findings

#### 6.3.3.1 Knowledge and understanding

All six studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Morrison-Beedy et al., 2005; Jemmott et al., 2005; Downs et al., 2004) examined intervention effects on knowledge and understanding.

Four studies (DiClemente et al., 2004; Morrison-Beedy et al., 2005; Jemmott et al., 2005; Downs et al., 2004) examined interventions that specifically targeted sexually active young females. Two studies, delivered in family planning clinics had significant effects on HIV knowledge. DiClemente et al (2004) reported that intervention participants had higher HIV prevention knowledge scores than control participants at both the 6- and 12-month follow-ups (both  $p < 0.001$ ). Morrison-Beedy and colleagues (2005) found that at the 3-month follow-up, the intervention group scored significantly higher on HIV-related knowledge ( $p < 0.001$ ). A skills-based HIV prevention intervention (Jemmott et al., 2005) was also found to have impacted on knowledge. African American and Latino females who received a skills-based intervention scored higher on HIV/STI knowledge and condom use knowledge post-intervention, compared to those who received a health promotion control ( $p < 0.01$ ), and reported greater gains in condom use knowledge compared to those who received an information-based intervention ( $p < 0.01$ ). However, there were no effects of an interactive video intervention at any follow-up (1-, 3- and 6-months) on general or specific knowledge related to STIs (Downs et al., 2004). The authors noted that knowledge improved in the both the intervention and control conditions over time. In this particular study the two control conditions were content-matched and topic-matched to the intervention, respectively.

Two studies (Boekeloo et al., 1999; Danielson et al., 1990) that examined personal health consultations both reported intervention impacts on knowledge. At immediate post-test, Boekeloo and colleagues (1999) reported that adolescents in the intervention group were more likely than control adolescents to know that HIV is transmitted through oral and anal intercourse. However, the significance of this finding was not reported. Danielson and colleagues (1990) did not report the period over which participants were followed up but found that knowledge about ways to protect against STIs was significantly associated with the intervention ( $p < 0.001$ ).

#### 6.3.3.2 Attitudes and values

Five studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) examined intervention effects on attitudes and values.

Two studies (Boekeloo et al., 1996; Danielson et al., 1990) examined the impact of health consultations. Boekeloo and colleagues (1999) reported that at immediate post-test, adolescents in the intervention group were more likely than control adolescents to believe that their doctor thought they should use condoms if they had sexual intercourse ( $p < 0.05$ ), believe that they should use condoms if they had sexual intercourse ( $p < 0.05$ ), and less likely to believe it would be hard to refuse sex with a partner who refused condom use ( $p < 0.05$ ). Perceived susceptibility to HIV and other STIs,

condom use self-efficacy, and beliefs about abstinence did not differ between groups. Danielson and colleagues (1990) examined intervention effects on sexual attitudes. Coercive sexual attitudes<sup>3</sup> were inversely associated with the intervention (OR 0.74;  $p < 0.05$ ). The association was weak and not statistically significant among those who had already been sexually active at baseline, but was stronger and statistically significant among those who had not yet become sexually active at baseline (OR 0.67;  $p < 0.01$ ).

Three studies (DiClemente et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) examined interventions specifically targeting sexually active young women. DiClemente and colleagues (2004) found that over a 12-month follow-up period, African American females who received group education sessions focusing on HIV prevention reported fewer barriers to condom use ( $p < 0.01$ ), more favourable attitudes toward using condoms ( $p < 0.001$ ), and higher condom use self-efficacy scores ( $p < 0.001$ ). Jemmott and colleagues (2005) also reported positive effects for a skills-based intervention that targeted African American and Latino adolescent females. At post-test, compared to a health promotion control group, skills-based intervention group participants reported greater intentions to use condoms ( $p < 0.01$ ), greater condom use hedonistic beliefs<sup>4</sup> ( $p < 0.01$ ), greater sexual partner approval of condoms ( $p < 0.01$ ), higher technical skills beliefs ( $p < 0.05$ ), and higher impulse control beliefs ( $p < 0.05$ ). Participants who received the information-based intervention also reported higher scores compared to the health promotion control group on the following measures: condom use intentions ( $p < 0.01$ ); condom use hedonistic beliefs ( $p < 0.01$ ); technical skills beliefs ( $p < 0.05$ ), and impulse control beliefs ( $p < 0.05$ ). Based on 3-months of follow-up, Morrison-Beedy and colleagues (2005) found that females who received an HIV prevention intervention scored significantly higher than the control group on confidence in condom use ( $p < 0.05$ ), and lower on the cons of condom use ( $p < 0.05$ ). However, there was no difference between groups in risk perception, readiness, behavioural intentions, or pros of condom use.

### 6.3.3.3 Personal and social skills

Three studies (Boekeloo et al., 1999; DiClemente et al., 2004; Morrison-Beedy et al., 2005) examined intervention effects on skills. Boekeloo and colleagues (1999) found that at post-test, intervention participants who received a health consultation reported significantly more discussion with their physician about 11 of 13 topics regarding sexuality than control adolescents (all  $p < 0.05$ ). However, there was no difference between intervention and control adolescents in their discussions with their parents on these topics. Two studies (DiClemente et al., 2004; Morrison-Beedy et al., 2005) examined interventions which specifically targeted sexually experienced young females. Over 12-months of follow-up, African American females who received an HIV prevention intervention (DiClemente et al., 2004) reported more frequent discussions with male sex partners about HIV prevention compared to controls ( $p < 0.01$ ) and scored significantly higher on a measure of the condom use skills ( $p < 0.001$ ). Morrison-Beedy and colleagues (2004) found a potentially negative effect of a group-based HIV

<sup>3</sup> Based on two items: "A girl who leads you on should go all the way", and "I might stop seeing some if she refused me".

<sup>4</sup> A measure concerning the belief that condoms do not interfere with sexual enjoyment

intervention. At the 3-month follow-up, control participants reported talking with their partners about safer sex more often than did intervention participants ( $p < 0.05$ ).

#### **6.3.3.4 Health and social outcomes related to sexual health**

All six studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al. 2005) examined intervention effects on health and social outcomes related to sexual health.

Boekeloo and colleagues (1999) and Danielson and colleagues (1990) examined the effects of health practitioner-led sexual health consultations. Boekeloo and colleagues (1999) examined whether an STI risk assessment and education intervention had an impact on sexual activity, condom use and STI rates. Bivariate analyses, revealed that there were no statistically significant differences between groups regarding vaginal, anal, and/or oral sexual intercourse in the last 3 months or lifetime, or the number of vaginal intercourse partners (last 3 months or lifetime), at either the 3- or 9-month follow-up. Based on a mixed model regression, which controlled for baseline sexual experience and doctor, intervention participants were found to be more likely to have had vaginal intercourse at the 3-month follow-up than controls (OR 2.46; 95% CI 1.04, 5.84), but not at the 9-month follow-up (OR 1.64; 95% CI 0.81, 3.34). Among adolescents sexually active in the last 3 months, there were no significant differences between intervention and control participants regarding condom use at last intercourse at 9-months follow-up (OR 1.00; 95% CI: 0.31, 3.24), but the rate was greater among intervention participants at the 3-month follow-up (OR 18.1; 95% CI 1.3, 256.0). There was no difference between intervention and control participants in their reported STI diagnoses, STI treatment or pregnancies during the last 3 months at either follow-up. At the 9-month follow-up, more control participants reported genital signs of possible STIs than intervention participants ( $p < 0.05$ ). Danielson and colleagues (1990) reported that there was no statistically significant effect of the intervention, which specifically targeted male adolescents, on sexual activity status at follow-up. When confounding variables were controlled for, the association between the intervention and contraceptive effectiveness was statistically significant among the larger population of all males who were sexually active at follow-up (OR 1.51;  $p < 0.05$ ), and particularly among those who were not sexually active at baseline (OR 2.53;  $p < 0.01$ ). A partner's use of the pill at last intercourse was significantly associated with the intervention among all participants who were sexually active at follow-up (OR 1.66;  $p < 0.05$ ).

Four studies (DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) examined interventions specifically targeting sexually active young females. DiClemente and colleagues (2004) found that relative to participants who received a general health promotion intervention, African American females who received a group-based HIV intervention were more likely to report using condoms consistently in the past 30 days and 6 months, and to have used a condom at last vaginal sexual intercourse, at both the 6- and 12-month follow-up and in analyses conducted over the entire 12-month follow-up. Intervention participants were less likely to report having a new vaginal sex partner at the 6-month follow-up, and over the 12-month follow-up period. In addition, participants who received the intervention were significantly less likely to self-report a pregnancy at the 6-month follow-up, but there was no difference between groups on this outcome at 12-months, or

over the entire follow-up period. Compared to controls, HIV intervention participants were more likely to report condom protected sex acts, both in the 30 days and 6-months preceding the 6- and 12-month follow-up, and over the entire 12-month follow-up. They also reported significantly fewer unprotected vaginal intercourse episodes and a higher frequency of putting condoms on their partners. The results presented by the authors suggested that the intervention had an effect on Chlamydia infections (OR 0.17; 95% CI 0.03, 0.92;  $p < 0.05$ ), but no difference between groups were observed for *Trichomonas vaginalis* (OR 0.37; 95% CI 0.09, 1.46) or Gonorrhoea (OR 0.14; 95% CI 0.01, 3.02). Downs and colleagues (2004) examined an interactive video intervention, finding that intervention participants were more likely to have been completely abstinent between baseline and the 3-month follow-up than controls (OR 2.50;  $p < 0.05$ ). However, at the 6-month follow-up there was no difference between groups on this measure. There was no significant difference between intervention and control participants in how often they reported using condoms between baseline and the 3-month follow-up, or at the 6-month follow-up. There was no difference in the number of condom failures between conditions at the 3-month follow-up, but at the 6-month follow-up, participants in the video condition reported fewer condom failures in the past 3 months compared to controls ( $p < 0.05$ ). Participants in the video condition were significantly less likely to report having been diagnosed with an STI compared to controls (OR 2.79;  $p = 0.05$ ). However, the only disease with sufficient power to detect a difference was Chlamydia (OR 7.75;  $p = 0.05$ ). Jemmott and colleagues (2005) reported that participants who received a skill-based HIV intervention reported less frequent unprotected sexual intercourse at the 12-month follow-up compared to those who received a health-promotion control ( $p < 0.01$ ) or an information-based intervention ( $p < 0.05$ ). There was no difference between the groups on these measures at the 3- or 6-month follow-up. At the 12-month follow-up, skill-based intervention participants reported fewer sexual partners than controls ( $p < 0.05$ ), and they were less likely to report having multiple partners ( $p < 0.01$ ). No differences in the reported number of sexual partners were observed at the 3- or 6-month follow-up. There was no difference in STI rates between groups at the 6-month follow-up. However, at 12-months, participants who received the skill-based intervention were significantly less likely to have an STI than were those in the health promotion control group ( $p < 0.05$ ). Morrison-Beedy and colleagues (2005) found that a group-based HIV intervention for sexually active females had limited effects on sexual risk behaviours. Although overall risk behaviour scores were lower within the HIV intervention group relative to the control group, none of the individual risk outcomes, (including vaginal sex with/without condom, received/gave oral sex, alcohol or drug use before sex, and number of partners) were significantly different between the two groups.

#### **6.3.4 Summary and evidence statements**

Six studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) were conducted in healthcare settings including family planning clinics and primary care practices. Four studies (DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) examined group-based education and/or skills-based interventions that specifically targeted sexually active young women. Two studies (Boekeloo et al., 1999; Danielson et al., 1990) examined interventions based around a health practitioner-led sexual health consultation.

All six studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Morrison-Beedy et al., 2005; Jemmott et al., 2005; Downs et al., 2004) examined intervention effects on knowledge and understanding. Across four studies (DiClemente et al., 2004; Morrison-Beedy et al., 2005; Jemmott et al., 2005; Downs et al., 2004) of interventions that specifically targeted sexually active young females, there were consistent short- to medium-term improvements in sexual health-related knowledge among intervention participants. In addition, two studies (Boekeloo et al., 1999; Danielson et al., 1990) of health consultations reported significant short-term increases in knowledge among intervention participants relative to controls. Five studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) examined intervention effects on attitudes and values. There were fairly consistent positive intervention effects on condom use attitudes across three studies (DiClemente et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005), which examined group-based education and/or skills-based interventions specifically targeting sexually active young women, and one study (Boekeloo et al., 1996) that examined a sexual risk assessment and education intervention. Three studies (Boekeloo et al., 1999; DiClemente et al., 2004; Morrison-Beedy et al., 2005) examined intervention effects on personal and social skills related to communication. There were inconsistent effects on communication; one study (DiClemente et al., 2004) reported medium-term positive effects on intervention participants' communication with their partners and a further study (Boekeloo et al., 1999) found positive short-term effects on adolescents' communication with their doctor, but not their parents. One study (Morrison-Beedy et al., 2005) found a potentially negative effect of a group-based HIV intervention.

All six studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) examined intervention effects on health and social outcomes related to sexual health. Two studies (Boekeloo et al., 1999; Danielson et al., 1990) of health practitioner-led sexual health consultations found no intervention effects on sexual activity, but there were weak short-term effects on condom and other contraceptive use. Across four studies (DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) that examined interventions specifically targeting sexually active young females, there were inconsistent intervention effects on sexual activity, frequency of intercourse and number of partners. However, intervention effects on condom use and unprotected intercourse were more consistent, with two studies (DiClemente et al., 2004; Jemmott et al., 2005) reporting medium-term positive effects on these outcomes. Three studies (Boekeloo et al., 1999; Downs et al., 2004; Jemmott et al., 2005) examined intervention effects on STI infection and/or diagnosis, finding mixed intervention effects. However, medium-term positive effects on STI diagnosis were reported in one study (Jemmott et al., 2005) of a skills-based HIV/STI intervention.

**Evidence statement 9**

- 9 (a) There is strong evidence from six RCTs<sup>1</sup> to suggest that interventions and programmes delivered in healthcare settings may produce short- to medium-term improvements in sexual health-related knowledge. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 9 (b) There is strong evidence from three RCTs<sup>2</sup> to suggest that group-based education and/or skills-based interventions specifically targeting sexually active young women in healthcare settings may have short- to medium-term positive effects on condom use attitudes. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 9 (c) There is inconsistent evidence from three RCTs<sup>3</sup> on which to determine the effects of interventions and programmes delivered in healthcare settings on sexual health-related communication. However, there is strong evidence from one RCT<sup>4</sup> to suggest that a gender- and culturally-tailored intervention for African American females may have a positive impact on communication with sexual partners and condom use skills. This evidence may only be partially applicable because this study were conducted in the USA and focused on an ethnic population specific to the USA.
- 9 (d) There is moderate evidence from two RCTs<sup>5</sup> to suggest that interventions and programmes based on health practitioner-led sexual health consultations may have a limited impact on sexual behaviours, including sexual activity and condom and other contraceptive use. This evidence may only be partially applicable because these studies were conducted in the USA.
- 9 (e) There is strong evidence from four RCTs<sup>6</sup> to suggest that group-based education and/or skills-based interventions specifically targeting sexually active young women in healthcare settings may not have a consistent impact on sexual activity or numbers of sexual partners. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 9 (f) There is strong evidence from four RCTs<sup>6</sup> to suggest that group-based education and/or skills-based interventions specifically targeting sexually active young women in healthcare settings may have a short- to medium-term positive impact on condom and other contraceptive use, and unprotected intercourse. This evidence may only be partially applicable because these studies were conducted in the USA and focused on ethnic populations, specific to the USA.
- 9 (g) There is inconsistent evidence from three RCTs<sup>3</sup> on which to determine the effects of interventions and programmes delivered in healthcare settings on STIs. However, there is strong evidence from one RCT<sup>8</sup> to suggest that a skill-based HIV/STI intervention may have a positive medium-term impact on STI diagnosis. This evidence may only be partially applicable because this study were conducted in the USA and focused on ethnic populations specific to the USA.

- <sup>1</sup> Boekeloo et al., 1999 (RCT +); Danielson et al., 1990 (RCT -); DiClemente et al., 2004 (RCT ++); Downs et al., 2004 (RCT +); Jemmott et al., 2005 (RCT ++); Morrison-Beedy et al., 2005 (RCT +)
- <sup>2</sup> DiClemente et al., 2004 (RCT ++); Jemmott et al., 2005 (RCT ++); Morrison-Beedy et al., 2005 (RCT +)
- <sup>3</sup> Boekeloo et al., 1999 (RCT +); DiClemente et al., 2004 (RCT ++); Morrison-Beedy et al., 2005 (RCT +)
- <sup>4</sup> DiClemente et al., 2004 (RCT ++);
- <sup>5</sup> Boekeloo et al., 1999 (RCT +); Danielson et al., 1990 (RCT -)
- <sup>6</sup> DiClemente et al., 2004 (RCT ++); Downs et al., 2004 (RCT +); Jemmott et al., 2005 (RCT ++); Morrison-Beedy et al., 2005 (RCT +)
- <sup>7</sup> Boekeloo et al., 1999 (RCT +); Downs et al., 2004 (RCT +); Jemmott et al., 2005 (RCT ++)
- <sup>8</sup> Jemmott et al., 2005 (RCT ++)

**Table 6.5. Summary of programme content: programmes delivered within healthcare settings**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Boekeloo et al., 1999	RCT (individual) +	USA n=215 ~70% African American 12-15 years	Primary care	<b>ASSESS:</b> Sexual risk assessment and education intervention. Single session with doctor two brochures that addressed skills and self-efficacy for sexual health, community resources brochures, and two brochures for parents about how to discuss sex and drug risks with teens.	Social cognitive theory, Theory of Reasoned Action	Primary care doctors
Danielson et al., 1990	RCT (individual) -	USA n=522 males Ethnicity NR 15-18 years	Primary care	Reproductive health consultation and slide tape programme. Included information on reproductive anatomy, fertility, hernia, testicular self-examination, STIs, contraception, couple communication and access to health services.	NR	Health care practitioner
DiClemente et al., 2004	RCT (individual) ++	USA n=522 females 100% African American 14-18 years	Family medicine clinic	Four, 4-hour sessions; ethnic and gender pride, HIV risk reduction strategies and the importance of healthy relationships.	Social cognitive theory, theory of gender and power	Trained African American female health educator and two African American peer educators
Downs et al., 2004	RCT (individual) +	USA n=300 females 75% African American; 15% White; 10% other 14-18 years	Healthcare settings	Interactive video intervention, which covered negotiation behaviours with sexual partners, condom efficacy, and information about reproductive health and viral and bacterial STIs	NR	Video
Jemmott et al., 2005	RCT (individual) ++	USA n=682 females 68% African American; 32% Latino 12-19 years	Hospital-based family planning clinic	Single session interventions. (1) Educational videotapes illustrated correct condom use with a demonstration model and depicted effective negotiation of condom use; (2) Participants practiced the skills needed to use condoms	Cognitive behavioural theory	Female, African American facilitators
Morrison-Beedy et al., 2005	RCT (individual) +	USA n=62 females 59% White; 29% Black; 10% Hispanic; 2% Asian 15-19 years	Family planning centre	Four, 2-hour sessions; HIV-related information and behavioural skills components (assertiveness, self-efficacy, and negotiation) combined with motivational enhancement strategies.	Information-Motivation-Behavioural Skills Model	Trained female interventionists

**Table 6.6. Programme delivered in healthcare settings: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Boekeloo et al., 1999	RCT (individual) +	ASSESS n=101	No intervention n=114	PT (NR)	↑ HIV transmission <sup>¶</sup>	↑ beliefs about condom use <sup>¶</sup> <b>NS</b> condom use self-efficacy <b>NS</b> perceived HIV susceptibility <b>NS</b> abstinence beliefs	↑ discussion with physician about sexuality topics <sup>¶</sup>
Danielson et al., 1990	RCT (individual) -	Reproductive health consultation n=262	Wait list control n=260	NR	↑ ways to protect against STIs <sup>***</sup>	↓ coercive sexual attitudes*	-
DiClemente et al., 2004	RCT (individual) ++	HIV prevention n=251	General health promotion n=271	6 mo	↑ HIV prevention <sup>**</sup>	↑ condom attitudes <sup>**</sup> ↓ condom barriers <sup>**</sup> ↑ condom use self-efficacy <sup>**</sup>	↑ condom use skills <sup>***</sup> ↑ communication frequency <sup>**</sup>
				12 mo	↑ HIV prevention <sup>**</sup>	↑ condom attitudes <sup>**</sup> <b>NS</b> condom barriers ↑ condom use self-efficacy <sup>**</sup>	↑ condom use skills <sup>***</sup> ↑ communication frequency*
Downs et al., 2004	RCT (individual) +	Video intervention n=NR	Alternative delivery formats n=NR	3 mo	<b>NS</b> general STI <b>NS</b> specific STI	-	-
				6 mo	<b>NS</b> general STI <b>NS</b> specific STI	-	-
Jemmott et al., 2005	RCT (individual) ++	Skills-based n=235	Health promotion control n=219	3, 6, 12 mo	↑ HIV/STI risk reduction <sup>***</sup> ↑ condom use <sup>***</sup>	↑ condom use intention <sup>**</sup> ↑ condom use hedonistic beliefs <sup>***</sup> ↑ sexual partner approval <sup>**</sup> ↑ technical skills beliefs* ↑ impulse control beliefs* <b>NS</b> negotiation skill beliefs	-
		Information n=228	Health promotion control n=219	3, 6, 12 mo	↑ HIV/STI risk reduction <sup>***</sup> ↑ condom use <sup>***</sup>	↑ condom use intention <sup>***</sup> ↑ condom use hedonistic beliefs <sup>***</sup> <b>NS</b> sexual partner approval ↑ technical skills beliefs* ↑ impulse control beliefs* <b>NS</b> negotiation skill beliefs	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Jemmott et al., 2005	RCT (individual) ++	Skills-based n=235	Information n=228	3, 6, 12 mo	NS HIV/STI risk reduction*** ↑ condom use***	NS condom use intention NS condom use hedonistic beliefs NS sexual partner approval NS technical skills beliefs NS impulse control beliefs NS negotiation skill beliefs	-
Morrison-Beedy et al., 2005	RCT (individual) +	HIV risk reduction intervention n=33	Health promotion control n=29	3 mo	↑***	↑ confidence in condom use* ↓ cons of condom use* NS risk perception NS readiness NS behavioural intentions NS pros of condom use	↓ communication with partners about safe sex*

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; † p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

**Table 6.7. Programme delivered in healthcare settings: effects on health and social outcomes related to sexual health**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions	Other
Boekeloo et al., 1999	RCT (individual) +	ASSESS n=101	No intervention n=114	3 mo (int=92%; con=94%)	NS vaginal, anal or oral sexual intercourse	NS number of vaginal intercourse partners	↑ condom use†	NS STI diagnoses/treatment NS pregnancy	-
				9 mo (int=93%; con=90%)	NS vaginal, anal or oral sexual intercourse	NS number of vaginal intercourse partners	NS condom use	↓ genital signs of possible STIs† NS STI treatment NS pregnancy	-
Danielson et al., 1990	RCT (individual) -	Unnamed n=262	Wait list control n=260	NR	NS sexual activity status	-	↑ effective contraception* ↑ partner's use of pill at last intercourse*	-	-

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions	Other
DiClemente et al., 2004	RCT (individual) ++	HIV prevention intervention n=251	General health promotion n=271	6 mo (int=90%; con=90%)	-	↓ new vaginal sex partner, past 30 d*	NS consistent condom use, past 30 d ↑ consistent condom use, past 6 mo** ↑ condom use at last intercourse***	-	-
				12 mo (int=87%; con=89%)	-	NS new vaginal sex partner in past 30 days	↑ consistent condom use, past 30 d* ↑ consistent condom use, past 6 mo* ↑ condom use at last intercourse***	-	-
Downs et al., 2004	RCT (individual) +	Interactive video intervention n=NR	Alternative delivery formats n=NR	3 mo (NR)	↑ abstinence*		NS condom use frequency NS condom failures	-	-
				6 mo (NR)	NS abstinence		NS condom use frequency ↓ condom failures, past 3 mo*	↓ diagnosed with Chlamydia*	-

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes				
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions	Other
Jemmott et al., 2005	RCT (individual) ++	HIV/STI reduction intervention Skills-based, n=235	Health promotion control n=219	3, 6 mo (NR)	-	NS number of partners, past 3 mo NS multiple partners, past 3 mo	NS frequency sex without condom use, past 3 mo	-	↓ frequency sex drugs/alcohol (both*) NS frequency unprotected sex drugs/alcohol
				12 mo (NR)	-	↓ multiple partners, past 3 mo** ↓ number of partners, past 3 mo*	↓ frequency sex without condom use, past 3 mo**	↓ tested positive STI*	NS frequency sex drugs/alcohol ↓ frequency unprotected sex drugs/alcohol*
Jemmott et al., 2005	RCT (individual) ++	HIV/STI reduction intervention Information, n=228	Health promotion control n=219	3, 6, 12 mo (NR)	-	NS multiple partners, past 3 mo NS number of partners, past 3 mo	NS frequency sex without condom use, past 3 mo	NS tested positive STI	NS frequency sex drugs/alcohol NS frequency unprotected sex drugs/alcohol
Jemmott et al., 2005	RCT (individual) ++	HIV/STI reduction intervention Skills-based, n=235	HIV/STI reduction intervention Information, n=228	3, 6, 12 mo (NR)	-	NS multiple partners, past 3 mo NS number of partners, past 3 mo	↓ frequency sex without condom use, past 3 mo (12 mo FU only*)	NS tested positive STI	↓ frequency sex drugs/alcohol (3 mo only*) NS frequency unprotected sex drugs/alcohol
Morrison-Beedy et al., 2005	RCT (individual) +	HIV risk reduction intervention n=33	Health promotion control n=29	3 mo (48%)	NS received/ gave oral sex NS vaginal sex with/without condom	NS number of partners	-	-	NS alcohol or drug use before sex

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; † p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

## 6.4 Programmes delivered to families

### 6.4.1 Overview of evidence identified

Ten studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McBride et al., 2007; McKay et al., 2004; Miller et al., 1993; Scheinberg et al., 1997; Winett et al., 1992; 1993) evaluated seven programmes delivered to families which targeted adolescent sexual health, all of which were conducted in the USA. Two studies (Winett et al., 1992; 1993) evaluated interventions that aimed to prevent HIV and AIDS while eight studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008, McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997) evaluated programmes that focused on delaying sexual initiation and reducing sexual risk behaviours. Two studies (Anderson et al., 1999; Miller et al., 1993) included a specific focus on improving family communication about sexual behaviours. The setting where the intervention or programme was delivered varied, and included sessions after school, in the home and in community centres. The person or persons providing the intervention was poorly reported across the included studies, and were reported for only one programme, the CHAMP family programme (McKay et al., 2004; McBride et al., 2007), which was provided by a variety of providers including mental health interns, parents and community consultants respectively.

Six evaluations detailed the theory or theories that were the basis for intervention. Three programmes including RAP (Anderson et al., 1999), PARE (Lederman et al., 2008) and SHAPE (Scheinberg et al., 1997) were based on social learning theory. The development of the SHAPE programme (Scheinberg et al., 1997) also informed by social cognitive theory. Keepin' It R.E.A.L (Dilorio et al., 2006) was based on social cognitive theory and problem behavioural theory.

Sample size varied between studies, ranging from 49 families (Winett et al., 1992) to 804 adolescent-parent dyads (Lederman et al., 2004). All programmes involved children in early adolescence aged between 10 to 15 years and their parents, and all programmes had at least one session for both parent and child together. One programme (Keepin' It R.E.A.L, Dilorio et al., 2006) only included mothers while all other programmes recruited both mothers and fathers, or an appropriate other adult. Post-intervention follow-up time varied across the included studies. The period of follow-up for three programmes (CHAMP Family Program, McKay et al., 2004; McBride et al., 2007; an HIV prevention video, Winett et al., 1992; Winett et al., 1993; SHAPE, Scheinberg et al., 1997) was six months or less, with the CHAMP family programme and SHAPE evaluated at post-test only. Two studies, including evaluations of Facts and Feelings (Miller et al., 1993) and one evaluation of PARE (Lederman et al., 2004) reported follow-up periods of 12 months or less. Long-term evaluation (>12 months) was reported by three studies including evaluations of RAP (Anderson et al., 1999), Keepin' It R.E.A.L (Dilorio et al., 2006), and the second evaluation of PARE (Lederman et al., 2008).

### 6.4.2 Quality assessment

Of the 10 studies identified, seven were RCTs, one was an NRCT and two were CBA studies. Five RCTs (Lederman et al., 2004; 2008; Miller et al., 1993; Winett et al., 1992; 1993) were based on individual randomisation while the remaining two RCTs (Anderson et al., 1999; Dilorio et al., 2006)

were based on cluster randomisation, by group (Anderson et al., 1999) and community site (Dilorio et al., 2006). Quality of the RCTs varied with one study rated good for quality (Dilorio et al., 2006), two studies rated as moderate (Miller et al., 1993; Winett et al., 1993) and four rated as poor (Anderson et al., 1999; Lederman et al., 2004; 2008; Winett et al., 1992). The quality of the NRCT was rated as poor (Scheinberg et al., 1997). Two CBA studies that evaluated the CHAMP family programme (McKay et al., 2004; McBride et al., 2007) were rated poor quality due to being based on post-test follow-up only and poor reporting of outcomes. All seven RCTs were reported as randomised, but did not detail methods of randomisation or describe whether allocation was appropriately concealed. Outcome measures were reliable in all studies and rated good quality in three studies (Lederman et al., 2008; Miller et al., 1993; Winett et al., 1993). In all RCT studies, outcomes were rated as being relevant and generally all important outcomes were assessed. RCTs were rated as moderate or good for length of follow-up time, with the exception of one study (Winett et al., 1993) where follow-up time was less than six months. Baseline comparability of groups was poorly reported or not reported in five RCTs (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; Lederman et al., 2008; Miller et al., 1993) and an ITT analysis was only reported to have been undertaken in one study (Dilorio et al., 2006).

### **6.4.3 Findings**

#### **6.4.3.1 Knowledge and understanding**

For six programmes, eight studies (Dilorio et al., 2006; Lederman et al., 2008; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997; Winett et al., 1992; 1993) reported outcomes relating to knowledge and understanding. For four programmes including Keepin' It R.E.A.L (Dilorio et al., 2006), CHAMP family programme (McKay et al., 2004; McBride et al., 2007), SHAPE (Scheinberg et al., 1997) and an HIV prevention video intervention (Winett 1992; 1993) only short-term follow-up results, at six months or less were presented. Two studies (Miller et al., 1993; Lederman et al., 2009) reported medium- to long-term follow-up results, at 1- and 2-years, respectively.

Across the eight studies that examined intervention effects on knowledge and understanding, there were generally positive intervention effects. Evaluations of four programmes (Keepin' It R.E.A.L; CHAMP family programme; an unnamed HIV prevention video and PARE) examined knowledge about HIV and AIDS. Positive intervention effects were reported for both adolescent ( $p < 0.05$ ) and mother's ( $p < 0.01$ ) HIV knowledge following the Keepin' It R.E.A.L programme (Dilorio et al., 2006), for those who received the social cognitive theory-based intervention (SCT) in comparison to controls and those who received the life skills intervention (LSK). In two studies (Winett et al., 1992; 1993) of a home-based HIV prevention video, positive intervention effects were found on knowledge about HIV for both adolescents and their parents in the short-term (all comparisons,  $p < 0.001$ ). Lederman and colleagues (2008) also found that PARE had long-term positive effects on knowledge about preventing HIV and pregnancy (2-years follow-up;  $p < 0.05$ ). The CHAMP family programme (McKay et al., 2004; McBride et al., 2007) had no impact on knowledge about HIV at post-test, and although

SHAPE (Scheinberg et al., 1997) had a positive effect on children's knowledge at post-test ( $p < 0.05$ ) there was no significant impact upon parents. Miller and colleagues (1993) reported that the Facts and Feelings intervention had positive effects on child ( $p < 0.001$ ) and father ( $p < 0.01$ ) sexual knowledge, but had no significant impact on mother's knowledge.

#### **6.4.3.2 Attitudes and values**

Eight studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997) examined intervention effects on attitudes and values for six programmes. Adolescent attitudes and intentions regarding abstinence was the most common outcome evaluated and on the whole non-significant programme effects were reported. There was no significant effect of RAP (Anderson et al., 1999) on reasons why not to have sex in the short- or medium-term and there was no effect of Facts and Feelings (Miller et al., 1993) on intentions to have sex, or attitudes towards abstinence or sex. However, this programme positively influenced father's ( $p < 0.05$ ) and mother's ( $p < 0.01$ ) abstinence values in comparison to control participants. Dilorio and colleagues (2006) found a non-significant association between participation in Keepin' It R.E.A.L and adolescent intentions to have sex or use condoms at the 2-year follow-up. Based on short-term follow-up, Scheinberg and colleagues (1997) found that participation in SHAPE had no significant effects on adolescent attitudes towards abstinence or parent attitudes towards sex. Based on short-term follow-up, adolescent intentions to postpone sex were positively associated with participation in PARE (Lederman et al., 2004;  $p < 0.01$ ), however the programme did not impact upon attitudes towards risk behaviours. Long-term evaluation of PARE (Lederman et al., 2008) revealed that there was no significant effect of the programme on self-efficacy to resist sex.

Two studies (McKay et al., 2004; McBride et al., 2007) examined the impact of the CHAMP family programme on attitudes towards HIV and AIDS, finding no significant programme effects. One study (Dilorio et al., 2006) examined attitudes related to parent-child communication. Based on 2-year follow-up of Keepin' It R.E.A.L participants, Dilorio and colleagues (2006) found positive intervention effects on mothers' intentions to communicate about sex with their child ( $p < 0.01$ ) and on their comfort in doing so ( $p < 0.001$ ).

#### **6.4.3.3 Personal and social skills**

Ten studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997; Winett et al., 1992; 1993) examined the impact of eight programmes on personal and social skills. Nine studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997) examined intervention effects on parent-child communication. Two studies (Lederman et al., 2004; Scheinberg et al., 1997) of the PARE and SHAPE programmes, respectively, found no significant effects on communication about sexual behaviours at short-term follow-up in intervention families compared to controls. The CHAMP family programme (McKay et al., 2004; McBride et al., 2007) was found to have had significant short-term effects on family decision making ( $p < 0.05$ ), parental monitoring, family decision making and comfort in communication (all  $p < 0.01$ ). However, CHAMP intervention families also reported significantly higher

levels of family conflict compared to controls ( $p < 0.01$ ). At post-test, there was a positive effect of the RAP programme (Anderson et al., 1999) on parent-child communication ( $p < 0.05$ ), but at the 1-year follow-up this difference was no longer significant between intervention and control families. Two studies (Lederman et al., 2008; Dilorio et al., 2006) examined intervention effects on communication over the long-term. Long-term evaluation of the PARE programme (Lederman et al., 2008) revealed a non-significant effect of the programme on parent-child communication, in addition, although the Keepin' It R.E.A.L programme (Dilorio et al., 2006) had a significant, positive effect on mother-daughter discussion as reported by mothers, there was no significant effect on communication as reported by daughters.

Winett and colleagues (1992; 1993) evaluated two home-based HIV video interventions. Both evaluations found a short-term positive effect of the interventions on family problem-solving skills (both  $p < 0.05$ ), but no effect on teen assertiveness or teen problem solving skills. Scheinberg and colleagues (1997) found that the SHAPE programme had no impacts in the short-term on adolescent's comfort accessing contraception, sexual decision-making or assertiveness.

#### **6.4.3.4 Health and social outcomes related to sexual health**

Five studies (Anderson et al., 1999; Dilorio et al., 2006; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993) examined the effects of six programmes (RAP, Facts and Feelings, Keepin' It R.E.A.L, and the CHAMP family programme) on health and social outcomes related to sexual health.

Long-term evaluation of Keepin' It R.E.A.L (Dilorio et al., 2006) indicated no significant effects of either intervention condition on abstinence or involvement in intimate sexual behaviours, however, among sexually active participants, those in the SCT and LSK groups were more likely than controls to report that they had used a condom the last time they had sex, although the significance of this finding was not clearly reported. Two studies (Miller et al., 1993; Anderson et al., 1999) examined intervention effects on outcomes related to sexual health in the medium-term finding no effect of either intervention at follow-up, on sexual behaviours and pregnancy, respectively. Short-term evaluation of the CHAMP family programme (McKay et al., 2004; McBride et al., 2007) revealed a significant reduction in the time adolescents spent in situations of sexual possibility ( $p < 0.01$ ).

#### **6.4.4 Summary and evidence statements**

Ten studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McBride et al., 2007; McKay et al., 2004; Miller et al., 1993; Scheinberg et al., 1997; Winett et al., 1992; 1993) evaluated seven programmes delivered to families which targeted adolescent sexual health. All ten studies were conducted in the USA and the young people involved were in early adolescence. Across the included studies there was a focus on delaying sexual initiation, reducing sexual risk behaviours and improving parent-child communication about sexual behaviours.

Seven studies (Dilorio et al., 2006; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997; Winett et al., 1992; Winett et al., 1993) examined intervention effects on knowledge and understanding. The results of these studies demonstrated that interventions and

programmes delivered to families can have positive influences on knowledge related to sexual health in the short- (Scheinberg et al., 1997; Winett 1992; Winett et al., 1993), medium- (Miller et al., 1993) and long-term (Dilorio et al., 2006; Lederman et al., 2008). Improvements were reported in adolescent knowledge and knowledge among mothers (Dilorio et al., 2006) and fathers (Miller et al., 1993). Only one programme, CHAMP (McKay et al., 2004; McBride et al., 2007), was found to have had no impact on knowledge at follow-up. Eight studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997) examined intervention effects on attitudes and values. The most common outcomes examined were attitudes towards abstinence and adolescent's intentions to remain abstinent or have sex. Generally, across six studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; Miller et al., 1993; Scheinberg et al., 1997), the results suggested that programmes and interventions delivered to families were not effective at influencing adolescent's attitudes and intentions regarding resisting or delaying sex. Six studies reported finding no significant differences between intervention and control groups at follow-up regarding adolescent's attitude towards abstinence (Anderson et al., 1999; Miller et al., 1993; Scheinberg et al., 1997), or intentions to have sex (Dilorio et al., 2006; Miller et al., 1993), self-efficacy to resist sex (Lederman et al., 2008), and one study (Lederman et al., 2004) reported inconsistent effects, with effects on intentions to delay sex at medium-term follow-up but not on attitudes towards risk behaviours. Ten studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997; Winett et al., 1992; 1993) examined the impact of eight programmes on personal and social skills. Across nine studies, which examined effects on parent-child communication, no clear intervention effects were found.

Five studies (Anderson et al., 1999; Miller et al., 1993; Dilorio et al., 2006; McKay et al., 2004; McBride et al., 2007) examined effects on health and social outcomes related to sexual health for four programmes. The results suggested that programmes and interventions delivered to families do not affect sexual behaviour. Two studies (Anderson et al., 1999; Miller et al., 1993) found no intervention effects on pregnancy rates or sexual behaviour, respectively, and long-term evaluation of Keepin' It R.E.A.L (Dilorio et al., 2006) found no intervention effects on abstinence or involvement in intimate sexual behaviours. There were, however, limited but positive effects of this programme on condom use.

#### **Evidence statement 10**

- 10 (a) There is moderate evidence from five RCTs and one NRCT<sup>1</sup> to suggest that interventions and programmes delivered to families may improve knowledge in the short- to long-term. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 10 (b) There is moderate evidence from five RCT and one NRCT<sup>2</sup> to suggest that interventions and programmes delivered to families may not influence adolescent's attitudes or intentions regarding abstinence or delaying sex. Findings may only be partially applicable to the UK as

all the studies were conducted in the USA and may not be generalisable beyond the populations studied.

10 (c) There is moderate evidence from seven studies<sup>2</sup> to suggest that programmes and interventions delivered to families may not influence parent-child communication. There is weak evidence from two CBA studies<sup>3</sup> to suggest that intensive, family-focused interventions may have positive short-term effects on family communication. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.

10 (d) There is weak evidence from three RCT and two CBA studies<sup>4</sup> to suggest that programmes delivered to families may not have effects on adolescent sexual behaviour. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.

<sup>1</sup> Dilorio et al., 2006 (RCT ++); Scheinberg et al., 1997 (NRCT -); Winett et al., 1992 (RCT -); Winett et al., 1993 (RCT +); Miller et al., 1993 (RCT +); Lederman et al., 2008 (RCT -)

<sup>2</sup> Anderson et al., 1999 (RCT -); Dilorio et al., 2006 (RCT ++); Lederman et al., 2004 (RCT -); Lederman et al., 2008 (RCT -); Miller et al., 1993 (RCT +); Scheinberg et al., 1997 (NRCT -)

<sup>3</sup> McKay et al., 2007, McBride et al., 2007 (CBA -)

<sup>4</sup> Anderson et al., 1999 (RCT -); Miller et al., 1993 (RCT +); Dilorio et al., 2006 (RCT ++); McKay et al., 2004 (CBA -); McBride et al., 2007 (CBA -)

**Table 6.8. Summary of programme content: programmes delivered to families**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Anderson et al., 1999	RCT (cluster) -	USA n=251 adolescents (mean age 10.6) and their parents 46% Hispanic; 21% African American; 13% European-American; 6% Asian American; 2% Native American; 5% other; 8% unknown	Family; summer; after-school and in-school classes	<b>RAP Reaching Adolescents and Parents:</b> six adolescent-only; one adult-only and one joint sessions to improve parent-child communication and delay sexual debut	Social learning theory	NR
Dilorio et al., 2006	RCT (cluster) ++	USA n=582 adolescents (mean age 12 years) and their mothers Ethnicity=NR	Family; boys and girls club members	<b>Keepin' It R.E.A.L:</b> seven two-hour sessions over 14 weeks. Participants received either a life skills or social cognitive theory based intervention that aimed to delay sexual initiation and increase condom use	Social cognitive theory; problem behaviour theory	NR
Lederman et al., 2004	RCT (individual) -	USA n=804 parent and child dyads 38% Hispanic; 26% African American; 25% White; 10% Other (children aged 11-15 years)	Family; after-school	<b>PARE Parent-Adolescent Relationship Education:</b> participants received four two and a half-hour sessions over a four week period plus three booster sessions to reduce sexual risk behaviours	NR	NR
Lederman et al., 2008	RCT (individual) -	USA n=192 families 36% Hispanic; 29% African American; 24% White; 11% Asian or Other (adolescents aged 11-15 years)	Family	<b>PARE Parent-Adolescent Relationship Education:</b> participants received four two and a half-hour sessions over a four week period plus three booster sessions to reduce sexual risk behaviours	Social learning theory; cognitive behavioural theory	NR

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
McKay et al., 2004; McBride et al., 2007	CBA -	USA n=564 4 <sup>th</sup> and 5 <sup>th</sup> grade children and their families ~99% African American	Family	<b>CHAMP Family Programme:</b> 12 90-minute weekly meetings aimed at delaying initiation of sexual intercourse and reducing time spent in situations of sexual possibility	NR	Mental health interns; community consultants; parents
Miller et al., 1993	RCT (individual) +	USA n=548 families Mothers and fathers were 93% and 97% White respectively (adolescent mean age 13.9 years)	Family; in the home	<b>Facts and Feelings:</b> intervention included six 15-20 minute videos to increase parent-child communication about sexual issues and to delay the likelihood of sexual initiation with or without accompanying newsletters that provided supplementary information	NR	NR
Scheinberg et al., 1997	NRCT -	USA n=122 participants from n=61 families Majority White, 5% Latino, 4% Asian	Family; classroom curriculum	<b>SHAPE (Sharing Healthy Adolescent and Parent Experiences):</b> Parents and children attended six two-hour sessions together where they were exposed to a curriculum aiming to delay sexual intercourse and to prevent risky sexual behaviours	Social learning theory; social cognitive theory, relational ethics	NR
Winett et al., 1992	RCT (individual) -	USA n=49 families (adolescents aged 12-14 years) Ethnicity=NR	Family; in the home	<b>NR:</b> families viewed four HIV prevention videos at home that focused on educating about HIV; problem-solving, assertiveness, coping and communication skills	NR	Video
Winett et al., 1993	RCT (individual) +	USA n=69 families (adolescents aged 12-14 years) Ethnicity=NR	Family; in the home	<b>NR:</b> families viewed 135 minutes of HIV prevention video that included education about HIV and teen risk behaviour and health issues; family and problem-solving skills and teen assertiveness	NR	Video

**Table 6.9. Programmes delivered to families: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Anderson et al., 1999	RCT (cluster) -	RAP n=185	Delayed intervention n=66	PT (NR)	-	NS reasons why participants "would not have sex now"	↑ parent child communication*
				12 mo n=251 (54%)	-	NS reasons why participants "would not have sex now"	NS parent child communication
Dilorio et al., 2006	RCT (cluster) ++	Keepin' It R.E.A.L n=381 (LSK n=187; SCT n=194)	1 hour HIV session n=201	4 mo n=547 (94%)	↑ adolescent HIV knowledge <sup>a*</sup> ↑ mother's HIV knowledge <sup>a*</sup>	-	-
				24 months n=524 (90%)	-	↑ mothers' intentions to discuss sex with child** ↑ mothers' comfort in discussing sex with child*** NS child's comfort talking to mother about sex NS would end sexual activity until older NS would use a condom every time they have sex NS outcome expectations and self-efficacy for abstinence	↑ mothers reporting discussion with child about sex in past 3 months** NS child's reported communication with mother
Lederman et al., 2004	RCT (individual) -	PARE n=90	Traditional intervention delivery n=714	3-6 mo n=NR	-	↑ intentions to postpone sexual involvement** NS expectancies about consequences of sexual behaviour; NS attitudes towards risk behaviours NS perceptions of parents' disapproval to involvement in risk behaviours	NS discourse with parents about sexual and other risk behaviours
Lederman et al., 2008	RCT (individual) -	PARE n=90	Attention Control n=102	2 yrs n=NR	↑ protection against pregnancy and HIV transmission*	NS self-efficacy for resisting sex	↑ parents reported having definite rules about child's behaviour* NS parent child communication

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
McKay et al., 2004; McBride et al., 2007	CBA -	CHAMP n=274	Did not receive intervention n=290	PT n=465 (82%)	<b>NS</b> knowledge about HIV/AIDS	<b>NS</b> attitudes towards HIV/AIDS	† family decision making* † parental monitoring and supervision** † family communication regarding sensitive issues** † communication comfort** † children reported higher family conflict**
Miller et al., 1993	RCT (individual) +	Facts & Feelings n=258 (video only n=132; video + newsletter n=126)	Did not receive intervention n=290	1 yr n=504 (92%)	† child's sexual knowledge*** † father's sexual knowledge** <b>NS</b> mother's sexual knowledge	† father's abstinence values* † mother's abstinence values*** <b>NS</b> child's abstinence values; intentions to have sex before marriage or in the next year <b>NS</b> child's acceptability for pressuring for sex; child's peer's sexual values; child's family's sexual values; family or peer influence on child's sexual values	† child, father and mother reported parent child communication about sex*** † frequency in communication <b>NS</b> frequency in communication at delayed post-test
Scheinberg et al., 1997	NRCT -	SHAPE II n=NR	Reduced intervention n=NR	PT n=118 (97%)	† children's' knowledge test scores* <b>NS</b> parent's knowledge test scores	† attitudes towards homosexuality* † child's satisfaction with social relationships* <b>NS</b> child's attitudes about birth control; sexuality; gender roles; abstinence <b>NS</b> child's self-esteem; satisfaction with sexuality <b>NS</b> parent attitudes towards sexual behaviour	† children's social decision making scores* <b>NS</b> child engaging in social activities <b>NS</b> child's comfort engaging in social activities; talking with parents or friends about sex or birth control; comfort accessing or using birth control <b>NS</b> child's sexual decision making; communication; assertiveness; birth control assertiveness skills

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Winett et al., 1992	RCT (individual) -	NR n=NR	Waiting list control n=NR	PT n=NR	↑ teen knowledge about HIV*** ↑ parent knowledge about HIV***	-	↑ family problem solving skills*** <b>NS</b> teen assertiveness skills <b>NS</b> teen problem-solving skills
				6 mo n=NR (94%)	↑ teen knowledge about HIV* ↑ parent knowledge about HIV***	-	↑ family problem-solving skills* <b>NS</b> teen assertiveness skills <b>NS</b> teen problem-solving skills
Winett et al., 1993	RCT (individual) +	NR n=NR	Reduced intervention n=NR	PT n=69 families (100%)	↑ knowledge about HIV***	-	↑ family problem-solving skills*** <b>NS</b> teen assertiveness skills <b>NS</b> teen problem-solving skills
				4 mo n=46 families (67%)	↑ knowledge about HIV***	-	↑ family problem-solving skills*** <b>NS</b> teen assertiveness skills <b>NS</b> teen problem-solving skills

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; † p value not reported; ‡ increase relative to comparator; § decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup>SCT and control groups in comparison to LSK group <sup>b</sup>SCT group in comparison to LSK and control groups <sup>c</sup>video plus group in comparison to video only group

**Table 6.10. Programmes delivered to families: intervention effects on health and social outcomes related to sexual health**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes			
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions
Anderson et al., 1999	RCT (cluster) -	RAP n=185	Delayed intervention n=66	12 months n=251 (54%)	-	-	-	NS pregnancy rates
Dilorio et al., 2006	RCT (cluster) ++	Keepin' It R.E.A.L n=381 LSK, n=187; SCT, n=194)	1 hour HIV prevention session n=201	24 months n=524 (90%)	NS abstinence; intimate behaviours; sexual possibility situations	-	↑ condom use at last sex*	-
McKay et al., 2004; McBride et al., 2007	CBA -	CHAMP n=274	Did not receive intervention n=290	Post-test n=465 (82%)	↓ time in situations of sexual possibility**	-	-	-
Miller et al., 1993	RCT (individual) +	Facts & Feelings n=258 (video only n=132; video + newsletter n=126)	Did not receive intervention n=290	12 mo n=504 (92%)	NS sexual behaviour	-	-	-

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; † p value not reported; † increase relative to comparator; ‡ decrease relative to comparator; **NS** not significant; - outcome not reported  
<sup>a</sup>LSK group compared to SCT and control groups

## 6.5 Programmes delivered to parents

### 6.5.1 Overview of evidence identified

Five studies (Dancy et al., 2006; Dilorio et al., 2007; Forehand et al., 2007; Gustafson, 1998; O'Donnell et al., 2005) examined interventions and programmes delivered to parents that targeted adolescent sexual health. All five studies were conducted in the USA. Programmes were delivered in a variety of settings, with parents as the focus. One intervention was delivered at home to parents via CD-ROM (Saving Sex for Later; O'Donnell et al., 2005), others were delivered in community-based settings using facilitators to provide training sessions to parents and their children (Parents Matter!; Forehand et al., 2007), health experts (The Mother/Daughter HIV risk-reduction [MDRR]; Dancy et al., 2006), parish nurses (Let's Talk: Sex is for Love; Gustafson, 1998) or community-based workers (REAL Men programme; Dilorio et al., 2007).

The theoretical base underpinning the intervention was not reported in two studies (Forehand et al., 2007; Gustafson, 1998), cognitive behavioural skills theory was used in one study (Dancy et al., 2006), social cognitive theory was reported in another study (Dilorio et al., 2007), and the Saving Sex for Later programme (O'Donnell et al., 2005) was reportedly based on both diffusion of innovations theory and the theory of planned behaviour.

The numbers of participating parents and children were not clear for all studies. The total number of parents and youth involved was reported for three studies (Dilorio et al., 2007; O'Donnell et al., 2005; Gustafson, 1998), and ranged from 58 to 674 parents and 63 to 846 children. For the MDRR programme (Dancy et al., 2006), the authors reported only the numbers of daughters included (n=262). A total number of 1,115 participants was reported for the Parents Matter! Programme (Forehand et al., 2007). Power calculations or sample size was mentioned in only one study (REAL Men programme; Dilorio et al., 2007) and was reported to be poor due to small numbers and clusters. A further two studies provided enough information to determine that sample sizes were appropriate (O'Donnell et al., 2005; Forehand et al., 2007). However, insufficient information was provided to determine the appropriate size of the samples in two studies (Dancy et al., 2006; Gustafson, 1998).

The majority of studies focused on young people aged between 9-14 years. However, one study (Gustafson, 1998) focused on a slightly other population aged 12-16 years with a mean age of 14 years. One study (Gustafson, 1998) reported immediate post-test results only and Dancy and colleagues (2006) reported follow-up within 1-2 weeks after participating children had completed their training. A short follow-up time of three months was reported by O'Donnell and colleagues. Thus only two studies (Forehand et al., 2007; Dilorio et al., 2007) reported both short and medium term follow-up.

### 6.5.2 Quality assessment

Of the five included studies four were based on an RCT design and one used an NRCT design. Of the four RCTs, two were based on cluster randomisation (Dancy et al., 2006; Dilorio et al., 2007) and two were based on individual randomisation (Forehand et al., 2007; O'Donnell et al., 2005). Cluster

randomisation was conducted at community-based intervention site level. The unit of analysis did not match the unit of allocation in one study (Forehand et al., 2007) and no adjustment was reported. All studies were reported as moderate quality (+ rating) and two studies (Forehand et al., 2007; O'Donnell et al., 2005) reported intent to treat analysis. Outcome measures were reported to be reliable in all studies. Relevant outcomes were reported across all included studies.

### **6.5.3 Findings**

#### **6.5.3.1 Knowledge and understanding**

Knowledge outcomes were reported in one study (Dancy et al., 2006), which found no significant increase in HIV transmission knowledge in the MDRR group, in comparison to a group who received HIV education delivered by a health expert. However, a significant increase in HIV transmission knowledge was found in the MDRR group in comparison to a group who received a nutrition and exercise intervention.

#### **6.5.3.2 Attitudes and values**

Four studies (Dancy et al., 2006; Dilorio et al., 2007; Gustafson, 1998; O'Donnell et al., 2005) examined intervention effects on attitudes and values related to sexual health.

Dancy and colleagues (2006) found no effects of the MDRR intervention on intentions to refuse sex in comparison to a group receiving HIV education taught by health experts (Health Expert HIV Risk Reduction curriculum; HERR). However, in comparison to a group receiving a nutrition and exercise intervention (Mother/Daughter Health Promotion curriculum; MDHP), MDRR participants reported greater intentions to refuse sex ( $p < 0.05$ ). The REAL Men Programme (Dilorio et al., 2007) had non-significant short-term effects on fathers' intentions to discuss sex-related topics and sons' intentions to delay sexual intercourse. However, medium-term findings showed significant increases in both reported intentions among intervention participants compared to controls who participated in a nutrition and exercise programme (both  $p < 0.05$ ). Gustafson (1998), reported post-tests results indicating positive programme effects of the Let's Talk programme on Satisfaction with Personal Sexuality scale ( $p < 0.05$ ) and Clarity of Personal Sexual Values scale ( $p < 0.05$ ). However, there was no change in young people's attitudes towards sexuality, values of fidelity, attitude towards the use of force in sexual activity or in their intentions regarding sexual intercourse. O'Donnell and colleagues (2005) reported positive programme effects of the Saving Sex for Later programme on parents' views of their influence over their child's risk-taking behaviour. In logistic regression analyses, parents in the intervention group scored higher than controls on parental influence (adjusted OR 2.15; 95% CI 1.36, 3.41;  $p < 0.001$ ).

#### **6.5.3.3 Personal and social skills**

All five studies reported outcomes relating to personal and social skills. Most studies reported intervention effects on communication. The REAL Men programme (Dilorio et al., 2007) had inconsistent short- and medium-term effects on father and son reports of sexual health-related communication. In comparison to controls who participated in a nutrition and exercise programme, at

both the 3- and 12-month follow-up, intervention fathers reported a positive increase in discussion ( $p < 0.05$ ), with no difference reported at 6-month follow-up. However, sons in the intervention group reported no significant increases, in sex-related communication compared to controls at any follow-up period. Forehand and colleagues (2007) found higher mean changes ( $p < 0.05$ ) in parental reports of sexual communication and parental responsiveness to sexual communication in the short- to medium-term among parents who received an enhanced communication intervention compared those who received a single session communication intervention and controls who received a general health intervention. The effects of the enhanced intervention on children's reports of sexual communication and parental responsiveness to sexual communication were less consistent; higher mean changes were observed at post-test for both measures compared to the single session and control groups, but not at subsequent follow-ups. Compared to a no intervention control, parents who participated in the Let's Talk programme (Gustafson, 1998) had a significantly greater improvement in their scores on a scale measuring the quality of communication with their child ( $p < 0.05$ ). However, there was no difference on other measures of parental norms (sexual values of fidelity, frequency of communication, and monitoring) or on measures of social support behaviours (family cohesion and shared family activities). O'Donnell and colleagues (2005) found positive intervention effects of the Saving Sex for Later programme on parents' reports of communication (adjusted OR 2.45; 95% CI 1.53, 3.92;  $p < 0.001$ ) and self-efficacy (adjusted OR 1.94; 95% CI 1.21, 3.11;  $p < 0.01$ ), but not on parental monitoring (adjusted OR 1.84; 95% CI 0.91, 3.72). Children whose parents participated in the programme reported positive programme effects on family rules and family support (both  $p < 0.05$ ).

#### **6.5.3.4 Health and social outcomes related to sexual health**

Four studies (Dancy et al., 2006; Dilorio et al., 2007; Forehand et al., 2007; O'Donnell et al., 2005) examined intervention effects on health and social outcomes related to sexual behaviours. Dancy and colleagues (2006) reported that there was no difference in sexual activity among MDRR participants and in those who received HIV education taught by health experts (HERR). However, in comparison to a group receiving a nutrition and exercise intervention (MDHP), MDRR participants were less likely to be sexually active at post-test ( $p < 0.05$ ). The REAL Men Programme (Dilorio et al., 2007) had no short or medium-term programme effects on intimate behaviours, or on sexual abstinence rates. However, positive medium-term programme effects were reported for unprotected intercourse. Intervention participants were less likely than controls who participated in a nutrition and exercise programme to report ever having sexual intercourse without a condom ( $p < 0.05$ ). Forehand and colleagues (2007) found that children whose parents attended an enhanced communication intervention group were no more or less likely to be at sexual risk than those in the control group (RR 1.04; 95% CI 0.73, 1.46) or the single session groups (RR 0.98; 95% CI, 0.69, 1.39). Youth in the Saving Sex for Later programme (O'Donnell et al., 2005) showed significant decreases in behavioural risks compared to controls ( $p < 0.05$ ).

#### **6.5.4 Summary and evidence statements**

Five studies (Dancy et al., 2006; Dilorio et al., 2007; Forehand et al., 2007; Gustafson, 1998; O'Donnell et al., 2005) were identified that examined sexual health interventions aimed at parents.

One study (O'Donnell et al., 2005) examined intervention effects on a programme delivered via CD-ROM. Two studies (Dancy et al., 2006; Gustafson, 1998) used medically trained people to deliver the programme and two others (Dilorio et al., 2007; Forehand et al., 2007) used community-based workers and facilitators respectively.

One study (Dancy et al., 2006) found that, compared to a nutrition and exercise programme, an intervention which trained mother's to be their daughters' primary HIV educators had short-term significant effects on knowledge of HIV transmission. Four studies (Dancy et al., 2006; Dilorio et al., 2007; Gustafson, 1998; O'Donnell et al., 2005) examined intervention effects on sexual behaviour attitudes and values. Across three studies (Dancy et al., 2006; Dilorio et al., 2007; Gustafson, 1998) that examined effects on intentions there were inconsistent results. Dancy and colleagues (2006) found short-term positive effects of an HIV risk reduction intervention and positive medium-term programme effects were seen in one study (Dilorio et al., 2007). However, Gustafson (1998) found no programme effects on intentions towards sexual intercourse. O'Donnell and colleagues (2005) reported positive programme effects on parents attitudes, including an increase in parents' reported of parental influence on their children's risk-taking behaviour. All five studies (Dancy et al., 2006; Dilorio et al., 2007; Forehand et al., 2007; Gustafson, 1998; O'Donnell et al., 2005) examined outcomes relating to personal and social skills. Dancy and colleagues (2006) found short-term positive effects of an HIV risk reduction intervention on self-efficacy to refuse sex. In addition, generally positive programme effects were reported across the remaining studies with regards to communication, with the exception of the study by Dilorio and colleagues (2007). They found that reports were inconsistent between fathers and sons regarding the communication of sex-related topics with fathers reporting more positively than their sons. Gustafson (1998) reported a positive programme effect on quality of communication and Forehand and colleagues (2007) reported an increase in sexual communication based on reports from both parents and their children who received an enhanced communication intervention; although parent reports were found to be more positive over the medium term. O'Donnell and colleagues (2005) reported positive programme effects on communication across a range of measures including communication, self-efficacy and monitoring.

Four studies (Dancy et al., 2006; Dilorio et al., 2007; Forehand et al., 2007; O'Donnell et al., 2005) examined health and social outcomes related to sexual behaviour. There were positive short-term effects of two parent education programmes (Dancy et al., 2006; O'Donnell et al., 2005) on initiation of sexual activity and behavioural risks related to early sexual initiation, respectively. However, lack of clear intervention effects were reported in two further studies (Dilorio et al., 2007; Forehand et al., 2007).

**Evidence statement 11**

- 11 (a) There is moderate evidence from one RCT<sup>1</sup> to suggest that training for mothers to be their daughters' primary HIV educator may produce short-term improvements in sexual health-related knowledge and understanding. The evidence may only be partially applicable to the UK as this study was conducted in the USA and focused on ethnic populations specific to the USA.
- 11 (b) There is inconsistent evidence from three RCTs and one NRCT<sup>2</sup> on which to determine the effects of intervention and programmes delivered to parents on sexual health-related attitudes and values.
- 11 (c) There is weak evidence from three RCTs and one NRCT<sup>3</sup> to suggest that interventions delivered to parents may improve parent-child communication about sexual health topics. Findings may only be partially applicable to the UK as all the studies were conducted in the USA and may not be generalisable beyond the populations studied.
- 11 (d) There is inconsistent evidence from four RCTs<sup>4</sup> on which to determine the effects of programme delivered to parents on their children's sexual behaviour.
- 11 (e) There is moderate evidence from one RCT<sup>1</sup> to suggest that delivery of HIV prevention content by mothers may be as equally effective as that of health experts. The evidence may only be partially applicable to the UK as this study was conducted in the USA and focused on ethnic populations specific to the USA.

<sup>1</sup> Dancy et al., 2006 (RCT +)

<sup>2</sup> Dancy et al., 2006 (RCT +); Dilorio et al., 2007 (RCT +); Gustafson, 1998 (NRCT +); O'Donnell et al., 2005 (RCT +)

<sup>3</sup> Dilorio et al., 2007 (RCT +); Forehand et al., 2007 (RCT +); O'Donnell et al., 2005 (RCT +); Gustafson, 1998 (NRCT +)

<sup>4</sup> Dancy et al., 2006 (RCT +); Dilorio et al., 2007 (RCT +); Forehand et al., 2007 (RCT +); O'Donnell et al., 2005 (RCT +)

**Table 6.11. Summary of programme content: programme delivered to parents**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Dancy et al., 2006	RCT (cluster) +	USA n=262 daughters, 100% African American mean 12.4 years	Community	<b>The Mother/Daughter HIV risk-reduction (MDRR):</b> Aimed to reduce sexual activity, increase HIV transmission knowledge, self-efficacy and intention to refuse sex. Mother's were actively involved with the programme and had 12 weeks training.	Cognitive behavioural skills, Fishbein and Ajzen's behavioural intentions; Collins' community-other-mothers	Health experts
Dilorio et al., 2007	RCT (cluster) +	USA n=554 (fathers and sons) primarily African American 13-14 years old	Boys and Girls Clubs	<b>REAL Men programme:</b> Programme consisted of lectures, discussions, role-plays, games, videotapes and homework as well as weekly goals. Fathers received seven two hour sessions and their sons received one (final) session.	Social cognitive theory	NR
Forehand et al., 2007	RCT (individual) +	USA n=1,115 100% African American 9-12 years old	Community	<b>Parents Matter!:</b> Sexual risk-reduction programme including group sessions focussing on increasing parents' communication about sexual topics. The programme was delivered over five, 2.5 hour sessions using enhanced communication.	Not Reported	Facilitators
Gustafson, 1998	NRCT +	USA n=58 families Majority White 12-16 yrs	Community	<b>Let's Talk: Sex is for Love:</b> Parenting workshop and in-home exercises to complete as a family. Three hour workshop session; four weekly in-home exercises.	Not Reported	Parish nurse
O'Donnell et al., 2005	RCT (individual) +	USA n=846 children n=674 parents 62% Black; 29% Hispanic; 8% other 5 <sup>th</sup> or 6 <sup>th</sup> grade	Home	<b>Saving Sex for Later:</b> A CD-based intervention to improve parental communication relating to sexual behaviour. The programme disseminated one CD every 10 weeks for six months.	Diffusion of innovation model, theory of planned behaviour	CD-ROM

**Table 6.12. Programme delivered to parents: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Dancy et al., 2006	RCT (cluster) +	MDRR n=103	MDHP n=62	PT (91%)	↑ knowledge of HIV transmission**	↑ intention to refuse sex*	↑ self-efficacy to refuse sex**
			HERR n=97	PT (91%)	<b>NS</b> knowledge of HIV transmission	<b>NS</b> intention to refuse sex	<b>NS</b> self-efficacy to refuse sex
Dilorio et al., 2007	RCT (cluster) +	REAL Men programme n=141 fathers (52%)	7 session nutrition and exercise programme n= 132 fathers (48%)	3 mo (NR)	-	<b>NS</b> intent to discuss sex-related topics (fathers) <b>NS</b> intentions about delaying sexual intercourse (youth)	↑ discussion of sex-related topics (fathers)* <b>NS</b> discussion of sex-related topics (youth)
				6 mo (NR)	-	<b>NS</b> Intent to discuss sex-related topics (fathers) <b>NS</b> intentions about delaying sexual intercourse (youth)#	<b>NS</b> discussion of sex-related topics (fathers) <b>NS</b> discussion of sex-related topics (youth)
				12 mo (80%)	-	↑ intent to discuss sex-related topics (fathers)* ↑ Intentions about delaying sexual intercourse (youth)*	↑ discussion of sex-related topics (fathers)* <b>NS</b> discussion of sex-related topics (youth)
Forehand et al., 2007	RCT (individual) +	Parents Matter! Enhanced n=378	Communication /General health n= 366	PT (NR)	-	-	↑ sexual communication (parent and child report)* ↑ responsiveness
				6 mo (NR)	-	-	↑ sexual communication (parent report)
				12 mo (int=84%; con=70%)	-	-	↑ sexual communication (parent report)
		Parents Matter! Single session n=371	Communication /General health n= 366	PT (NR)	-	-	↑ sexual communication (parent and child report)* ↑ responsiveness
				6 mo (NR)	-	-	-
				12 mo (int=74%; con=70%)	-	-	-

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Forehand et al., 2007	RCT (individual) +	Parents Matter! Enhanced n=378	Parents Matter! Single session n=371	PT (NR)	-	-	↑ sexual communication (parent report) ↑ sexual communication (child report)*
				6 mo (NR)	-	-	↑ sexual communication (parent report)
				12 mo (Enhanced =84%; Single=74%)	-	-	↑ sexual communication (parent report)
Gustafson, 1998	NRCT +	Let's Talk: Sex is for Love n= 34 families	No intervention n= 24 families	PT (int=78%; con=97%)	-	↑ 'Satisfaction with Personal Sexuality' scale* ↑ 'Clarity of Personal Sexual Values'* NS attitude toward sexuality NS sexual values of fidelity NS attitude toward the use of pressure and force in sexual activity NS intentions of sexual intercourse	↑ Quality of Communication with Teen scale* NS sexual values of fidelity NS frequency of communication NS frequency of monitoring NS family cohesion NS shared family activities NS quality of communication with mother or father NS frequency of communication, understanding personal sexual response NS skills to avoid sexual pressure
O'Donnell et al., 2005	RCT (individual) +	Saving Sex for Later n=423 children n=337 parents	No intervention n=423 children n= 337 parents	3 mo (68%)	-	↑ parental influence (parent report)***	Parents reports - ↑ communication*** NS monitoring ↑ self-efficacy** Youth reports – ↑ family rules* ↑ family support*

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; † p value not reported; † increase relative to comparator; ‡ decrease relative to comparator; NS not significant; - outcome not reported; #Limited to those not sexually active

**Table 6.13. Programme delivered to parents: effects on health and social outcomes related to sexual health**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes			
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions
Dancy et al., 2006	RCT (cluster) +	MDRR n=103	MDHP n=62	PT (91%)	↓ sexual activity*	-	-	-
			HERR n=97	PT (91%)	NS sexual activity			
Dilorio et al., 2007	RCT (cluster) +	REAL Men programme n=141 fathers (52%)	7 session nutrition and exercise programme n= 132 fathers (48%)	3 mo (NR)	NS intimate behaviours NS sexual abstinence	-	NS ever sexual intercourse without condom	-
				6 mo (NR)	NS intimate behaviours NS sexual abstinence	-	NS ever sexual intercourse without condom	-
				12 mo (80%)	NS intimate behaviours NS sexual abstinence	-	↓ ever sexual intercourse without condom	-
Forehand et al., 2007	RCT (individual) +	Parents Matter! Enhanced n=378	Communication/ general health n= 366	12 mo (int=84%; con=70%)	NS at sexual risk	-	-	-
		Parents Matter! single session n=371	Communication/ general health n= 366	12 mo (int=74%; con=70%)	NS at sexual risk	-	-	-
		Parents Matter! Enhanced n=378	Parents Matter! single session n=371	12 mo (Enhanced=84%; Single=74%)	NS at sexual risk	-	-	-
O'Donnell et al., 2005	RCT (individual)+	Saving Sex for Later n= 423 children n= 337 parents	No intervention n= 423 children n= 337 parents	3 mo (68%)	↓ behavioural risks*	-	-	-

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; † p value not reported; † increase relative to comparator; ↓ decrease relative to comparator; NS not significant; - outcome not reported

## **6.6 Programmes involving the wider community or mass media**

### **6.6.1 Overview of evidence identified**

Two studies were identified (Doniger et al., 2001; Sieverding et al., 2005) that examined interventions that involved the wider community or mass media. Both studies were conducted in the USA. Doniger et al (2001) examined a mass media intervention, Not Me, Not Now, which involved paid television and radio advertising, billboards, posters distributed in schools in addition to educational materials for parents and education programming in schools. The duration of the programme was five years. Sieverding et al (2005) examined the Youth United through Health Education (YUTHE) outreach programme. Peer educators targeted young people between the ages of 12 and 22 years to undertake sexual risk assessment and provide information on STIs and STI screening. Young people who participated in the intervention were also provided with condoms.

Neither study reported the theoretical model underpinning intervention. As the interventions examined targeted the wider community it was not clear how many young people received the intervention in either study.

### **6.6.2 Quality assessment**

Both studies were based on cross-sectional time series (Doniger et al., 2001; Sieverding et al., 2005). Sieverding and colleagues (2005) examined Chlamydia rates over a 5-year period (1998-2002) and Doniger and colleagues (2001) examined pregnancy rates for 15-17 year olds over a 3-year period (1993-1996). The study by Doniger and colleagues (2001) was rated poorly as the study was likely to be subject to bias, as the analyses did not appear to adequately account for natural variations in the data over time. The study by Sieverding and colleagues (2005) appeared to have been appropriately conducted and was rated moderate quality.

### **6.6.3 Findings**

#### **6.6.3.1 Knowledge and understanding**

None of the included studies examined intervention effects on knowledge and understanding.

#### **6.6.3.2 Attitudes and values**

None of the included studies examined intervention effects on attitudes and values.

#### **6.6.3.3 Personal and social skills**

None of the included studies examined intervention effects on personal and social skills.

#### **6.6.3.4 Health and social outcomes related to sexual health**

Doniger et al (2001) examined the effects of Not Now, Not Me, an abstinence-oriented communications programme. Based on the analysis of pregnancy rates for 15-17 year olds across five geographic areas, the authors noted a statistically significant downward trend between 1993 and 1996 in four areas, including the intervention area. Based on further analyses of the slope of a regression line the authors reported that the rate of decline was fastest in the intervention area.

Sieverding and colleagues (2005) examined the impact of a community outreach programme on STI rates over a 5-year period. For both males and females in the intervention neighbourhood, Chlamydia rates remained relatively stable over the 5-year period (1998-2002) and both males and females in the comparison neighbourhood were significantly more likely to have Chlamydia than those in the intervention neighbourhoods (females: OR 3.0; 95% CI 2.3, 3.9;  $p < 0.001$  / males: OR 2.9; 95% CI 2.0, 4.4;  $p < 0.001$ ). As there were much fewer cases of Chlamydia in the youngest adolescents, the authors further examined rates in the older youth aged 18–22. Among females and males aged 18–22, those in the comparison neighbourhood were significantly more likely to have Chlamydia than their counterparts in the intervention neighbourhood (females: OR 2.3; 95% CI 1.7, 3.2;  $p < 0.001$  / males: OR 2.3; 95% CI 1.5, 3.5;  $p < 0.001$ ).

#### 6.6.4 Summary and evidence statements

Two studies were identified (Doniger et al., 2001; Sieverding et al., 2005) that examined interventions that involved the wider community or mass media. Doniger and colleagues (2001) examined a mass media intervention, Not Me, Not Now, and Sieverding and colleagues (2005) examined the Youth United through Health Education (YUTHE) outreach programme.

Neither of the included studies examined intervention effects on knowledge, attitudes and skills. Both studies analysed population-level changes, in pregnancy (Doniger et al., 2001) and STI rates (Sieverding et al., 2005), respectively. Both studies reported positive intervention effects at a population level, however the study by Doniger and colleagues (2001) did not adequately control for natural fluctuations in the data and therefore it is not clear whether these or intervention effects were responsible for the differences seen in the intervention and control communities.

#### Evidence statement 12

- 12 (a) There is no evidence from two CTS<sup>1</sup> on which to determine the effects of interventions and programmes involving the wider community or mass media on knowledge, attitudes and skills related to sexual health.
- 12 (b) There is weak evidence from one CTS<sup>2</sup> to suggest that a programme of community outreach may have a positive impact on STI rates among young people. Findings may only be partially applicable to the UK as the study was conducted in the USA and may not be generalisable beyond the population studied.

<sup>1</sup> Doniger et al., 2001 (CTS –); Sieverding et al., 2005 (CTS +)

<sup>2</sup> Sieverding et al., 2005 (CTS +)

**Table 6.14. Summary of programme content: programme involving the wider community or mass media**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Sieverding et al., 2005	CTS +	USA n=NR 87% African American 12-22 years	Community outreach	<b>Youth United Through Health Education:</b> Outreach programme; sexual risk assessment, information on STIs and STI screening sites, role model stories and condoms	NR	Peer educators
Doniger et al., 2001	CTS -	USA n=NR Ethnicity=NR 15-17 years	Mass media	<b>Not Me, Not Now:</b> Paid television and radio advertising, billboards, posters distributed in schools, educational materials for parents and an educational series presented in schools (Postponing Sexual Involvement), sponsorship of community events, website	Social learning theory, consumer information processing theory	NA

**Table 6.15. Programme involving the wider community or mass media: effects on health and social outcomes related to sexual health**

Study	Rating	Intervention	Comparator	Follow-up	Sexual health outcomes			
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions
Doniger et al., 2001	CTS -	Not Me, Not Now n=NR	No intervention n=NR	1993-1996	-	-	-	↑ rate of decline in pregnancy rates <sup>†</sup>
Sieverding et al., 2005	CTS +	YUTHE n=1 neighbourhood	No intervention n=1 neighbourhood	1998-2002	-	-	-	↓ rate of Chlamydia infection***

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; <sup>†</sup> p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

## 6.7 Programmes targeting vulnerable young people

### 6.7.1 Overview of evidence identified

Three studies (Gleghorn et al., 1997; Rew et al., 2007; Slesnick and Kang, 2008) examined community interventions aimed at vulnerable groups. All three studies examined interventions which specifically targeted young homeless people. Gleghorn and colleagues (1997) examined an HIV prevention intervention that combined street outreach, storefront prevention services and tailored prevention materials including posters, T-shirts, condom packets and magazines. Rew and colleagues (2007) examined a brief sexual health intervention, which consisted of group sessions based around role-play and discussion. The study by Slesnick and Kang (2008) examined an integrated cognitive-behavioural and HIV prevention intervention, which combined a community reinforcement approach with HIV prevention content drawn from the Becoming a Responsible Teen programme.

All three studies were conducted in North America and were delivered in the community using outreach workers (Gleghorn et al., 1997), trained health educators (Rew et al., 2007) or therapists (Slesnick and Kang, 2008). One study (Gleghorn et al., 1997) did not report a theoretical basis. Rew and colleagues (2007) reported using theory of reasoned action and social cognitive theory and Slesnick and Kang (2008) reported using cognitive behavioural theory. The sample size was small in one study (Slesnick and Kang, 2008; n=180; n=96 intervention, n=84 control) and reasonably large in two studies (Gleghorn et al., 1997; T1=429, T2=717; Rew et al., 2007; n=572). However, no studies reported power calculations or limitations based on sample size.

All three studies examined homeless youth aged over 19 years. However, samples also included youth aged 12 years thus justifying the studies' inclusion. Follow-up times were unclear in one study (Gleghorn et al., 1997), Rew and colleagues (2007) reported follow-up assessments at immediate post-test and 3-6 weeks after the end of the programme. Slesnick and Kang (2008) reported follow-up assessments at 3 and 6 months after baseline assessment, however data were presented as changes over time.

### 6.7.2 Quality assessment

Of the three studies, one (Slesnick and Kang, 2008) was an RCT design based on individual randomisation. The two remaining studies were based on NRCT study designs. The RCT study was rated moderate quality (+ rating) and used an intent-to-treat design. However, the possibility of contamination was mentioned. One NRCT study (Rew et al., 2007) was also rated moderate quality and considered the possibility of contamination in the choice of research design. The NRCT study by Gleghorn and colleagues (1997) was rated poor quality as details of the study were not fully reported and scales used were not validated. Relevant outcomes were reported across all three studies.

### **6.7.3 Findings**

#### **6.7.3.1 Knowledge and understanding**

Only one study (Rew et al., 2007) reported outcomes relating to knowledge and understanding. The authors reported an increase in HIV and STI knowledge in both the intervention and control groups at follow-up (both  $p < 0.001$ ). However, findings showed that for the intervention group, knowledge decreased from baseline to post-test and remained stable to the 3-6 week follow-up. For the control group, knowledge remained stable from baseline to post-test and then decreased at the 3-6 week follow-up.

#### **6.7.3.2 Attitudes and values**

None of the included studies examined intervention effects on attitudes and values.

#### **6.7.3.3 Personal and social skills**

Only one study (Rew et al., 2007) reported outcomes relating to personal and social skills. Self-efficacy for breast self-examination in women and testicular self-examination in men increased from baseline to post-test then remained stable. However, this was also the case for the control group reporting self-efficacy for testicular self-exam. No programme effects were seen for condom self-efficacy or assertive communication.

#### **6.7.3.4 Health and social outcomes related to sexual health**

All three studies examined health and social outcomes related to sexual health. Gleghorn and colleagues (1997) found no significant effects of a street outreach programme on young homeless people's use of condoms with either a main or casual partner and there was no effect of the programme on HIV-related referrals. In addition, Rew and colleagues (2007) found no effects of a group-based brief sexual health intervention on safe sex behaviours or on sexual risk-taking behaviours. Slesnick and Kang (2008) found that although there was no overall effect of combined community reinforcement therapy and HIV prevention sessions, frequency of condom use increased among subpopulations in both the intervention and control groups. Younger intervention participants (14-18 years) and older control and intervention participants (18-22 years) increased their condom use frequency at 6 months post-baseline. Intervention youths aged 14-18 years were more likely than control youths to report more frequent condom use ( $p < 0.01$ ).

### **6.7.4 Summary and evidence statements**

Three studies (Gleghorn et al., 1997, Rew et al., 2007, Slesnick and Kang, 2008) were identified that examined the effectiveness of community-based programmes on vulnerable populations. One programme (AESOP) was delivered by outreach workers, another (unnamed sexual health intervention) used healthcare educators and a third (community reinforcement approach) used therapists to deliver the intervention.

Intervention effects on knowledge and skills were examined by one study (Rew et al., 2007) and none of the included examined intervention effects on attitudes and values. There were limited effects of a brief sexual health intervention (Rew et al., 2007) on knowledge relating to AIDS and other STIs, and

on communication and self-efficacy. Health and social outcomes related to sexual health were examined in all three studies, two of which reported no intervention effects (Gleghorn et al., 1997, Rew et al., 2007). Slesnick and Kang (2008) found a positive effect on the frequency of condom use among younger participants in a programme which combined a community reinforcement approach with HIV prevention content.

### **Evidence statement 13**

13 (a) There is insufficient evidence from one NRCT<sup>1</sup> to determine effects of interventions and programmes targeting vulnerable populations on sexual health-related knowledge and understanding, and personal and social skills.

13 (b) There is inconsistent evidence from two NRCT and one RCT<sup>2</sup> on which to determine effects of interventions and programmes targeting vulnerable populations on health and social outcomes relating to sexual health.

<sup>1</sup> Rew et al., 2007 (NRCT +)

<sup>2</sup> Gleghorn et al., 1997 (NRCT -); Rew et al., 2007 (NRCT +); Slesnick and Kang, 2008 (RCT +)

**Table 6.16. Summary of programme content: programmes targeting vulnerable young people**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
Gleghorn et al., 1997	NRCT -	USA T1, n=429, T2, n=717, White: T1=155, T2=169 12-23 years	Outreach with homeless/ contact at youth centre	<b>AIDS Evaluation of Street outreach Project (AESOP):</b> This programme aimed to reduce youth HIV risk behaviours in homeless populations with the use of outreach workers. The intervention was compared to sites with limited HIV services and no regular outreach with no subculture-specific interventions and no youth-oriented HIV prevention centres	NR	Outreach workers
Rew et al., 2007	NRCT +	USA n=572, majority White ~58%, also African American, Asian American, Hispanic, American Indian, Multi-ethnic, Other 16-23 years	Community	A sexual health promotion intervention with homeless youth using eight one hour taught sessions to increase sexual health knowledge and self-efficacy.	Theory of reasoned action, Social cognitive theory	Healthcare educators
Slesnick and Kang, 2008	RCT (individual) +	USA n=180, 13% native American, 1% Asian, 3% African American, 30% Hispanic, 41% White, 12% Other 14-22 years	Community	<b>Community reinforcement approach:</b> An HIV risk-reduction programme using trained therapists to provide skills building and education to homeless youth. Compared to youth only accessing drop-in centres with links to case management, support, youth and community services and HIV testing and counselling.	Cognitive behavioural theory	Therapists

**Table 6.17. Programmes targeting vulnerable young people: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Rew et al., 2007	NRCT +	Unnamed - sexual health intervention n=196	No intervention n= control only: 287, both int & cont:89	PT, 3-6 weeks (NR)	NS HIV/STI knowledge	-	NS Condom self-efficacy NS Assertive communication ↑ self-efficacy for breast self-exam in women** ↑ self-efficacy for testicular self exam in men***
*p<0.05; **p<0.01; ***p<0.001; †p value not reported; † increase relative to comparator; ‡ decrease relative to comparator; NS not significant; - outcome not reported							

**Table 6.18. Programmes targeting vulnerable young people: effects on health and social outcomes related to sexual health**

Study	Rating	Intervention	Comparator	Follow-up	Sexual health outcomes			
					Age of initiation	Frequency/ Number of partners	Contraceptive use	STIs/ Conceptions Other
Gleghorn et al., 1997	NRCT -	AESOP n= T1=246, T2=392	Sites without regular outreach n= T1=183, T2=325	NR	-	-	NS condom use at last sex with main partner NS condom use at last sex with casual partner	NS HIV referrals
Rew et al., 2007	NRCT +	Brief sexual health intervention n=196	No intervention n= control only: 287, both int & cont:89	PT, 3-6 weeks (NR)	-	NS safe sex behaviours NS sexual risk-taking behaviours	-	-
Slesnick and Kang, 2008	RCT (individual) +	Community reinforcement approach + HIV prevention n= 96	Treatment as usual n= 84	3 mo (73%), 6 mo (86%)	-	-	↑ frequency of condom use (younger participants only**)	-
*p<0.05; **p<0.01; ***p<0.001; †p value not reported; † increase relative to comparator; ‡ decrease relative to comparator; NS not significant; - outcome not reported								

## **7 Programmes targeting multiple health behaviours**

No systematic reviews or meta-analyses were identified for inclusion in the review of programmes targeting multiple health behaviours, and in addition no economic evaluation studies were identified. Five articles, which reported on evaluations of programmes and interventions that addressed both alcohol use and sexual health, were identified. Two articles reported on studies that examined interventions or programmes delivered in social, healthcare or community settings and three articles reported on studies that examined interventions or programmes delivered to families or parents.

### **7.1 Programmes delivered within social, healthcare and community settings**

#### **7.1.1 Overview of evidence identified**

Two studies (St Pierre et al., 1995; Wiggins et al., 2009) examined programmes which targeted both sexual health and alcohol use. St Pierre et al (1995) examined the effects of Stay SMART, which targeted young people enrolled in Boys and Girls Clubs, with and without the addition of a peer leadership component. Wiggins et al (2009) evaluated the effectiveness of the Young People's Youth Development (YPYD) programme in reducing teenage pregnancy, substance use and other outcomes. The programme targeted young people considered to be at risk of teenage conception, substance misuse or exclusion from school.

The numbers of participants included in the two studies (St Pierre et al., 1995; Wiggins et al., 2009) were 359 and 2,724, respectively, and both studies targeted young people between the ages of 13 and 15 years. Both studies reported long-term follow-up, of 27- and 18-months, respectively.

#### **7.1.2 Quality assessment**

The study by St Pierre and colleagues (1995) was an NRCT. Participants were allocated to the intervention and control groups within club groupings by the researchers. Overall, the study design used was rated poorly. The authors excluded participants who did not complete a set number of sessions, which limited the generalisability of the study, and resulted in large losses to follow-up. The study by Wiggins and colleagues (2009) was based on a CBA design. Allocation was not controlled by the research team and participants for a comparison group were recruited from agencies that had not received funds to run the YPYD programme. Overall, given the limitations of the study design it was well reported and appeared to have been well conducted. The study was rated moderate quality.

#### **7.1.3 Findings**

##### **7.1.3.1 Knowledge and understanding**

None of the included studies examined intervention effects on knowledge and understanding.

##### **7.1.3.2 Attitudes and values**

Both studies examined intervention effects on attitudes and values. St Pierre et al (1995) reported that Stay SMART only participants who were sexually active at baseline perceived significantly fewer social benefits from engaging in sexual activity across all three follow-ups compared to the Stay

SMART + boosters participants ( $p < 0.01$ ) and control participants ( $p < 0.01$ ). Among participants who were virgins at baseline there were no significant effects of either intervention condition. Wiggins et al (2009) found that female participants were more likely than control participants to report that they expected to be a parent by age 20 (weighted adjusted OR 1.61; 95% CI: 1.07, 2.41;  $p < 0.05$ ).

### **7.1.3.3 Personal and social skills**

None of the included studies examined intervention effects on personal and social skills.

### **7.1.3.4 Health and social outcomes related to sexual health**

Both studies examined intervention effects on health and social outcomes relating to sexual health and alcohol use. St Pierre et al (1995) reported that there was no impact on sexual behaviour at the 15-months follow-up of either intervention condition among all participants. Stay SMART participants who were sexually active at baseline reported significantly less sexual behaviour compared to the Stay SMART + booster group and the control group at 27-months (both  $p < 0.05$ ). No statistically significant effects were observed among participants who were virgins at baseline. Wiggins et al (2009) found that the YPYD programme had a negative impact on participant's sexual behaviour. At follow-up, significantly more pregnancies were reported among females in the YPDP groups than in the comparison group (weighted adjusted OR 5.48; 95% CI 2.18, 13.75;  $p < 0.01$ ) and significantly more females in the YPDP group than in the comparison group reported heterosexual sex at follow-up 2 (weighted adjusted OR 3.48; 95% CI 1.49, 8.12). There was no difference in rates of monthly drunkenness among programme and comparison participants.

## **7.1.4 Summary and evidence statements**

Two studies (St Pierre et al., 1995; Wiggins et al., 2009) examined programmes which targeted both sexual health and alcohol use. St Pierre et al (1995) examined the effects of Stay SMART, which targeted young people enrolled in Boys and Girls Clubs, with and without the addition of a peer leadership component. Wiggins et al (2009) evaluated the effectiveness of the Young People's Youth Development (YPYD) programme in reducing teenage pregnancy, substance use and other outcomes.

Neither of the included studies examined intervention effects on knowledge and understanding, or on personal and social skills. However, both studies examined intervention effects on attitudes and values. St Pierre and colleagues (1995) found a favourable reduction in sexual attitudes but only among sexually experienced participants who received the intervention without the additional booster sessions. The YPYD programme (Wiggins et al., 2009) had potentially harmful effects on attitudes, with female intervention participants more likely than control participants to report that they expected to be a parent by age 20.

Both studies examined intervention effects on health and social outcomes related to sexual health, and Wiggins and colleagues (2009) examined effects on alcohol use. The effects of the Stay SMART intervention were inconsistent across the two intervention conditions examined. The YPYD programme (Wiggins et al., 2009) had a negative impact on participant's sexual behaviour, particularly among intervention females who were significantly more likely than controls to engage in

heterosexual sexual intercourse and more likely to become pregnant. There was no effect of the programme on male participants or on participant's alcohol use.

**Evidence statement 14**

- 14 (a) There is weak and inconsistent evidence from one NRCT and one CBA study<sup>1</sup> on which to determine the effects of programmes delivered in social and community settings on attitudes and values related to sexual health and alcohol use.
- 14 (b) There is weak and inconsistent evidence from one NRCT<sup>2</sup> on which to determine the effects of programmes delivered in social and community settings that seek to address both sexual health and alcohol use.
- 14 (c) There is weak evidence from one CBA study<sup>3</sup> to suggest that youth development programmes, which target young females at behavioural risk, may have a negative effect on sexual behaviours. This evidence is applicable as the study was conducted in the UK.

<sup>1</sup> St Pierre et al., 1995 (NRCT -); Wiggins et al., 2009 (CBA +)

<sup>2</sup> St Pierre et al., 1995 (NRCT -)

<sup>3</sup> Wiggins et al., 2009 (CBA +)

**Table 7.1. Summary of programme content: programmes delivered in social, healthcare or community settings**

Author	Study design and rating	Baseline population	Setting	Programme components	Theoretical base	Provider(s)
St Pierre et al., 1995	NRCT -	USA n=359 45% White, 14% Hispanic, 42% Black 13-14 years	Boys & Girls Clubs	<b>Stay SMART:</b> 12 sessions + 8 booster sessions; including components of LST. SMART leaders peer leader programme designed to build upon skills and knowledge.	NR	NR
Wiggins, 2009	CBA +	UK n=2,724 Int/Con: Black or minority ethnic 23%/20% 13-15 years	Youth agencies	<b>Young People's Youth Development programme:</b> 6-10 hours, one week a year; Education, training/employment opportunities, life skills, mentoring, volunteering, health education, arts, sports and advice on accessing services.	NR	Youth agency staff

**Table 7.2. Programmes delivered in social, healthcare or community settings: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
St Pierre et al., 1995	NRCT -	Stay SMART only n=119	No intervention n=123	3, 15, 27 mo (76%, 55%, 42%)	-	↓ perceived social benefits from engaging in sexual activity (Stay SMART only vs. control; non-virgins only**)	-
		Stay SMART + boosters n=117					
Wiggins, 2009	CBA +	YPYDP n=1,637	No intervention n=1,087	9, 18 mo (int=43%; con=31%)	-	↑ expected to be parent by age 20 (females only*)	

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; † p value not reported; † increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 7.3. Programmes delivered in social, healthcare or community settings: effects on health and social outcomes related to sexual health and alcohol use**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes	
					Sexual health	Alcohol use
St Pierre et al., 1995	NRCT -	Stay SMART only n=119 Stay SMART + boosters n=117	No intervention n=123	3, 15 mo (NR)	<b>NS</b> sexual intercourse	-
				27 mo (76%, 55% 42%)	↓ sexual intercourse (Stay SMART only vs. control; non-virgins only*)	-
		Stay SMART + boosters n=117	Stay SMART only n=119	3, 15 mo (NR)	<b>NS</b> sexual intercourse	-
				27 mo (NR)	↑ sexual intercourse (non-virgins only*)	-
Wiggins, 2009	CBA +	YPYDP n=1,637	No intervention n=1,087	9, 18 mo (int=43%; con=31%)	↑ pregnancy (females only**) ↑ heterosexual sex (females only <sup>†</sup> )	<b>NS</b> drunkenness

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; <sup>†</sup> p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

## 7.2 Programmes delivered to families or parents

### 7.2.1 Overview of evidence identified

Five studies (Haggerty et al., 2007; Prado et al., 2007; Stanton et al., 2000; 2004; Wu et al., 2003) examined interventions and programmes delivered to families or parents, which targeted both alcohol use and sexual health. Haggerty and colleagues (2007) examined the Parents Who Care programme, which was designed to prevent substance use and other problem behaviours. Stanton and colleagues (2000; 2004; Wu et al., 2003) examined a parental monitoring intervention, Informed Parents and Children Together (ImPACT) that was designed to reduce substance use, sexual risk behaviours and truancy. Prado and colleagues (2007) examined Familias Unidas + Parent Preadolescent Training for HIV Prevention (PATH), a programme that specifically targeted Hispanic parents and aimed to prevent adolescent substance use and unsafe sexual behaviours.

All five studies were conducted in North America and were delivered in a community setting by trained facilitators, project staff or family consultants. One study, of the Familias Unidas + PATH programme (Prado et al., 2007), reported using an ecodevelopmental theory to underpin the programme, whereas Stanton and colleagues (2000; 2004; Wu et al., 2003) reported using a social cognitive model in conjunction with protection motivation theory, and the basis for intervention in the study by Haggerty and colleagues (2007) was the social development model.

Sample sizes ranged from 237 parent-child dyads (Stanton et al., 2000) to 817 families (Stanton et al., 2004; Wu et al., 2003). Prado and colleagues (2007) reported acceptable power calculations of 80% and, although power was not specified in the study write up, enough information was provided in the study by Stanton and colleagues (2004) to determine that the sample size was appropriate. Haggerty and colleagues (2007) did not specify whether their study was sufficiently powered.

The mean age of youth participants recruited to participate in the included studies was a mean 13-14 years. Evaluations of all three programmes (Haggerty et al., 2007; Prado et al., 2007; Stanton et al., 2004) were based on short and medium-term follow-up (6 and 12 months) and two studies (Haggerty et al., 2007; Stanton et al., 2004; Wu et al., 2003) also reported data from long-term follow-up assessments up to 24 months.

### 7.2.2 Quality assessment

All five studies were based on an RCT design. Two articles of the FOK + ImPACT evaluation (Stanton et al., 2004; Wu et al., 2003) utilised cluster randomisation and three were based on individual randomisation (Haggerty et al., 2007; Prado et al., 2007; Stanton et al., 2000). The unit of analysis matched the unit of allocation in the cluster RCT and intraclass correlations were used to adjust the findings (Stanton et al., 2004; Wu et al., 2003). Of the RCTs based on individual randomisation, two (Prado et al., 2007; Haggerty et al., 2007) reported that their analyses were based on an intention to treat design. The study by Stanton and colleagues (2004; Wu et al., 2003) was rated good quality (++) as it presented a good research design and the methodology and results were well reported. The remaining three studies (Prado et al., 2007; Haggerty et al., 2007; Stanton et al., 2000) were

rated moderate quality (+ rating) and were also clearly presented. However, validity of scales were not reported in the study by Prado and colleagues (2007), two studies (Prado et al., 2007; Haggerty et al., 2007) lacked information to judge whether allocation to intervention and control groups had been adequately concealed, and the study by Stanton and colleagues (2000) did not carry out their analyses on an intent to treat basis and power calculations were lacking. Outcomes were deemed relevant in all five studies.

### **7.2.3 Findings**

#### **7.2.3.1 Knowledge and understanding**

None of the included examined intervention effects on knowledge and understanding.

#### **7.2.3.2 Attitudes and values**

Four studies (Haggerty et al., 2007; Stanton et al., 2000; Wu et al., 2003; Stanton et al., 2004) examined intervention effects on attitudes and values towards risk behaviour. Haggerty and colleagues (2007) evaluation of Parents Who Care found no significant programme effects at post-test and medium-term follow-up on attitudes towards and perceived harm of substance abuse. However, by long-term follow-up significantly less favourable attitudes to substance abuse were reported ( $p < 0.05$ ), but differences between groups' perceived harms of substance abuse remained non-significant. There were limited effects of ImPACT (Stanton et al., 2000) on parent and adolescent agreement regarding their involvement in risky behaviours and Wu and colleagues (2003) found no difference in risk taking intentions between FOK + ImPACT and FOK only participants at 6- and 12-month follow-up. Based on longer term follow-up of FOK + ImPACT participants (Stanton et al., 2004), compared to the FOK only group, there were positive programme effects on self-efficacy for stopping having sex until older ( $p < 0.01$ ), getting condoms ( $p < 0.05$ ), refusing sex without a condom ( $p < 0.01$ ), refusing sex if asked by a partner ( $p < 0.05$ ), not feeling the need to have sex with a long-time partner ( $p < 0.05$ ), not needing to have sex even if all friends are having sex ( $p < 0.05$ ), and overall response efficacy ( $p < 0.05$ ).

#### **7.2.3.3 Personal and social skills**

Three studies (Prado et al., 2007; Stanton et al., 2000; 2004) reported outcomes relating to personal and social skills. Growth curve analysis from the Familias Unidas + PATH programme (Prado et al., 2007) showed that compared to the ESOL (English for Speakers of Other Languages) + PATH the intervention group showed increased family functioning ( $p < 0.05$ ), positive parenting ( $p < 0.05$ ), and parent-adolescent communication ( $p < 0.05$ ). In comparison, relative to a second control group ESOL + HEART (HeartPower! For Hispanics), the intervention group compared showed greater increases in family functioning ( $p < 0.001$ ) and positive parenting ( $p < 0.05$ ). However, there was no difference in parent-adolescent communication between these groups. Two studies (Stanton et al., 2000; Wu et al., 2003) examined intervention effects on adolescent and parent perceptions of parental monitoring and communication. There were no effects of participation in ImPACT on adolescent and parent perceptions of parental monitoring and communication, and there were mixed effects of FOK + ImPACT on adolescent's perceptions of parental communication and monitoring. At 6-month follow-up,

FOK + ImPACT participants reported significantly higher perceptions of parental monitoring, but there were no differences in perceptions of monitoring or open communication at the 12-month follow-up. Stanton and colleagues (2004) found a positive programme effect for communication with the family about HIV/AIDS, but only in the FOK + ImPACT + boosters intervention group in comparison to the FOK only group. No effects of FOK + ImPACT were seen for condom-related skills, which included asking for condoms in a clinic or store, putting condoms on correctly, feeling able to convince a sexual partner to use a condom, asking partner about past relationships, or wanting to wait until they were older to have sex again.

#### **7.2.3.4 Health and social outcomes related to sexual health**

Four studies (Haggerty et al., 2007; Prado et al., 2007; Wu et al., 2003; Stanton et al., 2004) presented findings related to health outcomes for both alcohol and sexual behaviours. No programme effects were seen for Familias Unidas + PATH (Prado et al., 2007) for past 90-day alcohol use, or unprotected sexual behaviours when compared to either control group (ESOL + PATH; HEART + PATH). Compared to the ESOL + PATH control group, the intervention group showed decreased rates of STIs and unsafe sex at last intercourse ( $p < 0.05$ ). However, compared to the ESOL + HEART control group, the intervention group showed better outcomes only for decreased incidence of STIs ( $p < 0.05$ ). Haggerty and colleagues (2007) reported no significant effects of either version of Parents Who Care on substance use initiation at long-term follow-up and a reduction in sexual initiation was only seen among African American participants who received the group administered version of the programme. There were also limited effects of ImPACT + FOK (Wu et al., 2003; Stanton et al., 2004). At the 6-month follow-up, compared to FOK only participants. FOK + ImPACT participants were less likely to report having had sexual intercourse ( $p < 0.05$ ), unprotected intercourse ( $p < 0.01$ ) and drinking alcohol ( $p < 0.05$ ). However, at 12-month follow-up, the only significant difference that remained between FOK + ImPACT and FOK only participants was on the measure of alcohol use ( $p < 0.01$ ). At the 24-month follow-up (Stanton et al., 2004) there were no significant differences between FOK + ImPACT and FOK only participants on any of the sexual health or alcohol use measures, but participants who received FOK + ImPACT + boosters were less likely to report being pregnant or getting a girl pregnant ( $p < 0.05$ ) compared to FOK only participants. Participants who received FOK + ImPACT + boosters also showed a positive effect only in the proportion of people asking a recent partner if they always used condoms ( $p < 0.01$ ).

#### **7.2.4 Summary and evidence statements**

Five studies (Haggerty et al., 2007; Prado et al., 2007; Stanton et al., 2000; 2004; Wu et al., 2003) examined interventions and programmes delivered to families or parents, which targeted both alcohol use and sexual health. All five studies were conducted in the USA and were delivered by either project staff or trained facilitators.

None of the included studies examined intervention effects on knowledge and understanding. Across four studies (Haggerty et al., 2007; Stanton et al., 2000; Wu et al., 2003; Stanton et al., 2004) that examined intervention effects on attitudes and values towards risky behaviours there were indications

of mixed intervention effects. Haggerty and colleagues (2007) found positive long-term effects of the Parents Who Care programme on attitudes towards substance use and there were also long-term positive programme effects of FOK + ImpACT (Stanton et al., 2004) on attitudes and values related to a range of risky behaviours. Three studies (Prado et al., 2007; Stanton et al., 2000; 2004) examined intervention effects on personal and social skills, finding mixed programme effects on parent/family-child communication. Prado and colleagues (2007) found positive intervention effects on communication, family functioning and positive parenting, and Stanton and colleagues (2004) found a positive effect of the FOK + ImpACT + boosters condition on parent-child communication about HIV/AIDS.

Four studies (Haggerty et al., 2007; Prado et al., 2007; Wu et al., 2003; Stanton et al., 2004) examined intervention effects on health outcomes related to alcohol use and sexual health. Short-term to medium-term reductions in alcohol drinking were found for participants who received FOK + ImpACT, but this reduction was not sustained and no other significant programme effects were found for health outcomes related to alcohol use. One study (Prado et al., 2007) reported a decrease in incidence rates for STIs and unsafe sex at last sexual intercourse in the intervention group compared to controls (ESOL + PATH). Although, short-term benefits of FOK + ImpACT were also reported, these differences were not sustained and over the longer term there were no additional positive effects on sexual behaviour of the ImpACT programme among young people who had received a risk reduction programme (FOK; Stanton et al., 2004).

#### Evidence statement 15

- 15 (a) There is mixed evidence from four RCTs<sup>1</sup> regarding the effects of intervention and programmes delivered to families and parents on attitudes and values related to risky behaviours.
- 15 (b) There is moderate evidence from two RCTs<sup>2</sup> to suggest that interventions and programme delivered to families and parents, and which target alcohol use and sexual health, may improve parent-child communication and family functioning. This evidence may only be partially applicable to the UK as these studies were conducted in the USA and focused on ethnic populations specific to the USA.
- 15 (c) There is moderate evidence from two RCTs<sup>2</sup> to suggest that interventions and programme delivered to parents and which target alcohol use and sexual health, may not provide long-term additional benefits in terms of health and social outcomes related to sexual health and alcohol use beyond those conferred through interventions and programmes which directly target young people. This evidence may only be partially applicable to the UK as these studies were conducted in the USA and focused on ethnic populations specific to the USA.

<sup>1</sup> Haggerty et al., 2007 (RCT +); Stanton et al., 2000 (RCT +); Wu et al., 2003 (RCT +); Stanton et al., 2004 (RCT ++)

<sup>2</sup> Prado et al., 2007 (RCT +); Stanton et al., 2004 (RCT +)

**Table 7.4. Summary of programme components: programmes delivered to families and parents**

Author	Study design and rating	Baseline population	Setting	Programme components	Theory	Provider
Haggerty et al., 2007	RCT (individual) +	USA n=331 families; 51% European American; 49% African American mean 13.8 years	Family	<b>Parents Who Care:</b> Participants received either a self-administered or parent and adolescent administered substance abuse and problem behaviours prevention intervention	Social development theory	Family consultants
Prado et al., 2007	RCT (individual) +	USA n=266 youth n=266 parents 100% Hispanic mean 13.4 years	Schools	<b>Familias Unidas + PATH:</b> HIV and sexual risk-reduction programme. Included two parent centred modules which also included adolescent participation in family visits and discussion circles with facilitators. The programme was conducted over 49 hours, in a 36 month period.	Eco-developmental theory	Trained facilitators
Stanton et al., 2000	RCT (individual) +	USA n=237 dyads 100% African American median 13.6 years	Family	<b>Informed Parents and Children Together (ImpACT):</b> Parents and children viewed a 22-minute educational video about AIDS, condoms and risky behaviours.	NR	Video
Wu et al., 2003; Stanton et al., 2004	RCT (cluster) ++	USA n=817 adolescents 100% African American 13-16 years	Community	<b>Focus on Kids (FOK) + ImpACT:</b> Risk reduction programme for alcohol, smoking, drugs and sexual behaviour. Included parent and school components delivered over eight 1.5 hour sessions and conducted four 90 minute booster sessions, role play and 20 minute video sessions.	Social cognitive model; Protection motivation theory	Other

**Table 7.5. Programmes delivered to families and parents: effects on knowledge, attitudes and skills**

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Haggerty et al., 2007	RCT (individual) +	Parents Who Care n=225 (SA n=107; PA n=118)	No intervention n=106	PT n=313 (95%)	-	NS attitudes towards substance abuse; perceived harm of substance abuse	-
				12 months n=306 (92%)	-	NS attitudes towards substance abuse; perceived harm of substance abuse	-
		PWC: SA n=107	No intervention n=106	24 months n=304 (92%)	-	↓ favourable attitudes towards substance abuse* NS perceived harm of substance abuse	-
		PWC: PA n=118	No intervention n=106	24 months n=304 (92%)	-	↓ favourable attitudes towards substance abuse* NS perceived harm of substance abuse	-
Prado et al., 2007	RCT (individual) +	Familias Unidas + PATH n=91	ESOL + PATH n=84	36 mo (80%)	-	-	↑ family functioning* ↑ positive parenting* ↑ parent-adolescent communication*
			ESOL + HEART n=91	36 mo (80%)	-	-	↑ family functioning*** ↑ positive parenting* NS parent-adolescent communication
Stanton et al., 2000	RCT (individual) +	ImpACT n=NR	Goal for IT! n=NR	2 months n=209 dyads (88%)	-	NS parent and youth agreement regarding having a boyfriend/girlfriend/drank alcohol/had sex	NS youth and parental reports of communication and monitoring
				6 months n=204 dyads (86%)	-	↑ parent and youth agreement regarding having a boyfriend/girlfriend* NS parent and youth agreement regarding having drank alcohol/had sex	↑ youth performing condom skills correctly*** ↑ parents performing condom skills correctly** NS youth and parental reports of communication and monitoring

Study	Rating	Intervention	Comparator	Follow-up	Outcomes		
					Knowledge and understanding	Attitudes and values	Personal and social skills
Wu et al., 2003	RCT (cluster) +	FOK + ImPACT (with or without boosters) n=496	FOK only n=321	6 mo n=608 (74%)	-	-	<b>NS</b> risk taking intention ↑ perceptions of parental monitoring** <b>NS</b> perceptions of parental communication
				12 mo n=580 (71%)	-	-	<b>NS</b> risk taking intention <b>NS</b> perceptions of parental monitoring <b>NS</b> perceptions of open communication ↑ perceptions of problem communication
Stanton et al., 2004	RCT (cluster) +	FOK + ImPACT n=258	FOK only n=321	24 mo (60%)	-	-	<b>NS</b> talked with family member/other adult about AIDS/HIV <b>NS</b> asked recent sexual partner if condom always used
		FOK + ImPACT + boosters n=238	FOK only n=321	24 mo (60%)	-	-	↑ talked with family member/other adult about AIDS/HIV* ↑ asked recent sexual partner if condom always used**
Stanton et al., 2004	RCT (cluster) +	FOK + ImPACT + boosters n=238	FOK + ImPACT n=258	24 mo (60%)	-	-	↑ talked with family member/other adult about AIDS/HIV* <b>NS</b> asked recent sexual partner if condom always used
		Both intervention groups n=496	FOK only n=321	24 mo (60%)	-	↑ overall self-efficacy** ↑ overall response efficacy* <b>NS</b> overall response cost	<b>NS</b> talked with family member/other adult about AIDS/HIV ↑ asked recent sexual partner if condom always used*

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; † p value not reported; ↑ increase relative to comparator; ↓ decrease relative to comparator; **NS** not significant; - outcome not reported

**Table 7.6. Programmes delivered to families and parents: effects on health and social outcomes related to sexual health and alcohol use**

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes	
					Sexual health	Alcohol use
Haggerty et al., 2007	RCT (individual) +	Parents Who Care: SA n=107	No intervention n=106	24 mo n=304 (92%)	<b>NS</b> sexual initiation	<b>NS</b> initiation of alcohol use
		Parents Who Care: PA n=118	No intervention n=106	24 mo n=304 (92%)	↓ sexual initiation (African American youth only*)	<b>NS</b> initiation of alcohol use
Prado et al., 2007	RCT (individual) +	Familias Unidas + PATH n=91	ESOL + PATH n=84	36 mo (80%)	<b>NS</b> unprotected sexual behaviour ↓ rates of incidence of STIs* ↓ unsafe sex at last sexual intercourse*	<b>NS</b> past 90-day alcohol use
			ESOL + HEART n=91	36 mo (80%)	<b>NS</b> unprotected sexual behaviour ↓ rates of incidence of STIs* <b>NS</b> unsafe sex at last sexual intercourse	<b>NS</b> past 90-day alcohol use
Wu et al., 2003	RCT (cluster) +	Focus on Kids plus ImPACT n=496	Received Focus on Kids intervention only n=321	6 mo n=608 (74%)	↓ sexual intercourse* ↓ unprotected sex** <b>NS</b> sexual risk behaviour	↓ drank alcohol*
				12 mo n=580 (71%)	<b>NS</b> sexual intercourse <b>NS</b> unprotected sex <b>NS</b> sexual risk behaviour	↓ drank alcohol**
Stanton et al., 2004	RCT (cluster) +	FOK + ImPACT n=258	FOK only n=321	24 mo (60%)	<b>NS</b> sexual intercourse ↓ anal sex* ↓ been, or gotten a girl, pregnant* <b>NS</b> used birth control at last intercourse <b>NS</b> used condom at last intercourse	<b>NS</b> drank alcohol
		FOK + ImPACT + boosters n=238	FOK only n=321	24 mo (60%)	<b>NS</b> sexual intercourse <b>NS</b> anal sex <b>NS</b> been, or gotten a girl, pregnant <b>NS</b> used birth control at last intercourse <b>NS</b> used condom at last intercourse	<b>NS</b> drank alcohol

Study	Rating	Intervention	Comparator	Follow-up	Health and social outcomes	
					Sexual health	Alcohol use
Stanton et al., 2004	RCT (cluster) +	FOK + ImPACT + boosters n=238	FOK + ImPACT n=258	24 mo (60%)	<b>NS</b> sexual intercourse <b>NS</b> anal sex † been, or gotten a girl, pregnant* <b>NS</b> used birth control at last intercourse <b>NS</b> used condom at last intercourse	<b>NS</b> drank alcohol
		Both intervention groups n=496	FOK only n=321	24 mo (60%)	<b>NS</b> sexual intercourse <b>NS</b> anal sex <b>NS</b> been, or gotten a girl, pregnant <b>NS</b> used birth control at last intercourse <b>NS</b> used condom at last intercourse	<b>NS</b> drank alcohol
*p<0.05; **p<0.01; ***p<0.001; † p value not reported; † increase relative to comparator; ‡ decrease relative to comparator; <b>NS</b> not significant; - outcome not reported						

## 8 Discussion

### 8.1 Programmes targeting alcohol use

A total of 31 articles met the criteria for inclusion in the review of community-based programmes targeting alcohol use by young people. Four articles were systematic reviews and/or meta-analyses, three articles reported on studies that examined intervention or programmes delivered within social, healthcare and community settings, 20 articles reported on studies that examined programmes or interventions delivered to families or parents, and three studies examined interventions or programmes that involved the wider community or mass media. One economic evaluation study was also identified that examined the cost-effectiveness and cost-benefits of the Iowa Strengthening Families Programme (ISFP) and Preparing for the Drug Free Years (PDFY).

#### 8.1.1 Systematic reviews and meta-analyses

Three systematic reviews and meta-analyses examined community-based interventions and programmes that targeted alcohol use among young people. One review (Foxcroft et al., 2002; 2003) examined interventions and programmes aimed at the primary prevention of alcohol use across a range of populations and settings. Two further reviews (Petrie et al., 2007; Smit et al., 2008) examined interventions and programmes delivered to parents and families, respectively. Foxcroft et al (2002; 2003) found that although there was no consistent evidence to determine which programmes were effective over the short to medium-term, one family-based programme, the ISFP, was effective over the longer term. The reviews by Petrie and colleagues (2007) and Smit and colleagues (2008) also highlighted the long-term effectiveness of the ISFP.

#### 8.1.2 Programmes delivered in social, healthcare and community settings

Three studies were identified that examined interventions and programmes targeting alcohol use, which were delivered in social, healthcare and community settings. All three studies (Elder et al., 2002; Schinke et al., 2005; Tebes et al., 2007) were conducted within youth and after school agencies and were based in the USA.

None of the studies examined intervention effects on knowledge and understanding. Short-term increases in perception of harm were reported in two studies (Schinke et al., 2005; Tebes et al., 2007), but this effect was not sustained over the longer term. One study (Tebes et al., 2007) also found no impact of an after-school, youth development programme on participants' drug beliefs and there was no impact of a culturally tailored programme (Elder et al., 2002) on participants' susceptibility to alcohol. One study (Schinke et al., 2005) examined intervention effects on personal and social skills, finding a short-term intervention impact of an interactive CD-ROM intervention on assertion skills. Two studies (Elder et al., 2002; Schinke et al., 2005), conducted within youth agencies, found no intervention effects on health and social outcomes related to alcohol use. However, substance use remained low among both intervention and control participants throughout the study. One study (Tebes et al., 2007), which targeted older children (mean age 15 years) in after school programmes reported a positive short- to medium-term effect on alcohol use.

### 8.1.3 Programmes delivered to parents and families

A total of 20 studies were identified that examined programmes and interventions delivered to parents and families, which targeted adolescent alcohol or substance use. Evaluations of nine programmes delivered to families were reported on across fifteen studies (Bauman et al., 2000; Brody et al., 2004; 2006; Gerrard et al., 2006; Johnson et al., 1996; Jones et al., 2005; Loveland-Cherry et al., 1999; Mason et al., 2009; Murry et al., 2007; Schinke et al., 2004; 2009; Spoth et al., 1999; 2001; 2004; Stevens et al., 2002) and five studies (Beatty et al., 2008; Carlson et al., 2000; Cohen and Rice, 1995; Koutakis et al., 2008; Toomey et al., 1996) examined parent-targeted interventions.

Effects on knowledge and understanding were only examined in one study of a family-based programme and none of the parent-targeted interventions examined this outcome. Short-term intervention effects on attitudes and values related to alcohol use were found for two family-based programmes (Brody et al., 2004; 2009; Schinke et al., 2009) but for parent-targeted interventions there was no clear effect on parental attitudes to adolescent drinking (Cohen and Rice, 1995; Koutakis et al., 2008; Toomey et al., 1996). Both family-based and parent-targeted interventions appeared to produce short-term improvements in parent-child communication. Two CD-ROM based interventions (Schinke et al., 2004; 2009) showed positive programme effects on family communication skills and involvement skills and the culturally tailored SAAF (Brody et al., 2004) had a short-term positive effect on parental communication. Short-term intervention effects on parent-child communication were found for three studies (Beatty et al., 2008; Carlson et al., 2000; Toomey et al., 1996) of parent-targeted interventions; two studies (Beatty et al., 2008; Carlson et al., 2000) reported more frequent or recent parent-child communication about alcohol and one study (Toomey et al., 1996) showed positive long-term effects on parent-child communication regarding family rules about alcohol and alcohol related situations. Eleven studies examined intervention effects of family-based programmes on health and social outcomes related to alcohol use across eight programmes. Three programmes (Bauman et al., 2000; Jones et al., 2005; Loveland-Cherry, 1999) demonstrated non-significant effects on alcohol use, but across four programmes (Schinke et al., 2004; 2009; Spoth et al., 2001; Mason et al., 2009) short- and long-term positive effects on alcohol use were reported. In addition, six studies (Brody et al., 2004; 2006; Loveland-Cherry et al., 1999; Spoth et al., 1999; 2001; 2004) of four family-based programmes reported positive intervention effects on initiation of alcohol use in the medium- to long-term. The ISFP also had long-term positive effects on drunkenness and drinking without parental permission (Spoth et al., 2004), and long-term follow-up of the PDFY (Mason et al., 2009) revealed a positive effect of this programme on women's alcohol abuse in early adulthood. Two studies (Koutakis et al., 2008, Toomey et al., 1996) examined the effects of parent-targeted interventions. One study (Toomey et al., 1996) found no intervention effects but a second study (Koutakis et al., 2008) reported positive intervention effects on youth drinking, and past month drunkenness.

### 8.1.4 Programmes involving the wider community or mass media

Three studies (Cheadle et al., 1995; Flynn et al., 2006; Kypri et al., 2005) were identified that examined programmes involving the wider community or mass media. Two studies (Flynn et al., 2006;

Kypri et al., 2005) examined mass media intervention programmes delivered in communities in the USA and New Zealand, respectively, and one study (Cheadle et al., 1995) examined a 5-year community-based health promotion programme for adolescents on an American Indian Reservation. None of the included studies examined intervention effects on knowledge and understanding, or on personal and social skills. Only one study (Flynn et al., 2006) examined impacts on attitudes and values towards alcohol use, findings no effects of a long-term mass media programme on mediators of alcohol use. In addition, there were no effects of either mass media programme (Flynn et al., 2006; Kypri et al., 2005) or a community-wide campaign targeting American Indian adolescents on alcohol use.

### **8.1.5 Review of published economic evaluations**

One study (Spath et al., 2002) was identified that met the criteria for inclusion in the review of published economic evaluations. The study evaluated the cost-effectiveness and net benefits of two brief, family-focused interventions, the ISFP and PDFY, compared to a minimal intervention approach. Overall the net benefit was \$5,923 per family for the ISFP and \$2,697 per family for PDFY. The benefit-cost ratios were 9.60 and 5.85, indicating that for every \$1 spent on the ISFP and PDFY, \$9.60 and \$5.85, respectively, were saved in medical costs. The generalisability of the study to a UK context was unclear as the data used in the evaluation is based on studies conducted in the USA. In addition, projected alcohol use disorder rates were calculated based on US population data.

## **8.2 Programmes targeting sexual health**

A total of 49 articles met the criteria for inclusion in the review of community-based programmes targeting young people's sexual health. Nine articles were systematic reviews and/or meta-analyses, 20 articles reported on studies that examined intervention or programmes delivered within social, healthcare and community settings, 15 articles reported on studies that examined programmes or interventions delivered to families or parents, two articles reported on studies that examined interventions or programmes that involved the wider community or mass media, and three articles reported on studies which examined interventions for vulnerable young people.

### **8.2.1 Systematic reviews and meta-analyses**

Nine systematic reviews and meta-analyses were identified that examined the effectiveness of interventions and programmes across a range of settings and populations that targeted young people's sexual health behaviours. One review (Arnold and Rotheram-Borus, 2007) focused on interventions and programmes that targeted sexual risk taking among young homeless people. Findings from six reviews (Franklin et al., 1997; Pedlow and Carey, 2003; Robin et al., 2004; Sales et al., 2006; Underhill et al., 2007; 2008) indicated that community-based programmes can affect sexual risk behaviours of young people. In particular, HIV prevention and sexual risk reduction programmes were effective in increasing condom use and reducing pregnancy (Franklin et al., 1997; Robin et al., 2004; Sales et al., 2006). However, they may have a limited impact on adolescent sexual activity. According to Sales and colleagues (2006) successful community-based interventions were

theoretically based, tailored to the target population, implemented by trained facilitators, and the content was diverse and delivered using a wide variety of methods.

### **8.2.2 Programmes delivered in social, healthcare and community settings**

A total of 20 studies were identified that examined interventions or programmes delivered within social, healthcare or community settings. Nine studies (Di Noia and Schinke, 2007; Jemmott et al., 1992; Jemmott et al., 1998; Kipke et al., 1993; Postrado and Nicholson, 1992; Sikkema et al., 2005; Stanton et al., 1996; 1997; Villarruel et al., 2006) examined group education sessions or skills-based training interventions delivered in community settings. Three studies (Ferguson, 2000; Pearlman et al., 2002; Smith et al., 2000) examined peer-led interventions, including a peer counselling programme (Ferguson, 2000) and peer leader leadership programmes (Pearlman et al., 2002; Smith et al., 2000), respectively. Philliber and colleagues (2002) examined the CAS-Carrera programme that focused on youth development for disadvantaged young people enrolled in after school programmes and Elliott et al (1996) examined a theatre production designed to inform young people about HIV. Six studies (Boekeloo et al., 1999; Danielson et al., 1990; DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) were conducted in healthcare settings including family planning clinics and primary care practices. Four studies (DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005) examined group-based education and/or skills-based interventions that specifically targeted sexually active young women. Two studies (Boekeloo et al., 1999; Danielson et al., 1990) examined interventions based around a health practitioner-led sexual health consultation.

Across four studies (Di Noia and Schinke, 2007; Jemmott et al., 1992; 1998; Kipke et al., 1993), that examined group education sessions or skills-based training interventions in community settings there were positive intervention effects on knowledge and understanding over the short- to medium-term. In addition, the three-year, CAS-Carrera programme (Philliber et al., 2002) had a positive impact on knowledge. There was no effect of a peer counselling intervention (Ferguson, 2000) on knowledge, but two peer leadership interventions (Pearlman et al., 2002; Smith et al., 2000) had positive effects on levels of knowledge among the peer leaders themselves. Four studies (DiClemente et al., 2004; Morrison-Beedy et al., 2005; Jemmott et al., 2005; Downs et al., 2004) of interventions that specifically targeted sexually active young females in healthcare setting, reported consistent short- to medium-term improvements in sexual health-related knowledge among intervention participants. In addition, two studies (Boekeloo et al., 1999; Danielson et al., 1990) of health practitioner-led sexual health consultations reported significant short-term increases in knowledge among intervention participants relative to controls. Short-term decreases in intentions to engage in risky sexual intercourse were reported in the study of the community-based, BPBR programme which targeted Black male adolescents (Jemmott et al., 1992) and an abstinence-based version of the programme resulted in short-term reductions in intentions to engage in any sexual intercourse. Across three studies group that examined group education sessions and skills-based training interventions in community settings (Di Noia and Schinke, 2007; Kipke et al., 1993; Stanton et al., 1996) there were short-term increases in intervention participants' perception of their vulnerability to HIV infection.

However, this effect was not sustained in the medium-term (Stanton et al., 1996). Two studies (Elliott et al., 1996; Smith et al., 2000) found no effects of a theatre production intervention or peer leadership intervention, respectively, on HIV attitudes at follow-up. There were indications of positive intervention effects of group education sessions and skills-based training interventions (Di Noia and Schinke, 2007; Jemmott et al., 1998; Smith et al., 2000; Stanton et al., 1996) in community settings on attitudes and values related to condom use. However, these effects did not appear to be consistent and were not maintained over the medium-term (Stanton et al., 1996). There were fairly consistent positive intervention effects on condom use attitudes across three studies (DiClemente et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al., 2005), which examined group-based education and skills-based interventions specifically targeting sexually active young women in healthcare settings, and one study (Boekeloo et al., 1996) that examined a primary care-based sexual risk assessment and education intervention. Two studies (Di Noia and Schinke, 2007; Jemmott et al., 1998) found short-term positive intervention effects of a CD-ROM mediated intervention and an abstinence-based version of the BPBR curriculum, respectively, on attitudes towards abstinence. A CD-ROM intervention (Di Noia and Schinke, 2007) and education and skills training programme (Kipke et al., 1993) had positive effects on behavioural skills but results from five studies (Di Noia and Schinke, 2007; Smith et al., 2000; Boekeloo et al., 1999; DiClemente et al., 2004; Morrison-Beedy et al., 2005) presented mixed findings in relation to effects on communication.

Across five studies (Jemmott et al., 1992; 1998; Postrado and Nicholson, 1992; Sikkema et al., 2005; Villarruel et al., 2006) that examined group-based sessions and/or skills training in community settings, short- to medium-term effects on sexual intercourse were reported in four studies (Jemmott et al., 1992; Postrado and Nicholson, 1992; Sikkema et al., 2005; Villarruel et al., 2006), and one study (Jemmott et al., 1998) reported no programme effects. The CAS-Carrera programme (Philliber et al., 2002) had a positive effect on sexual activity among females, but there were no effects of health practitioner-led sexual health consultations (Boekeloo et al., 1999; Danielson et al., 1990) or peer interventions (Ferguson, 2000; Smith et al., 2000). Intervention effects on frequency of sexual intercourse and number of sexual partners were limited. Across four studies (Jemmott et al., 1998; Kipke et al., 1993; Pearlman et al., 2002; Villarruel et al., 2006) conducted in community settings, only one study (Villarruel et al., 2006) reported a positive intervention effect and across four studies (DiClemente et al., 2004; Downs et al., 2004; Jemmott et al., 2005; Morrison-Beedy et al. 2005) conducted in healthcare settings, there were inconsistent intervention effects on these outcomes. Intervention effects on condom use and unprotected intercourse were more consistent. Across six studies that examined group-based sessions and skills training in community and healthcare settings, there were positive short- to medium-term intervention effects on measures of condom use (DiClemente et al., 2004; Jemmott et al., 1998; 2005; Sikkema et al., 2005; Stanton et al., 1996; Villarruel et al., 2006), and some evidence from three studies (Jemmott et al., 1998; 2005; Villarruel et al., 2006) of a positive intervention effect on frequency of unprotected intercourse. There were no effects of an HIV theatre production (Elliott et al., 1996) or peer counselling intervention (Ferguson, 2000) on contraceptive use or frequency of unprotected sex, but the CAS-Carrera programme (Philliber et al., 2002) positively influenced both condom and hormonal contraceptive use among

females. There was no effect of a peer counselling intervention (Ferguson, 2000) or peer leadership programme (Smith et al., 2000) on pregnancy rates, but the CAS-Carrrea programme (Philliber et al., 2002) had a positive effect, with a reduction in pregnancies among intervention females. Three studies (Boekeloo et al., 1999; Downs et al., 2004; Jemmott et al., 2005) examined intervention effects on STI infection and/or diagnosis, finding mixed intervention effects. However, medium-term positive effects on STI diagnosis were reported in one study (Jemmott et al., 2005) of a skills-based HIV/STI intervention delivered in a healthcare setting.

### **8.2.3 Programmes delivered to parents and families**

Fifteen studies were identified that examined intervention and programmes delivered to parents and families, which targeted adolescent sexual health. Ten studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McBride et al., 2007; McKay et al., 2004; Miller et al., 1993; Scheinberg et al., 1997; Winett et al., 1992; 1993) evaluated seven programmes delivered to adolescents and their families and five studies (Dancy et al., 2006; Dilorio et al., 2007; Forehand et al., 2007; Gustafson, 1998; O'Donnell et al., 2005) examined parent-targeted interventions.

Both family-based and parent-targeted interventions demonstrated positive influences on knowledge related to sexual health in the short- (Dancy et al., 2006; Scheinberg et al., 1997; Winett 1992; Winett et al., 1993), medium- (Miller et al., 1993) and long-term (Dilorio et al., 2006; Lederman et al., 2008), with improvements seen in both parent and adolescent knowledge (Dilorio et al., 2006; Miller et al., 1993) related to sexual health. Programmes and interventions delivered to families (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; Miller et al., 1993; Scheinberg et al., 1997) did not appear to be effective at influencing adolescent's attitudes and intentions towards resisting or delaying sex and across three studies (Dancy et al., 2006; Dilorio et al., 2007; Gustafson, 1998) that examined effects of parent-targeted interventions on intentions there were inconsistent results. There were mixed effects on parent-child communication across both family-based and parent-targeted interventions. Eight studies (Anderson et al., 1999; Dilorio et al., 2006; Lederman et al., 2004; 2008; McKay et al., 2004; McBride et al., 2007; Miller et al., 1993; Scheinberg et al., 1997), which examined family-programmes found no clear intervention effects on communication, but in general positive effects were found across four studies (Dilorio et al., 2007; Forehand et al., 2007; O'Donnell et al., 2005; Gustafson, 1998) that examined parent-targeted interventions.

Across five studies (Anderson et al., 1999; Miller et al., 1993; Dilorio et al., 2006; McKay et al., 2004; McBride et al., 2007) that examined the effects of family-based programmes on health and social outcomes related to sexual health the results suggested that programmes and interventions delivered to families may not affect sexual behaviour. Two studies (Anderson et al., 1999; Miller et al., 1993) found no intervention effects on pregnancy rates or sexual behaviour, respectively, and one study (Dilorio et al., 2006) found no long-term effects of an intervention aimed at mothers and their adolescent children on abstinence or involvement in intimate sexual behaviours. There were, however, limited but positive effects of this programme on condom use. There were positive short-term effects of two parent education programmes (Dancy et al., 2006; O'Donnell et al., 2005) on initiation of sexual

activity and behavioural risks related to early sexual initiation, respectively. However, lack of clear intervention effects were reported in two further studies (Dilorio et al., 2007; Forehand et al., 2007).

#### **8.2.4 Programmes involving the wider community or mass media**

Two studies were identified (Doniger et al., 2001; Sieverding et al., 2005) that examined interventions that involved the wider community or mass media. Doniger and colleagues (2001) examined a mass media intervention, Not Me, Not Now, and Sieverding and colleagues (2005) examined the Youth United through Health Education (YUTHE) outreach programme. Neither of the included studies examined intervention effects on knowledge, attitudes and skills. Both studies analysed population-level changes, in pregnancy (Doniger et al., 2001) and STI rates (Sieverding et al., 2005), respectively, as measures of effectiveness. Both studies reported positive intervention effects at a population level, however the study by Doniger and colleagues (2001) did not adequately control for natural fluctuations in the data and therefore it is not clear whether these or intervention effects were responsible for the differences seen in the intervention and control communities.

#### **8.2.5 Programmes targeting vulnerable populations**

Three studies (Gleghorn et al., 1997, Rew et al., 2007, Slesnick and Kang, 2008) were identified that examined the effectiveness of community-based programmes on vulnerable populations. All three studies examined interventions which specifically targeted young homeless people. Intervention approaches examined were street outreach (Gleghorn et al., 1997), a brief group-based sexual health intervention (Rew et al., 2007), and a community reinforcement approach combined with HIV prevention (Slesnick and Kang, 2008). Intervention effects on knowledge and skills were examined in one study (Rew et al., 2007) and none of the included studies examined intervention effects on attitudes and values. There were limited effects of a brief sexual health intervention (Rew et al., 2007) on knowledge relating to AIDS and other STIs, and on communication and self-efficacy. Health and social outcomes related to sexual health were examined in all three studies, two of which reported no intervention effects (Gleghorn et al., 1997, Rew et al., 2007). Slesnick and Kang (2008) found a positive effect on the frequency of condom use among younger participants in a programme which combined a community reinforcement approach with HIV prevention content.

### **8.3 Programmes targeting multiple behaviours**

No systematic reviews or meta-analyses were identified for inclusion in the review of programmes targeting multiple health behaviours. Five articles were identified that reported on evaluations of programmes and interventions that addressed both alcohol use and sexual health. Two articles reported on studies that examined interventions or programmes delivered in social, healthcare or community settings and three articles reported on studies that examined interventions or programmes delivered to families or parents.

#### **8.3.1 Programmes delivered within social, healthcare and community settings**

Two studies (St Pierre et al., 1995; Wiggins et al., 2009) examined programmes which targeted both sexual health and alcohol use. St Pierre and colleagues (1995) examined the effects of Stay SMART,

which targeted young people enrolled in Boys and Girls Clubs, with and without the addition of a peer leadership component, and Wiggins and colleagues (2009) evaluated the effectiveness of the Young People's Youth Development (YPYD) programme in reducing teenage pregnancy, substance use and other outcomes.

Neither of the included studies examined intervention effects on knowledge and understanding, or on personal and social skills. However, both studies examined intervention effects on attitudes and values. St Pierre and colleagues (1995) found a favourable reduction in sexual attitudes but only among sexually experienced participants who received the intervention without the additional booster sessions. The YPYD programme (Wiggins et al., 2009) had potentially harmful effects on attitudes, with female intervention participants more likely than control participants to report that they expected to be a parent by age 20. Both studies examined intervention effects on health and social outcomes related to sexual health, and Wiggins and colleagues (2009) also examined intervention effects on alcohol use. The effects of the Stay SMART intervention were inconsistent across the two intervention conditions examined. The YPYD programme (Wiggins et al., 2009) had a negative impact on participant's sexual behaviour, particularly among intervention females who were significantly more likely than controls to engage in heterosexual sexual intercourse and more likely to become pregnant. There was no effect of the programme on male participants or on participant's alcohol use.

### **8.3.2 Programmes delivered to families or parents**

Five studies (Haggerty et al., 2007; Prado et al., 2007; Stanton et al., 2000; 2004; Wu et al., 2003) examined three programmes delivered to families or parents, which targeted both alcohol use and sexual health, in addition to other risk behaviours. None of the included studies examined intervention effects on knowledge and understanding. Across four studies (Haggerty et al., 2007; Stanton et al., 2000; Wu et al., 2003; Stanton et al., 2004) that examined intervention effects on attitudes and values towards risky behaviours there were indications of mixed intervention effects. Haggerty and colleagues (2007) found positive long-term effects of both self-directed and group-based versions of a universal substance use and problem behaviour prevention programme on attitudes towards substance use and there were also long-term positive programme effects of a parental monitoring intervention (Stanton et al., 2004) on attitudes and values related to a range of risky behaviours. Three studies (Prado et al., 2007; Stanton et al., 2000; 2004) examined intervention effects on personal and social skills, finding mixed programme effects on parent/family-child communication. Prado and colleagues (2007) found positive effects of a culturally-tailored programme on communication, family functioning and positive parenting, and Stanton and colleagues (2004) found a positive effect of a parental monitoring programme on parent-child communication about HIV/AIDS. Four studies (Haggerty et al., 2007; Prado et al., 2007; Wu et al., 2003; Stanton et al., 2004) examined intervention effects on health outcomes related to alcohol use and sexual health. Short-term to medium-term reductions in alcohol drinking were found for participants who received a parental monitoring intervention (Wu et al., 2003; Stanton et al., 2004), but this reduction was not sustained and no other significant programme effects were found for health outcomes related to alcohol use. One study (Prado et al., 2007) of a culturally-tailored programme reported a long-term

decrease in incidence rates for STIs and unsafe sex at last sexual intercourse among those who received an additional parent-targeted component. Although, short-term benefits of a parental monitoring intervention (Wu et al., 2003) were also reported, these differences were not sustained and over the longer term there were no additional positive effects on sexual behaviour of the intervention among young people who had received a risk reduction intervention (Stanton et al., 2004).

## **8.4 Strengths and limitations**

This review of the effectiveness and cost-effectiveness of community-based interventions and programmes that address health literacy and personal skills in relation to alcohol use and sexual health was based on a comprehensive and systematic literature review. Over 12,000 titles and abstracts were screened for inclusion in the review, and over 400 full text articles were reviewed. In addition, the review has been conducted using a standardised and transparent approach, adhering to NICE protocols for the development of public health programme guidance.

### **8.4.1 Quality of the included studies**

The studies identified for inclusion in the review were based on a range of study designs. However, the vast majority were based on an RCT design, of which half were cluster RCTs. The quality of the included studies was generally moderate or good, with approximately 30% of studies receiving a poor rating for quality. In general studies did not describe the source population or source area from which study participants were drawn, and it was therefore, frequently not possible to determine the eligibility of the selected populations or areas included. Methods of randomisation were well described in approximately one fifth of RCTs, which generally also reported that allocation was adequately concealed and that participants and/or investigators were blinded. Across the remaining RCTs, the authors reported that randomisation had been undertaken but did not describe the actual method of randomisation or how allocation was concealed. For studies based on non-random assignment, authors rarely reported how confounding and bias were minimised or how individuals or clusters were allocated to intervention or comparison groups. Few authors examined or commented on contamination and it was therefore difficult to judge whether contamination was acceptably low across the included studies. Attrition rates varied across the included studies, but over half of studies accounted for all participants at follow-up. Outcome measures were reported to be reliable across the majority of the included studies, and were deemed to be relevant. Follow-up times varied across the included studies, from immediate post-test to ten years, but two thirds of studies reported what was judged to be a meaningful follow-up time. Intervention and comparison groups were similar at baseline, or adjustments were made for differences, across the vast majority of studies. Few studies reported undertaking an intention to treat analysis (~25%) or reported whether studies were adequately powered (~20%). Analytical methods appeared to be appropriate in the majority of studies, but estimates of effect sizes were not reported or calculable in approximately one third of the included studies.

### 8.4.2 Applicability and transferability

As highlighted in previous reviews conducted by the lead author and colleagues, there is a lack of prevention initiatives originating from the UK which have been subject to evaluation and peer-reviewed publication. The research literature identified for this review was, as in previous reviews, dominated by programmes conducted in the USA, which focused on minority ethnic populations specific to the USA. Both African American and Hispanic adolescents have been identified as populations at high risk of HIV infection (Jemmott et al., 2005), and Hispanic adolescents report higher levels of substance use and unprotected sexual intercourse than non-Hispanic White and African American adolescents (Prado et al., 2007). However in the UK, although black and minority ethnic (BME) groups may be at higher risk of STI infection (DH, 2001) survey data indicates that drug use is generally lower among BME populations (Edmonds et al., 2005). In this review we identified the YPYD programme (Wiggins et al., 2009) which was implemented in England and whose development was informed by the US-based, Carrera programme. Despite promising effects of the Carrera programme, Wiggins and colleagues (2009) found an adverse effect of the intervention among an English population.

## 8.5 Research recommendations

The review has identified a number of gaps in the evidence and future research should aim to address the following key research recommendations:

- There needs to be further evaluation of the effectiveness and cost-effectiveness of alcohol education and SRE approaches delivered in community settings, which are currently being delivered or planned in the UK;
- Full economic evaluation studies are required of community-based approaches focusing on both SRE and alcohol education that consider both the costs and consequences of implementing these types of interventions and programmes.
- Future research should consider the relationship between alcohol use and sexual health.

Improvements in study design and the quality of reporting are required with respect to all types of studies and the following are recommendations to improve the methodology of future studies:

- Improved reporting of methods is required, particularly with regard to methods for the allocation of participants and clusters (e.g. methods of randomisation), allocation concealment, procedures for blinding, and follow-up of participants. Reporting standards could be improved by following guidelines on reporting, such as the CONSORT statement for RCTs and TREND statement for non-randomised studies.
- Standardisation of outcomes is required. Across the included studies a range of attitudinal and behavioural measures were reported and consequently it was not possible to synthesise outcomes across studies. Also when considering which outcomes to incorporate, there needs to be a consideration of the age and level maturity of the sample targeted (e.g. with regard to

studies of SRE programmes consideration should be made of the relationship status of participants).

- Some studies were conducted with inadequate sample sizes, and future research studies should be sufficiently powered to detect intervention effects.
- Future research studies should incorporate an adequate length of follow-up.

## 9 Conclusions

### 9.1 Programmes targeting alcohol use

There was a lack of evidence on which to draw conclusions about the effects of programmes and interventions that targeted adolescent alcohol use on knowledge and understanding. There were positive effects of programmes and interventions delivered to families on attitudes and values related to alcohol use, but programmes and interventions delivered to parents or within social, healthcare and community settings appeared to have no impact on these outcomes. Programmes and interventions delivered to families and parents produced short- and long-term improvements in parent-child communication, and programmes and interventions delivered to families had positive effects on both alcohol use and initiation of alcohol use. Programme effects on health and social outcomes related to alcohol use were mixed and inconsistent across programmes and interventions delivered to parents, in social, healthcare or community settings, or to the wider community. The family-focused ISFP was highlighted across three systematic reviews as showing particular promise; this programme, which was designed to enhance family protective and resiliency processes and to reduce family-based risk factors associated with child behaviour problems, had positive, long-term effects on a range of outcomes related to alcohol use and has been shown to be cost-effective and potentially cost saving.

### 9.2 Programmes targeting sexual health

The evidence suggests that programmes and interventions delivered in social, healthcare and community settings and to families and parents may have beneficial effects on sexual health-related knowledge in the short- to long-term. A range of outcomes were reported with regards to attitudes and values and programmes effects were mixed across these measures. The evidence suggests that while programmes and interventions targeting adolescent sexual health may not impact on attitudes towards sexual intercourse, programmes and interventions delivered in healthcare settings may positively impact on condom use attitudes. Programmes and interventions delivered to families and in social, healthcare and community settings had mixed and inconsistent effects on communication, but programmes and interventions delivered to parents appeared to have positive effects on parent-child communication. There appeared to be no effects of programmes and interventions delivered to families and parents on adolescent sexual behaviour, and programmes and interventions delivered in social, healthcare and community settings had limited and inconsistent effects on sexual activity including frequency of intercourse and number of sexual partners. However, the evidence suggests that group-based sessions and/or skills training programmes in community and healthcare settings may increase condom use and reduce the frequency of unprotected sex. In addition, a youth development approach showed promise, with effects on a range of sexual health outcomes for females. There was a lack of evidence on which to draw conclusions about the effects on programmes involving the wider community or mass media or those targeting vulnerable populations.

### **9.3 Programmes targeting multiple behaviours**

There was a lack of evidence on which to draw conclusions about the effects of programmes and interventions that targeted multiple behaviours on knowledge and understanding, and there was evidence of mixed and inconsistent effects of these programmes on attitudes and values. Programmes and interventions delivered to parents and families had long-term positive effects on communication, but intervention effects on health and social outcomes related to sexual health were less clear. There was no evidence supporting the effectiveness of programmes and interventions delivered in social, healthcare and community settings and interventions and programmes delivered to parents did not appear to provide additional long-term benefits beyond those conferred through interventions and programmes which directly target young people.

### **9.4 Summary**

The results of this systematic review suggest that programmes and interventions delivered to families may be effective in reducing adolescent alcohol consumption and that group-based sessions and/or skills training programmes in community and healthcare settings may be effective in increasing condom use and reducing the frequency of unprotected intercourse among adolescents. In addition, programmes and interventions delivered to families and parents appeared to be effective in increasing parent-child communication about alcohol use and sexual health. However, the applicability of the evidence identified may not be generalisable to the UK and good quality UK-based research of promising or novel intervention approaches, including assessment of cost-effectiveness, is required in order to build the evidence base on which to make UK-based policy and practice recommendations.

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## Appendix 2. References to excluded studies

### 1. Study did not meet design criteria for inclusion (n=213)

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**Appendix 3. Quality assessment tables**

**Table 10.1. Quality assessment: randomised controlled trials (individual)**

Reference	Population			Method of allocation to intervention (or comparison)										Outcomes						Analyses						Summary		
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	5.1	5.2	
Bauman et al., 2000	NR	NR	NR	+	+	NR	NR	+	+	NR	-	+	+	NR	+	-	++	NR	++	+	NR	NR	-	+	NR	-	+	
Boekeloo et al., 1999	NR	NR	NR	+	++	NR	NA	+	NR	NR	++	NR	NR	+	NR	++	++	+	+	+	NR	NR	++	+	++	+	-	
Danielson et al., 1990	NR	NR	NR	+	++	NR	+	+	NR	NR	NR	NR	NR	NR	NR	+	+	+	NR	NR	NR	NR	+	+	+	-	-	
DiClemente et al., 2004	NR	NR	NR	++	++	+	NR	++	NR	++	++	NR	NR	++	NR	++	++	++	++	++	NR	++	++	++	++	++	-	
Downs et al., 2004	NR	NR	NR	++	++	NR	NR	++	NR	NR	NR	NR	NR	++	NR	++	++	++	++	++	+	NR	-	+	+	+	-	
Forehand et al., 2007	+	+	++	+	++	NR	NA	-	NR	+	++			++	++	++	++	++	++	++	++	++	+	++	-	+	+	
Haggerty et al., 2007	NR	NR	NR	+	++	NR	NR	-	NR	NR	++	+	+	++	++	+	++	++	++	++	NR	++	NR	+	+	+	+	
Jemmott et al., 1992	NR	NR	NR	+	+	NR	NR	+	NR	+	NR	NR	NR	++	NR	++	++	+	+	+	NR	NR	+	+	+	+	-	
Jemmott et al., 1998	NR	NR	NR	++	++	NR	NR	++	NR	++	++	NR	NR	+	NR	++	++	++	++	++	++	++	++	++	++	++	-	
Jemmott et al., 2005	NR	NR	+	++	++	++	+	++	NR	++	++	NR	NR	++	NR	++	++	++	++	++	NR	NR	++	++	++	++	+	
Kipke et al., 1993	NR	NR	NR	+	++	NR	NR	++	NR	++	+	NR	NR	+	NR	+	+	++	-	++	NR	NR	+	+	+	+	-	
Lederman et al., 2008	+	NR	+	+	-	NR	NR	NR	NR	NR	-	++	+	++	+	-	+	++	++	NR	NR	NR	-	+	-	-	+	
Lederman et al., 2004	NR	NR	NR	+	+	NR	NR	+	NR	NR	NR	NR	NR	+	NR	-	+	+	+	NR	NR	NR	-	+	-	-	-	
Loveland-Cherry et al., 1999	NR	NR	NR	+	-	NR	NR	NR	NR	NR	-	++	+	NR	++	+	++	++	++	++	NR	NR	NR	+	+	+	-	+
Miller et al., 1993	+	+	+	+	+	NR	NR	NR	NR	NR	++	-	+	++	++	+	++	++	++	NR	NR	NR	-	+	++	+	-	
Morrison-Beedy et al., 2005	NR	NR	NR	+	++	NR	NR	++	NR	++	-	NR	NR	++	NR	++	++	++	++	+	+	NR	NR	+	+	+	-	
O'Donnell et al., 2005	+	++	++	++	++	NA	NA	+	++	NR	++	NR	NR	++	++	++	++	++	+	++	++	++	+	+	+	+	+	
Philliber et al., 2002	NR	NR	NR	+	++	NR	NR	++	NR	++	+	NR	NR	+	NR	+	+	+	++	+	+	NR	+	+	-	+	-	
Prado et al., 2007	+	++	++	++	++	NR	NA	++	NR	+	NR	NR	-	-	++	++	++	++	++	+	++	++	-	+	+	+	-	

Reference	Population			Method of allocation to intervention (or comparison)										Outcomes						Analyses						Summary	
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	5.1	5.2
Schinke et al., 2009	NR	NR	NR	+	+	NR	NR	+	NR	NR	++	NR	NR	++	NR	++	++	++	+	++	+	NR	-	++	+	+	-
Slesnick et al., 2008	++	++	++	++	++	+	NR	++	-	+	++	+	+	++	++	+	++	NR	+	++	++	NR	-	+	++	+	++
Stanton et al., 2000	NR	NR	NR	++	++	++	NR	-	NR	NR	+	-	+	++	++	+	++	+	-	++	NR	NR	+	++	++	+	+
Villarruel et al., 2006	NR	NR	NR	++	++	++	NR	++	+	++	+	NR	NR	+	+	++	++	++	++	++	++	++	NR	++	++	++	++
Winett et al., 1992	NR	NR	NR	+	++	NA	NA	+	NA	NR	-	++	NA	+	+	++	++	++	+	+	-	NR	-	+	+	-	+
Winett et al., 1993	+	NR	NR	+	++	NR	++	NR	NA	NR	++	+	+	++	-	+	++	++	-	++	NR	NR	-	+	+	+	+

**Table 10.2. Quality assessment: randomised controlled trials (cluster)**

Reference	Population			Method of allocation to intervention (or comparison)										Outcomes						Analyses						Summary		
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	5.1	5.2	
Anderson et al., 1999	NR	NR	NR	+	+	NR	NR	++	NR	NR	+	+	+	+	+	-	+	++	++	NR	-	-	+	+	-	-	+	
Beatty et al., 2008	+	+	+	+	+	NA	NA	+	NR	NR	++	NR	NR	++	++	++	++	NR	NR	-	NA	+	+	+	++	+	+	
Brody et al., 2004; 2006	+	NR	NR	+	++	NR	NR	++	NR	NR	++	NR	NR	+	NR	++	++	++	++	++	++	NR	NR	++	++	++	+	+
Cohen & Rice, 1995	-	NR	++	NR	+	NR	NR	+	NR	NR	NR	NR	NR	+	++	++	++	NR	++	++	NR	NR	++	++	++	-	-	
Dancy et al., 2006	++	++	++	+	++	NR	NR	++	NR	+	++	NR	NR	++	++	+	+	++	-	++	NR	NR	+	+	++	+	+	
Di Noia & Schinke, 2007	NR	NR	NR	+	++	NR	+	++	++	++	+	NR	NR	++	NR	+	++	++	-	++	-	NR	++	++	++	+		
DiLorio et al., 2006	+	NR	NR	+	++	NR	NR	NR	+	NR	NR	+	+	+	++	++	++	++	++	-	++	NR	-	+	++	++	+	
Dilorio et al., 2007	+	+	+	+	+	NA	NA	+	NR	+	++	NR	NR	++	++	++	++	++	++	++	NR	-	+	++	+	+	+	
Elder et al., 2002	NR	NR	NR	+	++	NR	+	++	++	++	-	NR	NR	+	NR	+	+	++	++	-	NR	NR	+	+	+	+	-	
Johnson et al., 1996	NR	NR	NR	+	+	NR	NR	+	NR	NR	NR	NR	NR	+	NR	-	+	+	++	+	NR	NR	-	+	-	-	-	
Jones et al., 2005	NR	NR	NR	+	-	NA	NA	NR	NA	NR	++	++	+	++	++	-	++	++	++	+	NR	NR	+	+	++	+	+	
Schinke et al., 2004	NR	NR	NR	+	++	NR	NR	++	NR	NR	++	+	+	++	++	+	++	++	++	++	+	NR	+	++	++	+	+	

Reference	Population			Method of allocation to intervention (or comparison)										Outcomes						Analyses						Summary		
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	5.1	5.2	
Schinke et al., 2005	NR	NR	NR	+	+	NR	NR	+	++	NR	++	NR	NR	NR	NR	-	+	++	-	+	NR	NR	-	+	-	-	-	
Sikkema et al., 2005	NR	NR	NR	+	++	NR	NR	++	++	++	++	NR	NR	++	NR	++	++	++	+	++	NR	NR	++	++	++	+	-	
Spoth et al., 1999; 2001; 2004	NR	NR	NR	+	+	+	NR	NR	NR	NR	+	+	+	+	++	+	++	++	++	++	++	NR	NR	+	++	++	+	+
Stanton et al., 2004	+	-	-	+	++	NR	NA	+	NR	+	++	NR	NR	++	++	++	++	++	++	++	NR	+	NR	++	++	+	++	
Stanton et al., 1996	NR	NR	NR	+	++	NR	NR	++	NR	+	+	NR	NR	+	NR	+	+	++	++	+	++	NR	+	+	+	+	-	
Stevens et al., 2002	NR	NR	NR	++	++	NR	NR	++	++	++	-	NR	NR	++	NR	++	++	++	++	++	NR	NR	++	++	++	+	-	
Toomey et al., 1996	+	-	+	-	+	NA	NA	+	-	-	++	NR	NR	++	++	++	++	++	++	NR	NA	+	-	+	++	-	+	
Wu et al., 2003	NR	NR	NR	+	++	NR	NR	++	++	NR	-	NR	NR	+	NR	++	++	++	++	++	NR	NR	+	++	+	+	-	

**Table 10.3. Quality assessment: other study designs**

Reference	Study design	Population			Method of allocation to intervention (or comparison)										Outcomes						Analyses						Summary	
		1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	5.1	5.2
Elliott et al., 1996	NRCT	NR	NR	NR	-	+	+	+	+	+	NR	+	NR	NR	NR	NR	+	+	+	-	NR	NR	NR	-	+	-	-	-
Ferguson, 2000	NRCT	+	NR	NR	-	+	-	NR	+	-	-	+	NR	NR	+	NR	+	+	+	+	NR	-	+	-	+	-	-	-
Gustafson et al., 1998	NRCT	NR	NR	NR	-	+	-	NR	+	++	NR	+	NR	NR	+	NR	+	+	+	-	-	NR	NR	+	+	+	+	-
Koutakis et al., (2008)	NRCT	+	++	++	NR	+	NR	NR	++	++	+	++	NR	NR	NR	++	++	++	++	++	++	++	++	++	+	++	++	++
Pearlman et al., 2002	NRCT	NR	NR	NR	-	++	-	NR	++	NR	++	NR	NR	NR	+	NR	+	+	+	+	+	+	NR	-	+	-	+	-
Rew et al., 2007	NRCT	+	+	++	NR	-	NR	NR	NA	++	NR	NR	NR	NR	++	++	++	++	NR	-	++	NA	NR	+	++	++	+	+
Scheinberg et al., 1997	NRCT	NR	NR	NR	-	+	-	-	NR	NR	+	++	+	+	-	++	+	++	+	-	++	NR	-	-	+	+	-	-
St Pierre et al., 1995	NRCT	NR	NR	NR	-	+	-	NR	+	++	NR	-	NR	NR	-	NR	+	+	++	++	-	-	NR	+	+	+	-	-
Cheadle et al., 1995	CBA	+	NR	NR	-	+	-	-	+	+	NR	NA	NA	NA	NR	NR	+	+	+	NA	+	NA	NR	+	+	+	+	-
Flynn et al., 2006	CBA	NR	NR	NR	NR	++	NR	NR	++	++	+	NA	NR	NR	++	NR	+	+	++	++	NA	NA	NR	+	++	+	+	-

Reference	Study design	Population			Method of allocation to intervention (or comparison)										Outcomes						Analyses						Summary	
		1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.10	3.1	3.2	3.3	3.4	3.5	3.6	4.1	4.2	4.3	4.4	4.5	4.6	5.1	5.2
Gleghorn et al., 1997	CBA	++	++	++	NR	+	NR	NA	-	++	+	NA	NR	NR	-	++	++	++	NR	NR	++	NA	NR	+	++	-	-	+
Kypri et al., 2005	CBA	NR	NR	NR	-	+	-	NR	+	NR	NR	+	NR	NR	+	NR	+	+	NR	-	NR	NR	+	+	+	+	+	-
McKay et al., 2004	CBA	+	NR	NR	-	++	NR	NA	NR	NR	NR	++	+	+	NR	+	+	++	-	-	-	NR	NR	-	+	++	-	+
Postrado & Nicholson, 1992	CBA	NR	NR	NR	-	+	-	-	+	NR	NR	NR	NR	NR	+	NR	-	+	NR	-	+	NR	NR	+	+	+	-	-
Smith et al., 2000	CBA	NR	NR	NR	-	+	NR	NR	++	++	NR	NR	NR	NR	+	NR	++	++	++	+	+	NR	NR	-	+	-	-	-
Tebes et al., 2007	CBA	NR	NR	NR	NR	+	NR	NR	+	++	NR	+	NR	NR	+	NR	+	+	+	++	+	+	NR	+	+	+	+	-
Wiggins et al., 2009	CBA	NR	NR	NR	-	+	-	NR	+	NR	+	+	+	++	++	NR	++	++	+	++	+	NR	+	++	++	++	+	-
Doniger et al., 2001	CTS	NR	NR	NR	-	++	-	-	++	NA	NR	NA	NR	NR	+	NR	+	+	NA	NA	NA	NA	NA	-	+	-	-	
Sieverding et al., 2005	CTS	NR	NR	NR	-	+	NA	NA	+	++	NR	NA	NR	NR	NR	NR	+	+	NR	+	+	NA	NA	NA	+	NA	+	-

NRCT – Non-randomised controlled trial; CBA – controlled before and after study; CTS – cross-sectional time series

**Table 10.4. Quality assessment: systematic reviews and meta-analyses**

Reference(s)	Questions					Coding
	1.1	1.2	1.3	1.4	1.5	
Arnold & Rotherham-Borus (2009)	-	-	-	NR	NA	-
DiCenso et al., 2002	++	++	++	++	++	++
Foxcroft et al., 2002	++	++	++	++	NA	++
Foxcroft et al., 2003	++	++	++	+	NA	+
Franklin et al., 1997	++	++	+	++	++	++
Guyatt et al., 2000	+	++	++	-	NA	+
Pedlow & Carey, 2003	++	+	+	-	NA	+
Petrie et al., 2007	++	++	+	++	NA	++
Robin et al., 2004	+	+	+	-	NA	+

Reference(s)	Questions					Coding
	1.1	1.2	1.3	1.4	1.5	
Sales et al., 2006	++	++	++	-	NA	+
Smit et al., 2008	++	++	++	++	++	++
Underhill et al., 2007	++	++	++	++	NA	++
Underhill et al., 2008	++	++	++	++	NA	++

NA – not applicable; NR – not reported; ++ well covered; + adequately addressed; - poorly addressed

**Table 10.5. Quality assessment for published economic evaluation studies**

<b>Study identification</b> Include author, title, reference, year of publication		<b>Spoth et al., 2002</b>
<b>Evaluation criterion</b>		
<b>1.</b>	<b>Was a well-defined question posed in answerable form?</b>	Yes
1.1	Did the study examine both costs and effects of the service(s) or programme(s)?	Yes
1.2	Did the study involve a comparison of alternatives?	Yes
1.3	Was a viewpoint for the analysis stated and was the study placed in any particular decision-making context?	Yes, societal
<b>2.</b>	<b>Was a comprehensive description of the competing alternatives given (that is, can you tell who? did what? to whom? where? and how often?)?</b>	Yes, both interventions were described.
2.1	Were any important alternatives omitted?	No
2.2	Was (Should) a do-nothing alternative (be) considered?	Yes, the intervention was compared to a minimal contact intervention.
<b>3.</b>	<b>Was the effectiveness of the programmes or services established?</b>	Yes, in a cluster RCT
3.1	Was this done through a randomised, controlled clinical trial? If so, did the trial protocol reflect what would happen in regular practice?	Yes, as above
3.2	Was effectiveness established through an overview of clinical studies?	NA
3.3	Were observational data or assumptions used to establish effectiveness? If so, what are the potential biases in results?	NA

<b>Study identification</b> Include author, title, reference, year of publication		<b>Spoth et al., 2002</b>
<b>4.</b>	<b>Were all the important and relevant costs and consequences for each alternative identified?</b>	Yes
4.1	Was the range wide enough for the research question at hand?	They appeared to be.
4.2	Did it cover all relevant viewpoints? (Possible viewpoints include the community or social viewpoint, and those of patients and third-party payers.)	Again they appeared to be, the authors discussed using the human capital approach to value the societal cost of alcohol disorders.
4.3	Were capital costs, as well as operating costs, included?	Not clear.
<b>5.</b>	<b>Were costs and consequences measured accurately in appropriate physical units (for example, hours of nursing time, number of physician visits, lost work-days, gained life-years)?</b>	Not reported
5.1	Were any of the identified items omitted from measurement? If so, does this mean that they carried no weight in the subsequent analysis?	Not reported
5.2	Were there any special circumstances (for example, joint use of resources) that made measurement difficult? Were these circumstances handled appropriately?	Not reported
<b>6.</b>	<b>Were costs and consequences valued credibly?</b>	Partially
6.1	Were the sources of all values clearly identified? (Possible sources include market values, patient or client preferences and views, policy-makers' views and health professionals' judgements.)	Not reported
6.2	Were market values employed for changes involving resources gained or depleted?	Not reported
6.3	Where market values were absent (for example, volunteer labour), or did not reflect actual values (for example, clinic space donated at reduced rate), were adjustments made to approximate market values?	NA
6.4	Was the valuation of consequences appropriate for the question posed (that is, has the appropriate type or types of analysis – cost-effectiveness, cost-benefit, cost-utility – been selected)?	Yes
<b>7.</b>	<b>Were costs and consequences adjusted for differential timing?</b>	Yes
7.1	Were costs and consequences which occur in the future 'discounted' to their present values?	Yes, discount rate of 3% applied
7.2	Was any justification given for the discount rate used?	Yes, recommended by the Panel on Cost-effectiveness in Health and Medicine
<b>8.</b>	<b>Was an incremental analysis of costs and consequences of alternatives performed?</b>	No
8.1	Were the additional (incremental) costs generated by one alternative over another compared to the additional effects, benefits or utilities generated?	No
<b>9.</b>	<b>Was allowance made for uncertainty in the estimates of costs and consequences?</b>	Yes
9.1	If data on costs or consequences were stochastic, were appropriate statistical analyses performed?	Not reported

<b>Study identification</b> Include author, title, reference, year of publication		<b>Spoth et al., 2002</b>
9.2	Were study results sensitive to changes in the values (within the assumed range for sensitivity analysis, or within the confidence interval around the ratio of costs to consequences)?	Sensitivity analyses conducted on key variables, favourable still reported.
<b>10.</b>	<b>Did the presentation and discussion of study results include all issues of concern to users?</b>	Partially.
10.1	Were the conclusions of the analysis based on some overall index or ratio of costs to consequences (for example, cost-effectiveness ratio)? If so, was the index interpreted intelligently or in a mechanistic fashion?	No.
10.2	Were the results compared with those of others who have investigated the same question? If so, were allowances made for potential differences in study methodology?	Partially.
10.3	Did the study discuss the generalisability of the results to other settings and patient/client groups?	Partially.
10.4	Did the study allude to, or take account of, other important factors in the choice or decision under consideration (for example, distribution of costs and consequences, or relevant ethical issues)?	No.
10.5	Did the study discuss issues of implementation, such as the feasibility of adopting the 'preferred' programme given existing financial or other constraints, and whether any freed resources could be redeployed to other worthwhile programmes?	No
<b>OVERALL ASSESSMENT OF THE STUDY</b>		
How well was the study conducted? Code ++, + or –		+
Are the results of this study directly applicable to the patient group targeted by this guideline?		Unknown, estimates presented were conservative but are based on USA population estimates.

## **Supplement D**



# **Prevention of sexually transmitted infections (STIs): a review of reviews into the effectiveness of non-clinical interventions**

## **Evidence Briefing Update**

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## Executive summary

### Introduction

In 2004, the Health Development Agency (HDA; now the National Institute for Health and Clinical Excellence) published *Prevention of sexually transmitted infections (STIs): a review of reviews into the effectiveness of non-clinical interventions* (Ellis and Grey, 2004). This evidence briefing updates the original report, assessing the effectiveness of interventions to impact on the factors which influence the sexual risk behaviours for STI transmission. As in the original Evidence Briefing, the aims of this update were to:

- Identify and synthesise review-level material to highlight 'what works' to prevent or reduce sexual risks and promote sexual health
- Highlight conflicting evidence, gaps in the evidence and provide recommendations for research.

This updated evidence briefing focuses upon particular types and features of interventions in order to draw out findings on the effectiveness of interventions for specific populations to reduce inequalities in sexual health.

### Policy

In 2001, the Department of Health published the first *National Strategy for Sexual Health and HIV* (DH, 2001). This set out five main aims, including reducing the transmission of STIs (with a national goal of a 25% reduction in newly gonorrhoea infections by 2007), reducing prevalence of undiagnosed STIs and reducing stigma associated with STIs.

Following on from this, the white paper *Choosing Health: making healthy choices easier* (DH, 2004) included sexual health as one of its six key priorities. This has encouraged a renewed determination to tackle sexual ill-health, and additional resources have been provided in order to do so. In the action plan the Government outlined its plans to improve sexual health services in a new £300m programme over the next three years.

### Epidemiology

National data on STIs reveal that chlamydia remained the most common STI diagnosed at GUM clinics in 2005, with the number diagnosed rising by 4.9% (104,733 to 109,958) with 53% (57,577) of those diagnoses among women. Gonorrhoea diagnoses have shown a decrease in the last year, with 19,392 diagnoses in 2005, 13% fewer than 2004. In 2005, 2,814 cases of syphilis were reported, an increase of 123% since 2004 (2,282 cases) and an increase of 273% since 2001 (753). Genital warts are caused by infection with two distinct subtypes of the human papilloma virus (HPV). Many other subtypes are linked to cervical cancer, but because they do not cause symptoms they remain undiagnosed. Diagnoses of genital warts increased by 1.3% between 2004 and 2005 (80,055 to 81,137). In 2005, 50% of diagnoses were in heterosexual men, 47% in women and 3% in men who have sex with men (MSM). The number of cases of herpes simplex virus (HSV) identified in GUM clinics represents only a small proportion of the total number

of cases. In 2005, 19,837 cases were diagnosed in GUM clinics, up 4% on the previous year, with the highest numbers in both men and women in the 25 to 34 year age group (2,838 and 3,628 respectively) (HPA, 2006).

### **Sexual behaviour**

The sexual behaviour of the population is an important determinant of the rates of STIs. The second National Survey of Sexual Attitudes and Lifestyles (NATSAL) in 2000, provides the most recent data on sexual behaviour among the general population in Britain (Johnson et al., 2001; Wellings et al., 2001). Since the first NATSAL in 1990, there have been notable changes in sexual behaviour during the intervening decade, these include:

- A greater number of lifetime partners – from 8.6 to 12.7 for men, and from 3.7 to 6.5 for women
- Lower median age at first intercourse – from 17 years among 16 to 19 year olds in NATSAL 1990 to 16 years among 16 to 19 years old in NATSAL 2000
- A greater proportion with concurrent partnerships in the past year (two or more partners at the same time) – from 11.4% to 14.6% for men (20% for 15 to 24 year olds); and from 5.4% to 9% for women (15% for 15 to 24 year olds)
- A greater proportion with two or more partners in the past year and who did not use condoms consistently – from 13.6% to 15.4% in men; and from 7.1% to 10.1% in women, and
- A greater proportion of men reporting ever having had a homosexual partner – from 3.6% to 5.4%.

Data on sexual behaviour needs to be interpreted with caution, acknowledging that unprotected sex is not the same as unsafe sex. Similarly, data on the number of partners can provide an indication of potential STI risk, even where intercourse is protected.

### **Inequalities**

The statistics on incidence clearly show how STIs disproportionately affect communities already suffering from considerable inequalities relating to their sexual orientation, ethnicity and gender. Statistics show that Black Caribbean populations continue to be disproportionately affected by gonorrhoea (UK Collaborative Group for HIV and STI Surveillance, 2005), for example, one study (Low et al., 1997) showed that gonorrhoea rates among some inner city black and minority ethnic groups were ten times higher than in white communities.

### **Cost-effectiveness**

Aside from the obvious ethical reasons for averting infections, the economic arguments are substantial. First, there are the costs associated with diagnosing and treating STIs. Second, there are also the health and societal costs of dealing with the consequences of poor sexual health, including pelvic inflammatory disease (which can cause ectopic pregnancies and infertility), HIV, cervical and other genital cancers, hepatitis, chronic liver disease and liver cancer, recurrent genital herpes, bacterial vaginosis and premature delivery, unintended pregnancies and abortions, psychological consequences of sexual coercion and abuse, and poor educational, social and economic opportunities for teenage mothers (DH,

2001). In a recent guide for planning and commissioning services, Payne and O'Brien (2005) concluded that investment in sexual health interventions is good value for money and can also be cost-saving. Examples of cost-saving interventions were listed as: wide-spread condom provision; outreach safe sex training for high risk groups; school education programmes; needle exchange services; screening programmes; high quality rapid access to STI services; wide choice of contraceptive services; and abortion services provided with minimal delay.

### **Conceptual framework**

This review draws on the same conceptual framework as the original review of reviews. For full details of the framework see Ellis and Grey (2004).

### **Methodology**

A standardised methodology was developed by the HDA (now the National Institute for Health and Clinical Excellence) for the analysis and synthesis of review-level evidence (Swann et al., 2003b, Kelly et al., 2002). The strategies used in this update were based on an updated 2003 HDA search strategy.

The following process was applied:

All databases were searched from January 2001 to January 2006 for references published in the English language. Results were downloaded into a Reference Manager database. Two reviewers independently appraised all of the titles and abstracts of the identified references to determine whether to retrieve the full paper on the basis of the following criteria:

- English language only
- Published since 2001
- Systematic review, synthesis, meta-analysis or literature review
- Relevance to STI prevention or sexual health promotion
- Presents (and synthesises) data from primary evaluation studies of intervention effectiveness.

This evidence briefing update excludes:

- Screening and treatment of STIs
- Interventions that focus mainly on the prevention of teenage pregnancy or HIV
- Reviews covered in the original evidence briefing.

A joint decision was made as to whether the full paper would be retrieved for critical appraisal; if the reviewers disagreed, or no clear decision could be made on the basis of the title or abstract, the full paper was obtained for appraisal. Two reviewers appraised the identified papers (including journal articles, book chapters and reports) independently. A joint decision was made regarding whether the paper was to be classified as Category 1, 2, 3, 4 or 5 based upon how well the paper satisfied the criteria of the appraisal tool.

In total 10 papers were judged to be Category 1, 2 or 3 and went on to analysis and synthesis. This compares to 14 Category 1, 2 or 3 papers from Ellis and Gray, 2004. Category 1 and 2 papers were used to derive evidence statements.

The categorisation process is only briefly described here, for further information see Ellis and Grey (2004). A joint decision was made regarding whether the paper was to be classified as Category 1, 2, 3, 4 or 5. The 'data pool' for the review of reviews consists of those reviews categorised as 1, 2 or 3. The categories are:

### **Category 1**

The review satisfied the criteria in both stages one and two of the CAT. Category 1 reviews are included within the data pool and analysed to derive evidence statements.

### **Category 2**

The review passed stage one of the CAT, but failed to meet all the criteria within stage two – usually because it was not clear how the review had assessed the quality of the included studies. Category 2 reviews are also included within the data pool and analysed to derive evidence statements.

### **Category 3**

The research question(s) was judged to be highly pertinent, and the paper is a review of interventions; however it failed to pass stage one of the CAT – it is not clear how the included studies were identified and the review had additional shortcomings. Category 3 reviews are included within the data pool and so may provide some evidence about effectiveness, but these reviews alone are insufficient to inform conclusions about effectiveness.

### **Category 4**

This paper is either not a review of effectiveness of interventions, or it is not a review in its own right (e.g. it may extract findings from another review). However it is relevant and contains useful policy, background, epidemiological or interpretive information.

### **Category 5**

The paper is not directly relevant and is therefore not used.

Category 1, 2 and 3 reviews are used to derive 'evidence statements' about types and features of interventions. Where relevant review evidence has been considered in conjunction with that of the original Evidence Briefing (Ellis and Grey, 2004) and evidence statements were derived based upon the combined evidence. The evidence statements reflect the strength of the conclusions made by the review(s), the outcomes used to judge effectiveness, the category of the review, and any inconsistencies within and between reviews. The reviews are used to derive the following evidence statements:

- **Sufficient review-level evidence** – clear evidence/conclusions from at least one Category 1 review, with no conflicting evidence/conclusions between Category 1 reviews
- **Tentative review-level evidence** – tentative evidence/conclusions from Category 1 review; or conflicting conclusions from Category 1 reviews; or clear conclusions from at least one Category 2 review
- **Insufficient review-level evidence** – no evidence/conclusions from Category 1 reviews and only tentative evidence/conclusions from Category 2 reviews; or clear evidence/conclusions from Category 3 reviews
- **No review-level evidence** – no evidence/conclusions from Category 1, 2 or 3 reviews.

### **Findings and discussion and conclusions**

The **Evidence** section (4) considers the evidence by individual, group, community and socio-political level interventions. In addition, we consider the ‘features of effectiveness’; cost-effectiveness; and, evidence of interventions to reduce inequalities in sexual health.

The **Findings, discussion and conclusions** section (5) address the key questions posed by the review of reviews, namely:

### **What works to prevent STI transmission? What works to reduce the risk behaviours for STI transmission? What works to address the determinants of STI risk?**

We found that most reviews analysed only intermediate health outcomes (e.g. behaviour) as opposed to health promotion outcomes (e.g. knowledge or skills), as such there was insufficient evidence available with which to make conclusions. However, we present the features of effectiveness elicited from the evidence. Some evidence statements have not changed from the original review (stated as ‘No change from Ellis and Grey, 2004’) and all evidence statements ought to be considered in conjunction with those of the previous review (Ellis and Grey, 2004).

#### *Features of effective interventions*

There is **sufficient review-level evidence** to conclude that interventions are more likely to be effective if they include the following features:

- The use of theoretical models (No change from Ellis and Grey, 2004)
- Use of behavioural skills training, including self-efficacy (No change from Ellis and Grey, 2004)
- Provision of basic, accurate information through clear, unambiguous messages (No change from Ellis and Grey, 2004)
- Use of targeted and tailored interventions (in terms of age, gender, culture, etc.), making use of needs assessment or formative research (No change from Ellis and Grey, 2004).

There is **tentative review-level evidence** to conclude that interventions are more likely to be effective if they include the following features:

- Have an emphasis on risk reduction (No change from Ellis and Grey, 2004)
- Use a trained facilitator
- Extend the delivery of their intervention (e.g. using 'booster' sessions).
- Use peers and community opinion leaders (No change from Ellis and Grey, 2004).

#### *Clinic-based sexual health promotion*

There is **tentative review-level evidence** to conclude that individual risk counselling can be effective.

#### *Partner notification*

There is **sufficient review-level evidence** to conclude that partner notification is an effective means of detecting new infections (No change from Ellis and Grey, 2004).

#### *Improved communication between parents and adolescents*

We conclude that there is **insufficient review-level evidence** to support or discount the effectiveness of parent/adolescent communication (No change from Ellis and Grey, 2004).

#### *Clinic-based interventions*

There is **insufficient review-level evidence** to conclude that:

- Clinic-based interventions aimed at adolescents are effective at reducing the sexual risk behaviour of adolescents.

There is **tentative review-level evidence** to conclude that:

- Clinic-based interventions using behavioural skills are an effective way to reduce the sexual risk behaviour of clinic attendees (No change from Ellis and Grey, 2004).

There is **insufficient review-level evidence** to support or discount the effectiveness of parental inclusion in clinic-based interventions.

#### *School-based programmes/sex education*

There is **sufficient review-level evidence** to conclude that:

- School-based sex education can be effective in reducing adolescents' sexual risk behaviour (No change from Ellis and Grey, 2004).

There is **tentative review-level evidence** to conclude that:

- Sex education is more effective if begun before the onset of sexual activity (No change from Ellis and Grey, 2004).

There is **insufficient review-level evidence** to conclude that:

- School-based interventions linked to clinical services and/or to the provision of condoms in schools are more effective (No change from Ellis and Grey, 2004)
- Condom availability in schools is not associated with increased sexual activity
- Parent involvement in school-based interventions is effective at improving parent/adolescent communication thereby reducing adolescent risk-taking behaviour.

#### *Small group work*

There is **sufficient review-level evidence** to conclude that small-group work interventions can be effective in reducing sexual risk behaviour (No change from Ellis and Grey, 2004).

#### *Detached education and outreach by professionals*

There is **tentative review-level evidence** to conclude that detached education and outreach work by professionals is effective in reducing sexual risk behaviour.

#### *Community level interventions*

There is **insufficient review-level evidence** to conclude that community outreach is effective at reducing sexual risk-taking behaviour.

#### *Socio-political interventions*

There is **insufficient review-level evidence** to support or discount the effectiveness of legislation or policy.

There is **no review-level evidence** to reach a conclusion about the effectiveness of equality work, regulation, facilitation, resource allocation, or organisation and delivery of services.

### **Are multi-component and multi-level interventions more likely to be effective in influencing sexual risk behaviours?**

There is **sufficient review-level evidence** to conclude that the most successful interventions are multi-component interventions. There is **insufficient review-level evidence** to support or discount the effectiveness of multi-level interventions (No change from Ellis and Grey, 2004).

### **What works to reduce inequalities in sexual health?**

There is **no review-level evidence** on interventions that aim to reduce inequalities in sexual health. In particular, there was **no review-level evidence** relative to socio-economic status (No change from Ellis and Grey, 2004).

### **What interventions are cost-effective?**

This update found **no new review level evidence** to add to the findings in the previous Evidence Briefing that reported **tentative review-level evidence** (see Ellis and Grey, 2004 for further information).

### *Implications for policy and practice*

Limitations of the evidence (section 5.1) leave us to conclude that we are unable to make recommendations for policy and practice. It is very important to note that **'no evidence' of 'insufficient evidence' does not equal evidence of ineffectiveness**. It simply means that we are unable to support or discount the effectiveness of interventions from the review-level evidence provided. We have, however, made recommendations for research. We also emphasise that practitioners and policy makers should not consider this review of review alone, but in conjunction with other the original Evidence Briefing (Ellis and Grey, 2004), non-review evidence and other relevant source information.

### *Research recommendations*

The **Conclusions and research recommendations** (section 5.2) highlights the research needed specific to target groups and types of interventions. The following is a summary of general research recommendations. Some recommendations have not changed from the original Evidence Briefing (stated as 'No change from Ellis and Grey (2004)' followed by their recommendation) and all recommendations ought to be considered in conjunction with those of the previous review (Ellis and Grey, 2004).

- No change from Ellis and Grey (2004). A key research recommendation is that intervention evaluations should measure outcomes relating to the personal and structural determinants of risk (e.g. knowledge, attitudes, skills, behavioural intentions, access to condoms, peer norms). This should be done in addition to the measurement of intermediate health outcomes (e.g. changes in behaviour) and, where appropriate (e.g. for large-scale multi-component interventions or programmes), health outcomes (e.g. changes in STI incidence). In turn, reviews should cease to exclude studies that only include data on health promotion outcomes alongside their effects on intermediate health outcomes and health outcomes. Reviews should fully report all of these outcomes where possible.
- No change from Ellis and Grey (2004). It is imperative that data on intermediate health outcomes (i.e. sexual behaviour surveys) are more specific about the context in which certain behaviours take place. Primary studies and future reviews should therefore focus on more meaningful risk indicators when making judgements about the relative effectiveness of interventions in influencing so-called 'risky' behaviours. Where feasible and appropriate these should be correlated with biological behavioural indicators and other socio-demographic variables. In conclusion, we need a consensus on the appropriate indicators for assessing the effectiveness of STI prevention programmes with different target populations.
- There is a need for more rigorous evaluations of UK-based STI prevention interventions. It is necessary for researchers to clearly report the methodology that they use, including their methods for randomisation. Future research should include appropriate comparison groups and should consider longer follow-up periods. In these cases research should report: levels of attrition, intent-

to-treat analysis, and effect sizes. There is also a need for primary studies to be standardised in their reporting.

- In addition to the recommendations from Ellis and Grey (2004), we recommend that further research is needed on the cost-effectiveness of STI prevention interventions in different settings. There is also a need for further research aimed at vulnerable 'high-risk' groups in the UK such as commercial sex workers (CSWs) and looked-after children. Finally, there is a need for further research to explore the effectiveness of interventions that aim to address inequalities and socio-political issues specific to target populations.

# 1 Introduction

## 1.1 Background

In 2004, the Health Development Agency (HDA) published *Prevention of sexually transmitted infections (STIs): a review of reviews into the effectiveness of non-clinical interventions* (Ellis and Grey, 2004). Since then, sexual health has continued to be at the forefront of policies, guidelines and initiatives, and these have identified the HDA's Evidence Briefing as the resource for ascertaining what works in preventing STIs. In 2004, the Department of Health (DH) produced its plan to improve the health of the population *Choosing health: making healthy choices easier*. In this key national policy document, sexual health is named as one of six key priorities, and the HDA evidence briefings identified as the source of information on effective interventions. In 2005, DH published the action plan *Delivering choosing health* which sets key targets around STIs, rolling out chlamydia screening and access to genitourinary medicine (GUM) clinics within 48 hours (DH, 2005). In 2005, the HDA joined with the National Institute for Clinical Excellence (NICE) to form the new National Institute of Health and Clinical Excellence (and retained the acronym NICE). The new organisation continues the commitment to build on the evidence base in public health. In the light of the Government's continued commitment to sexual health and HIV, and the necessity to ground STI prevention in good evidence, it was deemed necessary to update the 2004 Evidence Briefing to ensure that the most recent review-level evidence is available for planning services and improving the sexual health of the population.

NICE evidence briefings report on **reviews of reviews**, sometimes referred to as tertiary level research. They consist of detailed expositions of the strengths and weaknesses of the evidence from reviews, identification of gaps in the evidence, an analysis of future primary and secondary research needs, and a discussion of the implications of the evidence for policy and practice. The full rationale for carrying out reviews of reviews is given in the 2004 Evidence Briefing on STI prevention, as is a detailed consideration of the limitations of such a methodology. One such limitation is that of the inevitable time-lag between publication of primary research material and review level material. To mitigate this somewhat, Ellis and Grey (2004) stated an intention to update the Evidence Briefing regularly to keep the evidence base as up to date as reasonably practicable. This document is the first such update, and should be used in conjunction with the Ellis and Grey (2004)'s original Evidence Briefing. Each document has a freestanding summary that is published separately. The documents are also published on and supported by the NICE website at [www.publichealth.nice.org.uk](http://www.publichealth.nice.org.uk). This website also contains electronic copies of, or means of access to, the original reviews upon which the evidence briefings draw (if they are in the public domain).

Reviews that focus primarily on teenage pregnancy or HIV prevention, while clearly relevant, are excluded on the basis that their findings are considered in detail by the HDA/NICE evidence briefings on HIV prevention (Ellis et al., 2003, and updated in 2006 by Downing et al.) and teenage pregnancy (Swann et al., 2003a). Professionals are encouraged to refer to these documents (see [www.publichealth.nice.org.uk](http://www.publichealth.nice.org.uk)), since the outcomes for many of the included reviews are similar to those

for STI prevention (e.g. age at first intercourse, number of partners, condom use). Many of the topic areas covered have a reference group (e.g. for HIV, teenage pregnancy) comprising key academics, practitioners and officials with relevant expertise. All of the NICE evidence briefings are externally peer reviewed.

## 1.2 Context: sexual health in England

### 1.2.1 Policy context

In 2001, the Department of Health published the first *National Strategy for Sexual Health and HIV* (DH, 2001b). This set out five main aims, including reducing transmission of STIs (with a national goal of a 25% reduction in newly gonorrhoea infections by 2007), reducing prevalence of undiagnosed STIs and reducing stigma associated with STIs.

As part of its commitments in the *Implementation Action Plan* (DH, 2002), the DH published two sexual health and HIV toolkits, one on commissioning (DH, 2003a) and one on health promotion (DH, 2003b). The sexual health promotion toolkit gives practical advice on making inter-agency work effective, running health promotion projects, managing group work, developing resources and managing outreach work. The document also emphasises the need for a lot more research, and the need for health professionals to evaluate and document their health promotion interventions, in terms of intermediate outcomes (e.g. knowledge, attitude) as well as behavioural outcomes (DH, 2003b).

The white paper *Choosing Health: making healthy choices easier* (DH, 2004) identified six key priorities:

- Tackling health inequalities
- Reducing the numbers of people who smoke
- Tackling obesity
- **Improving sexual health**
- Improving mental health and wellbeing, and
- Reducing harm and encouraging sensible drinking.

The spotlight on sexual health in this key health policy document has encouraged a renewed determination to tackle sexual ill-health, and provides additional resources in order to do so. In the action plan the Government outlined its plans to improve sexual health services in a new £300m programme over the next three years. The main aims are to:

- Use £50m to implement a national and regional sexual health campaign aimed at young men and women to promote condom use and explain the risks of unprotected sex
- Make a commitment to sexual health in England through additional funding to deliver multidisciplinary sexual health services in a range of settings
- Expand the national Chlamydia screening programme to cover the whole of England by March 2007 (with an additional £80m to help achieve this goal)
- Carry out an audit of contraceptive services in 2005 in order to improve service provision

- Focus on modernizing Genito-Urinary Medicine (GUM) clinics, with an investment of £130m over three years including upgraded prevention services with an additional £40m provided for this purpose
- Ensure that every individual referred to a GUM clinic has an appointment within 48 hours by 2008.

### **1.2.2 Epidemiology – prevalence of STIs**

The surveillance of sexually transmitted infections relies on GUM clinicians reporting aggregated numbers of selected conditions by sex and age, and for some conditions, whether cases in men are heterosexual or from sex between men. These are submitted quarterly on KC60 forms. While there are limitations of the system (principally that only diagnoses made in GUM clinics are included, there are limited demographic data and no geographical marker), it is a good source of data on trends. More detailed information is sought from additional surveys, such as The Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP) survey to investigate resistance to gonorrhoea treatment and enhanced surveillance of outbreaks of previously rare infections such as syphilis and lymphogranuloma venereum (LGV).

Chlamydia remained the most common STI diagnosed at GUM clinics in 2005, with the number diagnosed rising by 4.9% (104,733 to 109,958) with 53% (57,577) of those diagnoses among women (HPA, 2006). In 2005, the highest rates of chlamydia in women were among young women aged 16 to 19 (1,359/100,000) while the men were slightly older, with the highest rate in men aged 20 to 24 years (1,070/100,000) (UK Collaborative Group for HIV and STI Surveillance, 2006). Factors that may have contributed to increases more recently include increased awareness of chlamydia and the roll out of chlamydia screening programmes. However, the rates calculated from GUM diagnoses represent only the tip of the iceberg when considering the prevalence of chlamydia in the general population. A study based on the first phase of the screening programme indicates that 10% of women and 13% of men aged under 25 years have chlamydia (LaMontagne et al 2004).

Gonorrhoea diagnoses have shown a decrease in the last year, with 19,392 diagnoses in 2005, 13% fewer than 2004. However, there was a 9.8% increase among MSM (3,994 to 4,388) (HPA, 2006). As was the case with chlamydia, the highest rates in 2005 were in young women between the ages of 16 and 19 years and men between the ages of 20 to 24 years. The GRASP 2005 survey shows that rates of gonorrhoea are higher in urban populations, among MSM, young women and some black ethnic minorities (UK Collaborative Group for HIV and STI Surveillance, 2006).

In 2005, 2,814 cases of syphilis were reported, an increase of 123% since 2004 (2,282 cases) and an increase of 273% since 2001 (753). In 2005, only 14.8% (418) of cases were in women, while among men infection among MSM account for 60% of all cases (HPA, 2006). Unlike chlamydia and gonorrhoea, it is not the younger age groups that experience the higher levels of syphilis. The highest prevalence is recorded in 2005 was among men aged 25 to 34 years (19/100,000) (UK Collaborative Group for HIV and STI Surveillance, 2006). Enhanced surveillance has revealed much detail about these localised outbreaks of a previously rare infection. In MSM, syphilis has been associated with oral sex and large numbers of

anonymous sex partners (Bellis et al., 2002), while heterosexual outbreaks have been associated with commercial sex work and exposure abroad (Simms et al., 2005).

Genital warts are caused by infection with two distinct subtypes of the human papilloma virus (HPV). Many other subtypes are linked to cervical cancer, but because they do not cause symptoms they remain undiagnosed. There are currently two new vaccines under consideration, both of which aim to protect against two of the common subtypes of HPV that cause cervical cancer and one that also includes protection against the two subtypes that cause warts (Steinbrook, 2006). Diagnoses of genital warts increased by 3.1% between 2005 and 2006 (81,201 to 83,745). In 2005, 50% of diagnoses were in heterosexual men, 47% in women and 3% in men who have sex with men (MSM) (HPA, 2006). In common with chlamydia and gonorrhoea, diagnosed men tend to be older than women with the highest male prevalence in those 20 to 24 years compare to females aged 16 to 19 years and 20 to 24 years (UK Collaborative Group for HIV and STI Surveillance, 2006). When considering all types of HPV infection, both those that cause warts and those associated with cancer, the prevalence is thought to be very high. An Edinburgh study showed that the prevalence of all types of HPV was 42% in women aged under 25 years and 20% of all women (Cuschieri et al., 2004). HPV infection is also linked to anal cancer, and its prevalence may be very high in men who have sex with men (57% of MSM in a USA study: Chin Hong et al., 2004).

Genital herpes is caused by the herpes simplex virus (HSV). Aside from HIV, genital herpes is the only incurable STI, often causing recurrent debilitating disease in those infected. Genital herpes is thought to be caused by one of two subtypes of the virus, HSV-1 and HSV-2. HSV-1 used to be more frequently associated with oral infection. The antibodies to the oral infection offer protection from the genital infection. However, the proportion of genital HSV infections attributed to HSV-1 is increasing, possibly because childhood exposure to HSV-1 is decreasing. Another possible link is to the reported increasing levels of oral sex among young people (Johnson et al., 2001). The number of cases of herpes simplex virus (HSV) identified in GUM clinics represents only a small proportion of the total number of cases. In 2005, 19,837 cases were diagnosed in GUM clinics, up 4% on the previous year, with the highest numbers in both men and women in the 25 to 34 year age group (2,838 and 3,628 respectively) (HPA, 2006).

### **1.2.3 Sexual behaviour**

The sexual behaviour of the population is an important determinant of the rates of STIs. The second National Survey of Sexual Attitudes and Lifestyles (NATSAL) in 2000, provides the most recent data on sexual behaviour among the general population in Britain (Johnson et al., 2001; Wellings et al., 2001). Since the first NATSAL in 1990, there have been notable changes in sexual behaviour during the intervening decade:

- A greater number of lifetime partners – from 8.6 to 12.7 for men; and from 3.7 to 6.5 for women
- A lower median age at first intercourse – from 17 years among 16 to 19 year olds in NATSAL 1990 to 16 years among 16 to 19 years old in NATSAL 2000

- A greater proportion with concurrent partnerships in the past year (two or more partners at the same time) – from 11.4% to 14.6% for men (20% for 15 to 24 year olds); and from 5.4% to 9% for women (15% for 15 to 24 year olds)
- A greater proportion with two or more partners in the past year and who did not use condoms consistently – from 13.6% to 15.4% in men; and from 7.1% to 10.1% in women
- A greater proportion of men reporting ever having had a homosexual partner – from 3.6% to 5.4%.

However, comparison of successive age groups in the NATSAL 2000 survey showed that condom use has continued to increase in the last decade. The proportion of men and women reporting condom use at first intercourse increased from 60% of 25 to 29 year olds (who would have become sexually active in 1990 or thereabouts) to 80% of 16 to 19 year olds (who would have become sexually active around the year 2000).

The main UK wide source of information about gay men's behaviour is the annual Sigma Research surveys. Periodically, the survey asks whether respondents have had unprotected anal intercourse: the last three surveys to include this were 1995 and 2000 (Hickson et al., 2001) and 2004 (Weatherburn et al., 2005). MSM in 2000 reported increases in unprotected anal intercourse (UAI) with both regular and casual partners compared with 1995:

- A greater proportion have UAI with a regular partner – from 42.3% in 1995 to 54.9% in 2000
- Fewer men having anal intercourse with a regular partner in 2000 always used a condom compared with men in 1995
- A greater proportion of men have casual UAI – from 9.8% of all men in 1995 to 14.4% in 2000.

The 2004 survey (Weatherburn et al., 2005) did not repeat these questions. The 2004 findings on self-reported behaviour showed that the more sexual partners a man reported the more likely he was to have had an HIV or STI test within the last year (22% of men who had only one partner had an HIV test, and 24% an STI test, compared to 43% of men who had 15-29 partners having an HIV test and 54% were tested for STIs). Men who reported more sexual partners expressed a wish for more sexual education than men who had fewer sexual partners. However, a worryingly high number of men who had many different sexual partners were not tested; 55% of men who had sex with 30 or more partners in the last 12 months had not had an HIV test and 39% not had an STI test in the last year. The survey also revealed that 10% had paid or been paid for sex in the last year, with over 40% of men involved with commercial sex work citing gay websites as their most likely method of finding partners.

The 2005 survey (Hickson et al., 2006) also revealed that in the past year three quarters of all men questioned had engaged in sex with a man of unknown serostatus. If these findings are representative of the whole MSM population they indicate a widespread lack of communication around HIV status among MSM. The survey also revealed that 11% of men who had anal intercourse in the last year never used a condom and inconsistent condom use was as common as consistent condom use. Furthermore, 19% of

men whose last HIV test was negative or who had never been tested for HIV, had participated in receptive unprotected anal intercourse with a partner of unknown status in the last year. This figure rose to 32% of untested men with thirty or more partners.

Data on sexual behaviour needs to be interpreted with caution, acknowledging that unprotected sex is not the same as unsafe sex. Similarly, data on the number of partners can provide an indication of potential STI risk, even where intercourse is protected.

#### **1.2.4 Inequalities**

The statistics on incidence clearly show how STIs disproportionately affect communities already suffering from considerable inequalities relating to their sexual orientation, ethnicity and gender. Statistics show that Black Caribbean populations continue to be disproportionately affected by gonorrhoea (UK Collaborative Group for HIV and STI Surveillance, 2005), for example, one study (Low et al., 1997) showed that gonorrhoea rates among some inner city black and minority ethnic groups were ten times higher than in white communities.

#### **1.2.5 Costs**

Aside from the obvious ethical reasons for averting infections, the economic arguments are substantial. First, there are the costs associated with diagnosing and treating STIs. Second, there are also the health and societal costs of dealing with the consequences of poor sexual health, including pelvic inflammatory disease (which can cause ectopic pregnancies and infertility), HIV, cervical and other genital cancers, hepatitis, chronic liver disease and liver cancer, recurrent genital herpes, bacterial vaginosis and premature delivery, unintended pregnancies and abortions, psychological consequences of sexual coercion and abuse, and poor educational, social and economic opportunities for teenage mothers (DH, 2001). In a recent guide for planning and commissioning services, Payne and O'Brien (2005) conclude that investment in sexual health interventions is good value for money and can also be cost-saving. Examples of cost-saving interventions were listed as: wide-spread condom provision; outreach safe sex training for high risk groups; school education programmes; needle exchange services; screening programmes; high quality rapid access to STI services; wide choice of contraceptive services; and abortion services provided with minimal delay.

#### **1.2.6 Conceptual framework**

This review draws on the same conceptual framework as the original Evidence Briefing. For full details of the framework see Ellis and Grey (2004).

## 2 Methodology

A standardised methodology was developed by the HDA (now the National Institute for Health and Clinical Excellence) for the analysis and synthesis of review-level evidence (Swann et al., 2003b, Kelly et al., 2002). The specific methodology used in the review of reviews is outlined below.

### 2.1 Identification of the literature

#### 2.1.1 *Electronic searches*

A wide-ranging set of search strategies was developed for the original Evidence Briefing by Ellis and Grey, (2004) in an attempt to identify as many types of 'review' relevant to the subject as possible.

Briefly, the topic strategy was developed to identify papers with a focus on any intervention with the goal of reducing the sexual risk of transmitting or acquiring an STI. The topic search was developed using general terms for STIs (e.g. STD, chlamydia, gonorrhoea). For each database, strategies were developed with a combination of Medical Subject Headings ('MESH') (using various 'operators' such as 'and', 'or', 'adjacent' and 'near') and text words (appropriately truncated, e.g. 'STI\$') in order to achieve as many relevant reviews as possible.

The strategies used in this update were based on an updated 2003 HDA search strategy, which included papers to December 2002. The Medline search strategy used is provided as an example in Appendix A.

The following databases and websites were searched:

- The Cochrane Library (including HTA database, DARE [Database of Abstracts of Reviews of Effects] and NHS EED [Economic Evaluation Database])
- The 'Wider Public Health' report
- MEDLINE
- TRIP (database with access to largest collection of 'evidence-based' material on the web)
- SIGN (Scottish Intercollegiate Guidelines Network)
- Health Evidence Bulletins Wales
- National Guidelines Clearing House
- NCCHTA (National Co-ordinating Centre for Health Technology Assessment) website
- NICE (National Institute for Clinical Excellence) website
- REFER (Research Findings Electronic Register)
- National Research Register
- Clinical Evidence
- EMBASE
- Sociological Abstracts
- PsycINFO
- Cinahl (Cumulative Index to Nursing and Allied Health Literature)

- Sociofile
- EPPI-Centre's \*\*\* Register of Reviews of Effectiveness (RoRE).\*\*\*

All databases were searched from January 2001 to January 2006 for references published in the English language. Results were downloaded into a Reference Manager database.

### **2.1.2 Selection and filtering**

Two reviewers independently appraised all of the titles and abstracts of the identified references to determine whether to retrieve the full paper on the basis of the following criteria:

- English language only
- Published since 2001
- Systematic review, synthesis, meta-analysis or literature review
- Relevance to STI prevention or sexual health promotion in the UK
- Presents (and synthesises) data from primary evaluation studies of intervention effectiveness.

This evidence briefing update excludes:

- Screening and treatment of STIs
- Interventions that focus mainly on the prevention of teenage pregnancy or HIV
- Reviews covered in the original evidence briefing.

A joint decision was made as to whether the full paper would be retrieved for critical appraisal; if the reviewers disagreed, or no clear decision could be made on the basis of the title or abstract, the full paper was obtained for appraisal.

## **2.2 Critical appraisal**

Two reviewers appraised the identified papers (including journal articles, book chapters and reports) independently. The appraisal process sought to identify the extent to which papers were:

- *Systematic* – do the review authors apply a consistent and comprehensive approach? If repeated, would this give the same results?
- *Transparent* – are the review authors clear about the processes involved, the individual study results, the findings and conclusions drawn from these? Is there sufficient detail to repeat?
- *Analytically sound* – do the authors undertake the appropriate methods of analysis and are they undertaken correctly?
- *Relevant* – is the content relevant to the UK and the priority populations under consideration?

### **2.2.1 Assessing the quality of the reviews**

The HDA's standard protocol (Swann et al., 2003; Kelly et al., 2002) and critical appraisal tool (CAT) was used to make judgements about the quality of the identified papers. See Appendix B for further details.

For a further discussion about the assessment of quality please see the previous Evidence Briefing (Ellis and Grey, 2004).

### **2.2.2 Categorisation of reviews**

The categorisation process is only briefly described here, for further information see Ellis and Grey (2004).

A joint decision was made regarding whether the paper was to be classified as Category 1, 2, 3, 4 or 5. The 'data pool' for the review of reviews consists of those reviews categorised as 1, 2 or 3. The categories are:

#### **Category 1**

The review satisfied the criteria in both stages one and two of the CAT. Category 1 reviews are included within the data pool and analysed to derive evidence statements.

#### **Category 2**

The review passed stage one of the CAT, but failed to meet all the criteria within stage two – usually because it was not clear how the review had assessed the quality of the included studies. Category 2 reviews are also included within the data pool and analysed to derive evidence statements.

#### **Category 3**

The research question(s) was judged to be highly pertinent, and the paper is a review of interventions; however it failed to pass stage one of the CAT – it is not clear how the included studies were identified and the review had additional shortcomings. Category 3 reviews are included within the data pool and so may provide some evidence about effectiveness, but these reviews alone are insufficient to inform conclusions about effectiveness.

#### **Category 4**

This paper is either not a review of effectiveness of interventions, or it is not a review in its own right (e.g. it may extract findings from another review). However it is relevant and contains useful policy, background, epidemiological or interpretive information.

#### **Category 5**

The paper is not directly relevant and is therefore not used.

## 2.3 Analysis and synthesis

Reviews categorised as 1, 2 or 3 were subject to analysis and synthesis. Detailed structured summaries were completed for each Category 1, 2 and 3 reviews (see Appendix D).

### 2.3.1 Evidence statements

Category 1, 2 and 3 reviews are used to derive 'evidence statements' about types and features of interventions. Where relevant review evidence has been considered in conjunction with that of the original Evidence Briefing (Ellis and Grey, 2004) and evidence statements were derived based upon the combined evidence. The evidence statements reflect the strength of the conclusions made by the review(s), the outcomes used to judge effectiveness, the category of the review, and any inconsistencies within and between reviews. The reviews are used to derive the following evidence statements:

- **Sufficient review-level evidence** – clear evidence/conclusions from at least one Category 1 review, with no conflicting evidence/conclusions between Category 1 reviews
- **Tentative review-level evidence** – tentative evidence/conclusions from Category 1 review; or conflicting conclusions from Category 1 reviews; or clear conclusions from at least one Category 2 review
- **Insufficient review-level evidence** – no evidence/conclusions from Category 1 reviews and only tentative evidence/conclusions from Category 2 reviews; or clear evidence/conclusions from Category 3 reviews
- **No review-level evidence** – no evidence/conclusions from Category 1, 2 or 3 reviews.

Where there was no change from the evidence statement in the original Evidence Briefing this was stated in the text and followed by the original evidence statement from Ellis and Grey (2004). Evidence statements remained the same where there was evidence from the same category or lower than in the original Evidence Briefing and/or where all current evidence agreed with the previous evidence.

Evidence statements were amended from the original Evidence Briefing (Ellis and Grey, 2004) where current evidence originated from a higher category. Evidence statements also changed where there was evidence from the same category or higher where the authors' conclusions were more definitive than those in the original Evidence Briefing<sup>1</sup>.

## 2.4 Presentation of data

Complete bibliographic lists of the Category 1-5 papers are presented in the **References** (section 6).

The **Results** (section 3) contains a flow chart of the paper identification process and includes a summary table of the assessment of each Category 1-3 review according to the critical appraisal process.

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<sup>1</sup> On one occasion (Cost-effectiveness section 4.7) the evidence statement was amended because there was no current cost-effectiveness evidence found to continue to maintain the original evidence statement in relation to current sexual health interventions.

**Appendix C** contains lists of all of the reviews by category 1-5.

**Appendix D** contains detailed summaries of Category 1-3 reviews. **Appendix E** contains the primary studies from Category 1 and 2 reviews.

The findings of Category 1, 2 and 3 reviews are analysed and synthesised in **section 4 (The Evidence)**. There are sections on different 'types' of individual, group, community and socio-political interventions, as well as a section on 'features of effective interventions'; other sections consider the evidence for cost effectiveness and interventions to reduce inequalities in sexual health.

Within each section, having weighed up the evidence a number of 'evidence statements' are made, based on the findings from the Category 1, 2 and 3 review papers (see section 3.2).

The **Discussion, conclusions and research recommendations (section 5)** considers methodological issues, gaps, inconsistencies and limitations of the review of reviews drawn out from the evidence statements in section 4, particularly in relation to the UK and in the context of the those reported in the previous Evidence Briefing.

### 3 The Results

#### 3.1 Summary of identification of papers

A total of 2,319 titles and abstracts were screened for inclusion. Compared to 2,430 in Ellis and Grey, 2004. Of these, 99 papers were ordered as full papers and appraised using the CAT. In total, 10 papers were judged to be Category 1, 2 or 3 and went on to analysis and synthesis. A summary of the process of review identification is shown in Figure 1. Table 1 summarises the Category 1-3 review-level evidence.

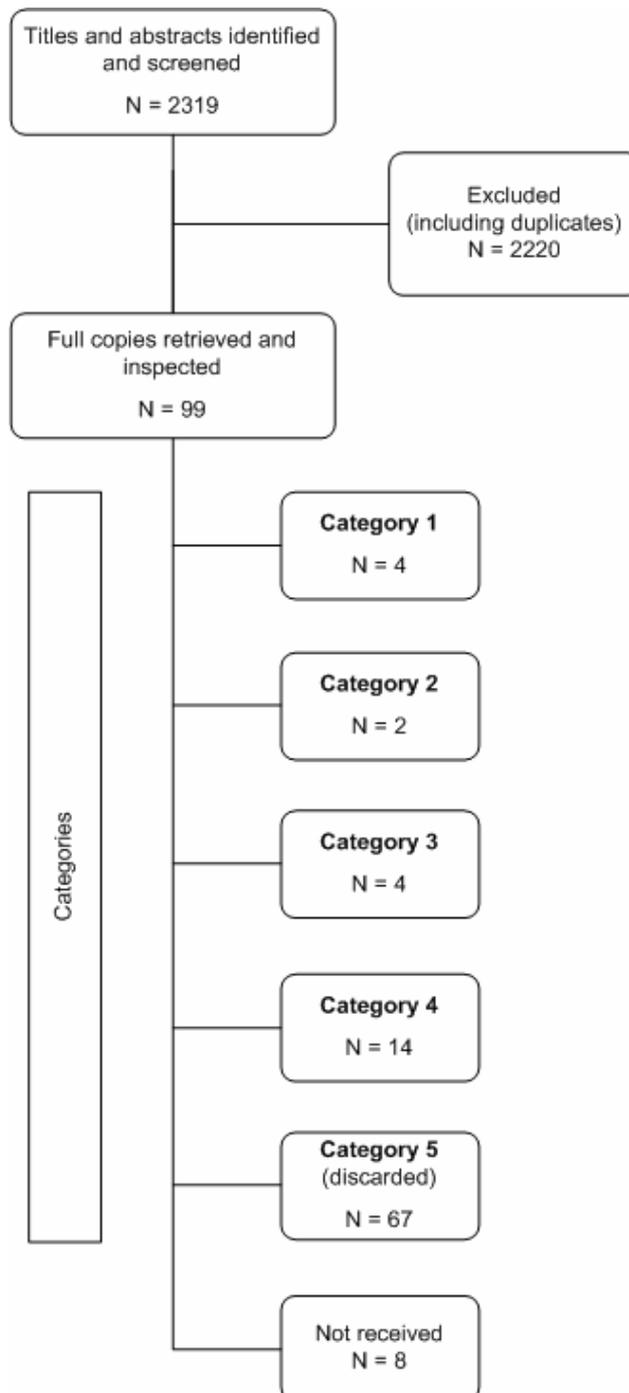


Figure 1. Flowchart showing the process of identification and categorisation of papers

### 3.2 Summary of reviews in categories 1- 3

**Table 1: Category 1-3 review-level evidence**

Author and date*	Stage one					Stage two							
	1	2			2d	3			3d	4		5	CATEGORY
	Clear aim/ question inc. Setting population, intervention	Comprehensive search strategy			Inclusion criteria specified	Assessment of quality of included studies			Assessment of the studies' quality	Quality of analysis		Conclusions related to findings	
		2a Identify approp. range of source databases	2b Additional search strategies **	2c Specifies search terms		3a Definition of quality	3b Tool used to assess quality	3c How assessments generated		4a Study findings clear and consistent	4b Study findings analysed appropri- ately		
DiClemente R.J. et al., (2005)	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Ward D.J. et al., (2005)***	✓	✓	(in part)	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
Ward D.J. et al., (2004)	✓	✓	(in part)	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
Manhart L.E. et al., (2005)	✓	✓	(in part)	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
Robin L. et al. (2004)	✓	✓	(in part)	✗	✓	✓	✓	✗	✓	✓	✓	✓	2
Pedlow C.T and Carey M.P., (2004)	✓	✓	(in part)	✗	✓	✓	✓	✗	✓	✓	✓	✓	2
Shrier L. A., (2004)	✓	✗	✗	✗	✗	-	-	-	-	-	-	-	3
Schaalma H.P., et al., (2004)	✓	✗	✗	✗	✗	-	-	-	-	-	-	-	3
Schmiedl R. (2004)	✓	✗	✗	✗	✗	-	-	-	-	-	-	-	3
DiClemente R.J. et al., (2002)	✓	✗	✗	✗	✗	-	-	-	-	-	-	-	3

\* Complete bibliographic details of Category 1, 2 and 3 review papers are provided in Appendix C. Detailed summaries of Category 1-3 reviews can be found in Appendix D.

\*\* Additional search strategies involve follow-up of references/journals, consultation with experts in the field and grey literature searches.

\*\*\* Ward D. J. et al., (2005) is a journal article containing many of the same primary studies and findings from Ward D. J. et al., (2004).



## 4 The evidence

We follow each section with evidence statements regarding the effectiveness of interventions. Where there is no change from the evidence statement in the original Evidence Briefing this is stated in the text and followed by the original evidence statement from Ellis and Grey (2004). This Evidence Briefing also contains evidence statements on topics not previously included in the original Evidence Briefing (Ellis and Grey, 2004). Further, statements were amended from the original evidence briefing where current evidence was deemed to be of a higher quality. The quality of evidence was judged by the category from which it originated.

Detailed summaries of Category 1-3 reviews can be found in Appendix D. Details of the primary studies for each Category 1 and 2 reviews can be found in Tables 2-7 in Appendix E.

### 4.1 Individual level interventions

We found a total of eight Category 1, 2 and 3 reviews that included individual-level interventions. This compares with the eight Category 1, 2 and 3 reviews in the original evidence briefing (Ellis and Grey, 2004). The most frequently reported individual level intervention was clinic-based risk reduction interventions.

**Category 1:** DiClemente et al., 2005; Manhardt and Holmes, 2005; Ward et al., 2004; Ward et al., 2005.

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004.

**Category 3:** DiClemente et al., 2002; Shrier, 2004.

#### 4.1.1 *Clinic-based sexual health education*

We found a total of six reviews that referred to primary studies covering sexual health education in a clinic setting. These findings add to the five Category 1 and 3 reviews identified in the original Evidence Briefing (Ellis and Grey, 2004) concerning individual counselling.

#### *Outcomes*

The most frequently reported outcomes were condom use, sexual activity and incidence of STIs.

**Category 1:** DiClemente et al., 2005; Manhardt and Holmes, 2005; Ward et al., 2004; Ward et al., 2005.

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004.

**Category 3:** No evidence.

Seven Category 1 and 2 reviews examined the evidence of effectiveness of clinic-based sexual health education (DiClemente et al., 2005; Manhardt and Holmes, 2005; Ward et al., 2004; Ward et al., 2005; Robin et al., 2004; Pedlow. and Carey, 2004). The main outcomes considered were condom use, sexual

activity and STI incidence. Sexual health knowledge and self-efficacy of condom use were also considered.

DiClemente and colleagues (2005) reviewed five individual-level clinic-based STI prevention interventions (Boekeloo et al., 1999; DeLameter et al., 2000; Mansfield et al., 1993; Scholes et al., 2003 and Schrier et al., 2001) (some overlap with Ward et al., 2004, 2005 and Pedlow and Carey, 2004). Interventions primarily included risk-assessment, condom attitudes and skills, STI education, culturally tailored information, and information on drug and needle use. One intervention (Scholes et al., 2003) involved sending out postal information. None of the interventions showed significant effects for all their outcomes however, the individual interventions that showed at least one significant impact in measurable outcomes (e.g. consistent condom use) in the intervention group compared to the control group incorporated risk-assessments and used tailored educational materials. Overall (including the results for group clinic interventions), there were significant results for condom-protected sex at six and 12 months follow up.

Manhardt and Holmes (2005) (some overlap with Ward et al., 2004, 2005 and Robin et al., 2004) included five additional individual-level interventions targeted at people attending STI clinics (Boyer et al., 1997; Kamb et al., 1998; Peterman et al., 2000; VCT Efficacy study group, 2000; EXPLORE Study Team, 2004). Intervention methods included cognitive-behavioural intervention, individual risk-reduction counselling and voluntary counselling and testing (VCT). All interventions examined STI incidence as the primary outcome. Findings of the VCT interventions showed that although a reduction in the incidence of STIs and HIV acquisition was seen, the effects were non-significant. However, results were more positive for counselling interventions. Manhardt and Holmes (2005) stated that “client-centred counselling was as effective as interactive-counselling intervention based on the theory of reasoned action and social cognitive theory at reducing the incidence of STIs over a 12-month period, when compared to the efficacy of didactic messages” (S15). The findings in these studies add to those of the previous Evidence Briefing (Ellis and Grey, 2004), which found that there was tentative review-level evidence to conclude that individual risk counselling can be effective.

Ward and colleagues (2005) (some overlap with Ward et al., 2005, DiClemente et al., 2005, Manhardt and Holmes, 2005 and Robin et al., 2004) examined nine clinic-based interventions (see Table 5, Appendix E). Interventions primarily included counselling and skills-building techniques. Four out of the nine trials considering the outcome of laboratory confirmed STIs found greater reductions in their intervention groups relative to their controls, which was statistically significant ( $p < 0.05$ ) for two studies. However, pooled results did not indicate an overall effect (RR 1.00 (95% CI, 0.81 to 1.23)). Of the four studies considering clinically diagnosed STIs one found no reduction (Branson et al., 1998) whilst the remaining studies showed that participants in the intervention group had higher STI rates than the control group following the intervention. Two trials considering self-reported STIs also found no significant effects (Shrier et al., 2001; Metzler et al., 2000). Six out of seven trials reporting consistent condom use observed an increase in the intervention groups compared to the controls (Kamb et al., 1998; NIMH, 1998; Imrie et al., 2001; Kalichman et al., 1999; Shrier et al., 2001; Boyer et al., 1997) and pooled results suggested an overall

effect (RR 1.17 (1.10 to 1.25)). Also, five out of seven trials considering number of sexual partners found fewer sexual partners among their intervention groups compared to their control groups.

In addition to one study already mentioned (Boyer, 1997), Robin and colleagues (2004) examined one other clinic-based intervention that included risk-assessment, counselling on condom use and prevention, educational material and the offer of free condoms (Mansfield, 1993). However, analysis showed no effects on any behavioural outcome and the authors make no further comment about it.

**Evidence statement: No change from Ellis and Grey (2004). There is tentative review-level evidence to conclude that individual risk counselling can be effective in reducing sexual risk behaviour among clinic attendees.**

#### **4.1.2 Partner notification**

We found one Category 1 review to add to the six Category 1, 2 and 3 reviews relevant to partner notification in the originals Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** Manhardt and Holmes, 2005.

**Category 2:** No evidence

**Category 3:** No evidence

The previous Evidence Briefing (Ellis and Grey, 2004) found evidence to support the effectiveness of partner notification. In this update, Manhart and Holmes (2005), reported on one study relevant to partner notification (Peterman et al., 1997) that randomly assigned people diagnosed with syphilis to different intervention approaches. The methods used were: partner notification by patients within two days; immediate notification by disease-intervention specialist; or immediate notification by disease-intervention specialist with optional blood draw in the field. Findings showed similar success for all three approaches in terms of locating and treating partners.

**Evidence statement: No change from Ellis and Grey (2004). There is sufficient review-level evidence to conclude that notification can be an effective means of newly detecting infections**

#### **4.1.3 Improved communication between parents and adolescents (parental/family intervention)**

A total of four reviews were identified that discussed studies relevant to parental monitoring. These findings add to those previously reported from three Category 3 reviews in the original evidence briefing (Ellis and Grey, 2004).

#### *Outcomes*

The main outcomes examined were unprotected sex, pregnancy and sexual debut.

**Category 1:** No evidence

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004.

**Category 3:** DiClemente et al., 2002; Shrier, 2004.

Robin et al. (2004) reported on one individual-level intervention by Miller et al. (1993). This intervention involved adolescents and their families viewing six videos and supplementary printed material over a three-month period. However, this intervention showed null results, Robin et al. (2004) made no additional comments about this intervention.

Pedlow and Carey (2004) included three school-based studies that aimed to promote parent/adolescent communication (further details provided in section 4.2.5 (ii)). Pedlow and Carey (2004) noted that “Parents continue to be important, and parent-adolescent discussions about sex can protect teens from other influences that might encourage risky sex. Thus, encouraging parent-teen communication and assisting parents in monitoring teens’ behaviour may be especially important for the prevention of HIV/STDs as well as unintended pregnancy” (p174).

Shrier (2004) and DiClemente et al. (2002) also highlighted the importance of parental monitoring. DiClemente et al. (2002) reported findings from several studies that involved parental monitoring and family support as a prevention intervention. Li et al. (2000a, 2000b; cited in DiClemente et al., 2002) examined parental monitoring to prevent unprotected sex. DiClemente et al. (2002) stated that “parental monitoring had a direct and stronger protective effect against adolescents’ engagement in unprotected vaginal sex at the 2-, 3-, and 4-year follow-up” (p.173). DiClemente et al. (2001; cited in DiClemente et al., 2002) found that adolescents with perceived low parental monitoring were significantly more likely to participate in unprotected sex; have multiple sexual partners; and have partners who were not monogamous compared to others with perceived high parental monitoring. Romer et al. (1994) found that high levels of parental monitoring were related to lower odds of initiating sex before 11 years of age and greater likelihood of delayed sexual initiation in female adolescents. Additional relationships between parental monitoring and risky sexual practices among adolescents have been reported by Metzler et al, (1994); Luster et al. (1997); Benda and DiBlasio, (1994); and Crosby et al. (2002). One study showed that behavioural interventions resulted in significant improvements in parental monitoring (Stanton et al., 2000).

Ellis and Grey (2004) found Category 3 evidence for greater communication between parents and adolescents. Our findings add to those from the original Evidence Briefing, however, we conclude that there is insufficient evidence to change the previous evidence statement.

**Evidence statement: No change from Ellis and Grey (2004). There is insufficient review-level evidence to support or discount the effectiveness of improved communication between parents and adolescents (parental/family involvement) at reducing the sexual risk behaviour of adolescents.**

## 4.2 Group-level interventions

We found a total of nine Category 1, 2, and 3 reviews that included group level interventions. These add to those previously reported from 17 Category 1, 2, and 3 reviews in the original Evidence Briefing (Ellis and Grey, 2004). The most frequently reported group-level interventions were clinic-based.

**Category 1:** DiClemente et al., 2005; Manhart and Holmes, 2005; Ward et al., 2004; and Ward et al., 2005.

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004

**Category 3:** DiClemente et al., 2002; Schmiedl, 2004; Schaalma et al., 2004

### 4.2.1 Clinic-based interventions

We found a total of seven reviews that reported findings on clinic-based interventions.

#### *Outcomes*

The most frequently reported outcome was condom use.

#### **(i) Clinic-based interventions aimed at adolescents**

A total of five reviews reported findings on clinic-based interventions aimed at adolescents. The original Evidence Briefing did not contain any reviews that explored clinic-based interventions aimed at adolescents.

**Category 1:** DiClemente et al., 2005; Ward et al., 2004; Ward et al., 2005

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004

**Category 3:** No evidence

DiClemente et al. (2004) reported on five clinic or health service-based interventions (DiClemente et al., 2004; Gillmore et al., 1997; Metzler et al., 2000; Orr et al., 1996; Lawrence et al., 1995) all of which included adolescent populations. The interventions used group sessions that focused primarily upon safe sex, attitudes towards condoms, various skills training and assertion. Across the five interventions, outcomes were mixed. In three studies, participants receiving the intervention reported higher levels of consistent condom use at six- (DiClemente et al., 2004; Orr et al., 1996; St. Lawrence et al., 1995) and 12-month follow-up (DiClemente et al., 2004; St. Lawrence et al., 1995). One study (Metzler et al., 2000) found that the intervention group demonstrated a significant reduction in sexual partners at six-month follow-up. Gilmore et al. (1997) reported no significant effect of the intervention on condom use, number of sexual partners or refusing sex without a condom.

Ward et al. (2004) (the same studies as DiClemente et al., 2004) reported on two group-level clinic-based STI interventions targeted at adolescents (Metzler et al., 2000; Orr et al., 1996; also reported in Ward et al., 2005). Metzler et al. (2000) incorporated role-play and skills training into their interventions. Findings

showed that there was a significant decrease in the number of sexual partners who were strangers, in addition to significant decreases in the mean number of sexual partners and the mean number of non-monogamous sexual partners. Orr et al. (1996) also examined an intervention that included role-play, condom negotiation and skills training. Findings from this study showed that there was a significant increase in consistent condom use in both the intervention and control group. Ward et al. (2004) made no specific comment on clinic-based interventions specific to adolescents.

Pedlow and Carey (2004) (overlap with Ward et al., 2004; 2005; DiClemente et al., 2004) reported on two clinic-based interventions targeting adolescents that have not previously been mentioned<sup>2</sup> (DeLamater et al., 2000; Mansfield et al., 1993). These interventions included decision-making skills, booster sessions, condom skills, negotiation skills, and one also measured risk perception. However, the authors made no specific comment on the effectiveness of these interventions relative to their setting.

Robin et al. (2004) described one group-level health centre-based intervention aimed at adolescent African Americans (St. Lawrence et al., 1995; also reported in DiClemente et al., 2004). This randomised controlled trial involved small-group discussion modelling skills, skills practice, external speakers and role-play. The intervention showed positive results on rate of sexual activity, condom use, and sexual initiation. However Robin et al. (2004) categorised this study as 'mixed' due to the fact that it showed null results when carried out on males in a state reformatory (St. Lawrence, 1999).

**New evidence statement: There is insufficient review-level evidence to conclude that clinic-based interventions aimed at adolescents are effective at reducing the sexual risk behaviour of adolescents.**

#### **(ii) Clinic-based interventions aimed at the general clinic attendees**

A total of three reviews reported findings on interventions aimed at general adult clinic attendees.

**Category 1:** Manhart and Holmes, 2005; Ward et al., 2004; Ward et al., 2005

**Category 2:** No evidence

**Category 3:** No evidence

Manhart and Holmes (2005) reported details of six clinic-based interventions (seven studies) (Branson et al., 1998; NIMH, 1998; Shain et al., 1999; Shain et al., 2002; Hobfall et al., 2002; Baker et al., 2003; Cohen et al., 1991). Two interventions targeted both men and women and the remaining four interventions targeted women only. All six interventions involved small-group work including counselling, attitudes, skills and behaviour change. All but two of the studies (Branson et al., 1998; Hobfall et al., 2002) reported reductions in STI incidence. Cohen et al. (1991) compared group discussion on condoms in waiting rooms

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<sup>2</sup> Pedlow and Carey, 2004 also included Orr et al., 1996 and Metzler et al., 2000.

(intervention group) to no group discussion (control), finding a non-significant 50% reduction in repeat clinic attendances with a subsequent STI for the intervention group.

Ward et al. (2004) reported on ten group-level clinic-based STI interventions, five of which have not previously been discussed and were aimed at general STI clinic attendees (Balmer et al., 1998; Imrie et al., 2001; Kalichman et al., 1999; O’Leary et al., 1996; Solomon et al., 1989). Ward et al. (2004) stated that, “This review suggests that behavioural interventions may be effective in increasing the proportion of GUM clinic patients reporting consistent condom use, though there were inconsistent effects on STI rates and other measures of sexual behaviour (e.g. number of sexual partners)” (p.53). Ward et al. (2005) also found “evidence that behavioural interventions increase consistent condom use, though effects on other aspects of behaviour were inconsistent” (p. 390).

**New evidence statement: There is tentative review-level evidence to conclude that clinic-based interventions using behavioural skills are an effective way to reduce the sexual risk behaviour of clinic attendees.**

### **(iii) Parental involvement in clinic-based interventions**

A total of two reviews referred to parental involvement in clinic-based interventions. The original Evidence Briefing did not contain any reviews that explored parental involvement in clinic-based interventions.

**Category 1:** DiClemente et al., 2004

**Category 2:** No evidence

**Category 3:** DiClemente et al., 2002

Although they provided no evidence of effectiveness DiClemente et al. (2004) highlighted the importance of involving parents as behaviour-change agents through improved parent-teen communication. They also maintained that clinicians who see young people are in a good position to provide parents with the information they need to facilitate parent-adolescent discussions.

DiClemente et al. (2002) also suggested that clinic-level interventions involving parental counselling may enable physicians to emphasise the importance of parental monitoring (p.175).

**New evidence statement: There is insufficient review-level evidence to either support or discount the effectiveness of parental inclusion in clinic-based interventions at reducing the sexual risk behaviour of students.**

#### **4.2.2 Linking schools to clinic services and/or providing condoms in schools**

One review we identified reported on five primary studies relevant to school-based STI prevention interventions. These reviews add to the five relevant Category 1, 2 and 3 reviews previously reported in the original Evidence Briefing (Ellis and Grey, 2004).

##### *Outcome*

The most frequently reported outcome was condom use.

**Category 1:** No evidence

**Category 2:** No evidence

**Category 3:** Schmiedl, 2004

Schmeidl (2004) reported on five school-based condom distribution interventions (Schuster et al., 1998; Wolk and Rosenbaum, 1995; Guttmacher et al., 1997; Kirby et al., 1999; Blake et al., 2003). Findings from Schuster et al. (1998) showed that there was no increase in the level of sexual activity at one-year follow-up. However, condom use increased among males, and there was an increase in the percentage of male students who had used condoms at recent first sex. Wolk and Rosenbaum (1995) found that condom distribution in schools was three times more beneficial to a sexually active student than the risk of encouraging a non-sexually active young person to become sexually active. Guttmacher et al. (1997) reported increased condom use in students with three or more partners in the last six months in a school with condom provision compared to a school without. Kirby et al. (1999) found that condom provision did not increase sexual activity in students. Blake et al. (2003) found that students from schools with condom provision were less likely to report sexual intercourse, more likely to receive condom use education, and where they did report sexual activity, were more likely to use condoms but were less likely to use any other method of contraception. Overall, findings showed that some young people received condoms but did not use them. In addition, there was no difference in pregnancy rates between intervention schools and schools without condom distribution schemes. None of the studies examined the effects of condom distribution on rates of STIs.

These findings add to those in the first Evidence Briefing and although they do not measure changes in STI rates they do show evidence of increased condom use. However, they original only from Category 3 papers therefore, there is insufficient evidence.

**Evidence statement: No change from Ellis and Grey (2004). There is insufficient review-level evidence to conclude that condom distribution in schools can be effective at reducing the sexual risk behaviour of students.**

##### **(i) Condom availability in schools and association with increased sexual activity**

One review identified studies relevant to condom availability in schools. The original Evidence Briefing did not include evidence relating to an association between condom availability in schools and sexual activity.

**Category 1:** No evidence

**Category 2:** No evidence

**Category 3:** Schmiedl, 2004

Schmiedl (2004) stated that, “school-based condom availability programs were not associated with an increase in teen sexual activity, whereas data from most programs indicated increased use of condoms by teens who are sexually active, these programs should be seriously considered when developing school-based programs focused in preventing pregnancy, STDs, and HIV” (p.19).

**New evidence statement: There is insufficient review-level evidence to support or discount the view that condom distribution in schools is not associated with increased sexual activity.**

#### **4.2.3 School curriculum-based sex education**

We found a total of three reviews that reported on 52 relevant primary studies. These findings add to those previously reported by the relevant 14 Category 1, 2 and 3 reviews in the original Evidence Briefing (Ellis and Grey, 2004).

##### *Outcomes*

The most frequently reported outcomes were delay of sexual initiation, condom use, contraceptive use and frequency of sexual intercourse.

**Category 1:** No evidence

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004

**Category 3:** Schaalma et al., 2004

Robin et al. (2004) reported on 12 primary studies that addressed school-based sex education (see Table 6, Appendix E). Eight studies reported positive intervention effects, two showed mixed effects and two, aimed at older adolescents, showed negative effects.

Pedlow and Carey (2004) reported on 13 school-based interventions (see Table 7, Appendix E). Findings showed that programmes targeting pre-adolescent youth (aged 9-12 years) were effective at delaying the onset of sexual intercourse and improving condom use among sexually active youth. With young adolescents (aged 13-15 years) interventions were effective at increasing condom use, reducing unprotected sex, and reducing the frequency of sexual intercourse.

Schaalma et al. (2004) reported on five school-based interventions (Abraham et al., 2002; Schaalma et al., 1996; Schaalma and Kok, 2001; Wight and Abraham, 2000; Paulussen et al., 1994). Schaalma et al.

(2004) noted that these interventions include aspects such as, discussion groups, role-play, rehearsal and modelling, which are methods that have proven to be effective at preventing risk behaviours.

The findings from the previous Evidence Briefing concluded that after-school based interventions, and the inclusion of skills building techniques such as role-play were effective at changing sexual behaviour.

**Evidence statement: No change from Ellis and Grey (2004). There is sufficient review-level evidence to conclude that school-based sex education can be effective in reducing the sexual risk behaviours of young people.**

### **(i) Start sex education early, before the onset of sexual activity**

We found one review to add to the two Category 1 and 2 reviews in the original Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** No evidence

**Category 2:** No evidence

**Category 3:** Shrier, 2004

Shrier (2004) concluded that the earlier young people receive sex education, the less likely they are to participate in risky sexual behaviour.

These comments agree with those provided by two reviews in the original evidence briefing (Ellis and Grey, 2004).

**Evidence statement: No change from Ellis and Grey (2004). There is tentative review-level evidence to conclude that sex education is more effective if begun before the onset of sexual activity.**

### **(ii) Parents and school-based interventions**

Two Category 2 and 3 reviews (Pedlow and Carey, 2004; DiClemente et al., 2002) were identified that reported on five primary studies relevant to parental inclusion in school-based interventions. The original Evidence Briefing did not include evidence of parent and school-based interventions.

#### *Outcomes*

The most frequently reported outcomes were improved parent-adolescent communications, multiple partners, and pregnancy.

**Category 1:** No evidence

**Category 2:** Pedlow and Carey, 2004

**Category 3:** DiClemente et al., 2002

Pedlow and Carey (2004) reported details of three studies that included parental involvement (Coyle et al., 2001; Levy et al., 1995; Aarons et al., 2000). The interventions examined incorporated aspects such as completing homework assignments with parents, providing material to parents to encourage communication, meetings and newsletters for parents. Two studies found no change in parent and adolescent communication after the intervention, and one study (Coyle et al., 2001) found improved adolescent-parent communication at almost three years follow-up.

DiClemente et al. (2002) reported on one intervention aimed at reducing the sexual risk behaviour of young people in schools through parental inclusion in school-based intervention. Hawkins et al. (1991) examined a youth development programme that provided training to both young people and their parents in a school setting. This intervention decreased the odds of young people participating in risky sexual behaviour, such as multiple partners and pregnancy, during adolescence.

**New evidence statement: There is insufficient review-level evidence to conclude that parental involvement in school-based interventions is effective at reducing the sexual risk behaviour of young people.**

#### **4.2.4 Small-group work**

Six reviews were identified that reported on small group work. These findings add to the seven Category 1 and 3 reviews previously reported in the original evidence briefing (Ellis and Grey, 2004).

##### *Outcomes*

The most frequently reported outcome was condom use.

**Category 1:** DiClemente et al., 2004; Manhart and Holmes, 2004; Ward et al., 2004; Ward et al., 2005.

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004

**Category 3:** No evidence

DiClemente et al. (2004) reported on successful primary studies (DiClement et al., 2004; Metzler et al., 2000; Orr et al., 1996; St Lawrence et al., 1995) showing significant effects on outcomes including, for example, consistent condoms use in the intervention group compared to the control group. These studies incorporated clinic-based small-group work, and highlighted the importance of role-play and skills building.

Manhart and Holmes (2005) reported details of five small-group RCTs with passive follow-up (e.g. review of clinic records as opposed to actively testing individuals) (O'Donnell et al., 1998; Cohen et al., 1992a; Cohen et al., 1992b; Gollub et al., 2000; Imrie et al., 2001). Findings showed mixed results with one study (Imrie et al., 2001) demonstrating an increase in STI incidence in the intervention group.

Pedlow and Carey also included studies focused at pre- and young adolescents (9-12 years and 13-15 years) that included small group work. They found evidence of successful group-level interventions addressing cognitive factors, risk perception and skills development. Pedlow and Carey (2004) classified the design of the intervention by Kirby et al. (1997) as being a developmentally appropriate study for this target group as it included decision-making skills and preparation for risky situations.

Robin et al. (2004) reported details of 21 primary studies that included small group work with young people from communities, clinics, schools, detention facilities and a state reformatory (see Table 6, Appendix E). Robin et al. (2004) reported details of three primary studies that were undertaken with participants from schools and clinics as well as family planning clinics and community based organisations (Jemmott et al., 1992<sup>3</sup>; Kirby et al., 1997; Eisen et al., 1990). These interventions included, among other aspects, role-play, discussion, and videos. Findings from Jemmott et al. (1992) favoured the intervention group (who received a career planning intervention) for risky sexual behaviour index, frequency of sex, number of partners, occasions of sex without a condom and having had anal sex. Robin et al. (2004) deemed the studies by Kirby et al. (1997) and Eisen et al. (1990) to have negative effects due to inconsistencies in the randomisation process. Robin and colleagues noted “the most common strategies for content delivery were small group discussion, role-playing and interactive and experiential exercises, use of media and interactive media, use of structured games, and lecture” (p.18).

Manhart and Holmes (2005) stated that, “Interventions delivered in small-group settings were as effective as those delivered to individuals” (S20) and other reviews have also found that group interventions although effective, are no more effective than individual-level interventions. Ward et al. (2004) carried out a pooled analysis and found no difference in effects between group interventions and those interventions using either an individual format or those with one or two sessions. Ward et al. (2005) reported that, “intervention format and length was not associated with trial results [group based relative risk (RR) 0.94 (0.70 to 1.25) versus individual based RR 1.16 (0.76 to 1.75)]” (p.390).

These findings add to the evidence of effectiveness reported in the previous evidence briefing (Ellis and Grey, 2004).

**Evidence statement: No change from Ellis and Grey (2004). There is sufficient review-level evidence to conclude that small group work involving skills-building activities can be effective at reducing the sexual risk behaviour of all target groups.**

#### **4.2.5 Detached education and outreach by health professionals**

Two reviews were identified that reported details of education and outreach-based interventions employing group-level education and condom-distribution. The original Evidence Briefing did not include evidence of group level detached education and outreach by health professionals.

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<sup>3</sup> Also reported by Pedlow and Carey (2004).

## *Outcomes*

The most frequently reported outcome was STI incidence.

**Category 1:** Manhart and Holmes, 2005

**Category 2:** Robin et al., 2004

**Category 3:** No evidence

Condom distribution was a characteristic of three studies included by Manhart and Holmes (2005) (Feldblum et al., 2001; Fontanet et al., 1998; Celentano et al., 1998; also reported in Speizer et al., 2003). Feldblum and colleagues examined an intervention that included the provision of information, education and communication (IEC) as well as female condoms to female plantation workers in Kenya. The intervention had no impact on STI incidence. Fontanet et al. (1998) provided male and female condoms to brothel workers in Thailand. The intervention resulted in a non-significant decrease in STI incidence compared to brothels that only received male condoms.

Robin and colleagues (2004) reported on three community-based education programmes, all with positive outcomes on risky sexual behaviour (e.g. condom use) (Jemmott et al., 1998; Stanton et al., 1996; Stanton et al., 1997). Interventions included, among other aspects, small-group discussions, role-play, videos, and skills-building activities. However, these interventions were aimed at African American young people and their generalisability to the UK population of young people may be limited.

One additional group-level intervention reported by Manhart and Holmes (2005) addressed STI prevention for male Thai army conscripts using condom distribution at brothels targeted at men with an STI history. Findings showed significant, desirable effects on rates of STIs with greater than 80% reduction in STI recurrence compared to that in the control groups. Findings also showed a reduction in HIV incidence, risk behaviour, brothel visits and an improvement in consistent condom use.

**New evidence statement: There is tentative review-level evidence to conclude that detached education and outreach by health professionals, including targeted condom distribution, is effective at reducing the sexual risk behaviour of high risk groups.**

## **4.3 Community level interventions**

Only one review identified reported on relevant community level interventions. This adds to the seven Category 1, 2 and 3 reviews included in the original Evidence Briefing (Ellis and Grey, 2004).

### **4.3.1 Community outreach**

One review reported details of two community-level mixed modality interventions. The original Evidence Briefing did not include evidence relating to community outreach.

### *Outcomes*

The reported outcome was STI incidence.

**Category 1:** Manhart and Holmes, 2005.

**Category 2:** No evidence

**Category 3:** No evidence

Manhart and Holmes (2005) reported on two community-level interventions (Hayes et al., 2003; Kamali et al., 2003). Both interventions were mixed modality and included behavioural and treatment strategies. The study by Kamali et al. (2003) showed that communities receiving only information, education and communication (IEC) experienced a decrease in HSV-2 seroconversion compared to the communities receiving IEC and management of STI symptoms, which experienced decreased incidence of syphilis and gonorrhoea. However, all groups, including the control group, reported an increase in condom use. Hayes et al. (2003) carried out a four-component intervention that included school health and reproductive education, reproductive youth services, condom distribution and community activities. However, no intervention effects were found for STI or HIV incidence even though improvements in knowledge and behaviour were reported.

**Evidence statement: There is insufficient review-level evidence to support or discount the effectiveness of community level outreach interventions on sexual risk behaviour.**

## **4.4 Socio-political interventions**

Three reviews were identified that addressed socio-political interventions. They add to the four Category 3 reviews reported in the original evidence briefing (Ellis and Grey, 2004).

### *Outcomes*

The most frequently reported outcome was condom use.

#### **4.4.1 Legislation, policy, equality work, regulation**

We found three reviews to add to one Category 3 review regarding Legislation, policy, equality work and regulation.

**Category 1:** Manhart and Holmes, 2005

**Category 2:** No evidence

**Category 3:** DiClemente et al., 2002; Schaalma et al., 2004.

Manhart and Holmes (2005) included one study (Egger et al., 2000) that reported on an intervention in Nicaragua where a health ordinance required motels to provide condoms to guests when requested.

Motels frequented by CSWs were randomly assigned to either (1) offering condoms when requested at check-in, (2) always offering condoms at check-in, or (3) placing condoms on each bed before check-in. Findings showed that both offering condoms at check-in and placing condoms on the bed resulted in significant increases in condom use.

DiClemente et al. (2002) discussed the benefits of parental involvement in school-based programmes (see section 4.2.3 (ii)). DiClemente and colleagues concluded that, “community policies that involve parents in the sex education programs offered to children and adolescents in schools may also be beneficial” (p.176).

In relation to sex education in schools, Schaalma et al. (2004) commented on the policies in The Netherlands that state that teenagers in school should be taught about condom use, contraceptive use and social skills relative to sexual health. Findings have shown that the theory and evidence based interventions implemented in The Netherlands have had favourable effects. However, Schaalma and colleagues also noted the negative effects policies can have on sex education in schools. For example, abstinence based sex education in US schools has shown little or no evidence of effectiveness yet continues to be implemented, and national guidelines in Tanzania discourage the promotion of condom and contraceptive information. Schaalma et al. (2003) argue that when policy or legislation constrains evidence-based practice the PRECEDE/PROCEED or Intervention Mapping approaches could be applied to politicise health promotion and mobilise community members to support and aid the establishment of health promotion policies.

**Changed evidence statement: There is insufficient review-level evidence to support or discount the effectiveness of legislation, policy, equality work or regulation.**

The previous evidence statement reported no review-level evidence to support or discount the effectiveness of legislation, policy, equality work or regulation.

#### **4.4.2 Resource allocation**

Four reviews were identified that referred to the issue of resource allocation. They add to the two Category 3 reviews included in the original Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** Ward et al., 2004.

**Category 2:** Robin et al., 2004.

**Category 3:** DiClemente et al., 2002; Schaalma et al., 2004.

Although the reviews considered in this evidence briefing presented no evidence of effective models of resource allocation they have considered resource allocation when making conclusions regarding the effectiveness of interventions and suggestions for future research.

Ward et al. (2004) stated, “one of the studies to show success in reducing STI rates found no advantage of an enhanced four-week intervention over and above two 20-minute individually based counselling sessions. However, even if such an approach was shown to be effective in a UK setting, currently it could not be delivered as part of routine clinic care without increased resources, clinic time, and trained staff. In addition, the potential impact of such an intervention on STI rates is not clear. This will depend on the uptake of such an intervention were it offered, and crucially on the proportion of STIs thought to occur in those who have previously attended GUM clinics” (p.55).

DiClemente et al. (2002) discussed the importance of parental monitoring and suggested that parental counselling by clinicians may be effective as an STI intervention aimed at young people. However, they highlight that further resources would be needed to develop and undertake this intervention.

With regard to resource allocation for school-based interventions Schaalma et al. (2004) stated that, “high quality teacher training is required for high quality sexual health promotion in classrooms and this needs to be acknowledged in budget planning” (p.264). In light of the evidence that suggested interventions carried out over longer periods of time are more effective Robin et al. (2004) noted, “the effect of duration and intensity on interventions results in a particular challenge for school-based educators because they may have limited time to implement programs within a school year” (p.23). They also noted, “community-based organisations also need sufficient resources to implement programs in multiple sessions” (p.23).

**Evidence statement: No change from Ellis and Grey (2004). There is no review-level evidence to support or discount the effectiveness of difference models of resource allocation.**

## 4.5 Features of effective interventions

### 4.5.1 *Use of theoretical models in developing interventions*

Findings from five Category 1, 2 and 3 reviews add to those reported in 13 reviews from the original evidence briefing (Ellis and Grey, 2004) that concluded that many successful interventions were underpinned by theories of behaviour change.

**Category 1:** Manhart and Holmes, 2005; Ward et al., 2004; Ward et al., 2005.

**Category 2:** Pedlow and Carey, 2004

**Category 3:** Schaalma et al., 2004

With regard to theory-based interventions, Ward et al. (2004; 2005) concluded that interventions using social cognitive or related theories were related to intervention effectiveness, although pooled results were

not statistically significant [social cognition models RR 0.91 (0.71 to 1.16) versus other trials RR 1.19 (0.84 to 1.68)].

In relation to theory-based interventions, Manhart and Holmes (2005) concluded that “among the behavioural interventions reviewed, those that showed no effect were theory based as often as those that demonstrated benefit, and no underlying behavioural theory or approach (e.g., skills building, counselling, and motivational interviewing) was more often successful than another” (S20).

Pedlow and Carey (2004) concluded that the majority of theories applied to interventions aimed at young people were developed primarily for adults and do not focus upon the developmental determinants of sexual risk (p.181).

Schaalma et al. (2004) reported details of several studies that found evidence of effectiveness in interventions underpinned by cognitive behavioural theories. Schaalma et al. (2004) referred specifically to one study by Jemmott and Jemmott (2000) that examined 36 theoretically based interventions that were effective at changing behaviour to see if they were more effective on condom use. Findings showed that those studies with effects on mediators of behaviour change such as knowledge and intentions, also had greater effects on condom use and abstinence.

**Evidence statement: No change from Ellis and Grey (2004). There is sufficient review-level evidence to conclude that theory-based interventions are more likely to be effective.**

#### **4.5.2 *Emphasis on risk reduction (e.g. promoting condom use or reduction in number of partners), rather than promotion of abstinence only***

Findings from three Category 1, 2 and 3 reviews contribute to the evidence from eight reviews reported in the original evidence briefing (Ellis and Grey, 2004).

**Category 1:** DiClemente et al., 2004.

**Category 2:** Robin et al., 2004

**Category 3:** Schaalma et al., 2004

DiClemente et al. (2004) noted that adolescents should understand the value of abstinence in accordance with recommendations (US). They also stated that adolescents should be informed about the use of condoms and contraceptives.

Although Robin et al. (2004) made no specific conclusions regarding risk reduction compared to abstinence only programmes they did highlight that more effective programmes were usually of a longer

duration and focused on developing knowledge and life skills, compared to shorter programmes that focused specifically on abstinence and condom-use skills.

From the evidence reviewed on abstinence-based interventions, Schaalma et al. (2004) concluded, “programs with an exclusive abstinence message generally have not succeeded in the promotion of abstinent sexual behaviour, although some have succeeded in changing attitudes towards abstinence” (p.265).

**Evidence statement: No change from Ellis and Grey (2004). There is tentative review-level evidence to conclude that interventions that promote risk reduction, rather than abstinence alone, are more likely to be effective.**

**Evidence statement: No change from Ellis and Grey (2004). There is insufficient review-level evidence to support or discount the effectiveness of school-based abstinence-only approaches.**

#### **4.5.3 Use of behavioural skills and social skills training, including self-efficacy**

Nine Category 1, 2 and 3 reviews were found to add to the 15 Category 1, 2 and 3 reviews in the original Evidence Briefing.

**Category 1:** DiClemente et al., 2004; Manhart and Holmes et al., 2005; Ward et al., 2004; Ward et al., 2005

**Category 2:** Pedlow and Carey, 2004; Robin et al., 2004

**Category 3:** DiClemente et al., 2002; Schaalma et al., 2004; Shrier, 2004

Ward et al. (2004; 2005) commented that trials of behavioural interventions showed a reduction in STI rates and was associated with increased consistent condom use. Many of the interventions included training such as condom use, training in how to deal with high-risk situations, and decision-making skills.

DiClemente et al. (2004) concluded that characteristics of effective interventions include technical skills, such as condom-use skills, and active learning skills, through the use of role-play, as well as self-efficacy through communication and assertiveness skills (p.215).

Manhart and Holmes (2005) included studies that used behavioural skills and although skills-building was listed as a feature of successful interventions, Manhart and Holmes (2005) concluded that no theory or approach (e.g. behavioural skills) was more often successful than another (S18).

With regard to interventions aimed at adolescents, Pedlow and Carey (2004) concluded that skills-training is effective (p.174).

Robin et al. (2004) found that typically, programmes that were effective at reducing sexual risk behaviours included skills-building activities such as communication skills, problem-solving, changing peer-norms and decision-making. However, Robin et al. (2004) also found that programmes more generally targeted towards increasing adolescent resiliency and competencies have also shown promising results.

DiClemente et al. (2002) suggested that clinic and community-based interventions should be further utilised in order to promote behavioural skill-based interventions through physician counselling and social/friendship/peer networks.

Although Shrier (2004) provided no evidence of effectiveness he/she maintained that the incorporation of behavioural skills such as partner notification, sexual negotiation and risk perception into prevention interventions can increase self-efficacy.

Schaalma et al. (2004) highlighted studies that call for behavioural-skills and social-skills development, including what they term “life skills” such as decision-making, communication and negotiation (p.262). Through these skills young people will learn how they would react in social situations that could lead to risky behaviour. They report on two successful programmes (three studies) that contain relevant aspects (Abraham et al., 2002; Schaalma et al., 1996; Schaalma and Kok, 2001). Schaalma et al. (2004) highlighted the relationship between self-efficacy and condom use and also identified four cognitions that have medium to large correlations with condom use, they are: (1) attitudes toward condoms ( $r = .32$ ); (2) descriptive norms in relation to condom use (i.e., perceptions that others approve of and use condoms;  $r = .37$ ); (3) intentions to use condoms ( $r = .43$ ); and (4) pregnancy motivation (e.g. condoms should be used for contraceptive purposes, as well as STI protection;  $r = .37$ ) (p.261). Schaalma et al. (2004) referred to a study by Jemmott and Jemmott (2000) that examined 36 theoretically based interventions that were effective at changing behaviour to see if they were more effective on condom use. Interventions were divided into those that had a small effect on these cognitions. Findings showed that those interventions with greater effects on cognitive mediators also had greater effects upon behaviour such as condom use “( $d_s = 0.15$  for interventions with a small effect on mediators vs.  $d_s = 0.41$  for those with larger effects on mediators)” (p.262).

**Evidence statement: No change from Ellis and Grey (2004). There is sufficient review-level evidence to conclude that interventions that incorporate behavioural skills training (specifically negotiation skills) are more likely to be effective.**

#### **4.5.4 Provision of basic, accurate information through clear, unambiguous messages**

Two reviews were found to add to the 10 Category 1, 2 and 3 reviews from the original Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** DiClemente et al., 2004

**Category 2:** Pedlow and Carey, 2004

**Category 3:** No evidence

DiClemente et al. (2004) concluded that one of the fundamental aspects of clinic-based interventions aimed at young people and achieving positive effects on STI-associated risk behaviours, included timely and accurate STI related information in a clear and understandable format (p.215).

Pedlow and Carey, (2004) argued for developmentally appropriate prevention interventions and maintained that prevention concepts aimed at young people need to be clearly illustrated using personalised examples appropriate to their cognitive maturity.

**Evidence statement: No change from Ellis and Grey, 2004. There is sufficient review-level evidence to conclude that interventions which include the provision of basic, accurate information through clear, unambiguous messages are more likely to be effective at reducing sexual risk-taking behaviour.**

#### **4.5.5 Facilitator training**

The findings from two Category 2 and 3 reviews explored the influence of facilitator training. Facilitator training was not covered in the original Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** No evidence

**Category 2:** Robin et al., 2004

**Category 3:** Schaalma et al., 2004

Robin et al. (2004) stated that, “Programs that produced positive effects used trained adult facilitators” (p.18). The authors went on to conclude that, “program facilitators’ training may be more important than whether facilitators’ and participants’ demographic characteristics match” (p.23).

Schaalma et al. (2004) examined the role of school-based intervention facilitators. They stated, “Health promotion in classrooms depends upon the establishment of a “safe” classroom atmosphere. Young people should feel free to discuss intimate issues because discussing sexual behaviour may break taboos concerning the public discussion of sexuality” (p.264). Schaalma et al. (2004) concluded that, “sexual health promotion in schools is a specialised aspect of health promotion requiring particular expertise from planning through delivery. High quality teacher training is required for high quality sexual health promotion in classrooms” (p.264).

**New evidence statement: There is tentative review-level evidence to conclude that school-based interventions that use trained adult facilitators are more likely to be effective.**

#### **4.5.6 Of appropriate duration, length and intensity**

We found five Category 1 and 2 reviews to add to the six Category 1, 2 and 3 reviews included in the original Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** Manhart and Holmes, 2005; Ward et al., 2004; Ward et al., 2005.

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004.

**Category 3:** No evidence

In this Evidence Briefing we have examined reviews relating to the extended delivery of interventions and booster sessions separately. In the original Evidence Briefing both issues were considered together under a general category of appropriate duration, length and intensity.

##### **(i) Extended delivery**

**Category 1:** Manhart and Holmes, 2005; Ward et al., 2004; Ward et al., 2005.

**Category 2:** Robin et al., 2004; Pedlow and Carey, 2004.

**Category 3:** No evidence

With specific reference to interventions aimed at clinic patients, Ward and colleagues (2004) found no evidence to suggest that duration or format affected the impact of interventions. Ward et al. (2005) also stated that, “there was no evidence that an intervention’s success in reducing infections or increasing consistent condom use was related to its format or length” (p.392). They concluded that, “Intervention format and length was not associated with trial results (group based RR 0.94 (0.76 to 1.25) versus individual based RR 1.16 (0.76 to 1.75))” (p.390).

Considering clinic-based interventions, Ward and colleagues (2005) also noted that there is no difference in effectiveness between studies that received a multiple session enhanced intervention and a brief intervention. However, they stated that, “the control groups in these trials received an intervention that goes beyond current UK practice, making it difficult to generalise results or transfer effect estimates to a UK population” (p. 392).

Manhart and Holmes (2005) highlighted evidence that the number of sessions may affect the impact of the intervention, they stated that, “All trials of successful counseling interventions involved at least 2

counseling sessions. However, 2 interventions of 4 and 6 sessions had no effect on the incidence of STI[s]" (S20).

With reference to adolescents, findings from Pedlow and Carey (2004) showed that "extending the delivery of interventions is a promising strategy for reaching youth during developmental periods". They concluded that preliminary findings "suggest that it may be necessary to design, and fund, interventions to be delivered over time as youth mature rather than providing multiple interventions in a single-shot intervention" (p.182).

With specific reference to interventions aimed at adolescents, Robin and colleagues (2004) stated that, "Programs that were more than 15 hours long addressed a greater variety of knowledge topics (including violence prevention and drug and alcohol use) than did those of shorter duration. In addition, more programs that were longer than 15 hours included more general life skills (such as community service learning, career planning, and general problem solving) than programs of shorter duration, and included a greater variety of general life skills. In contrast, programs between 7 and 15 hours were more likely than longer or shorter programs to teach abstinence and condom-use skills, and to teach a greater variety of each" (p.18). Robin and colleagues report one study (Rotheram-Borus et al., 1998) that tested two versions of a study of the same duration delivered in a different number of sessions. Findings showed that the intervention delivered in more sessions (seven compared to three) was more effective.

This evidence adds to that of Shepherd et al. (2001), included in the original evidence briefing, which concluded that, "interventions should be sustained over longer periods of time" (Ellis and Grey, 2004) (p.50). It also adds to the reviews by Kirkby and Coyle (1997) and Kirby (1999) which concluded that, "effective programmes lasted a sufficient length of time to adequately complete a variety of activities" (Ellis and Grey, 2004) (p.50).

**Changed evidence statement: There is tentative review-level evidence to conclude that extended delivery of an intervention relates to its effectiveness.**

## **(ii) Booster sessions**

**Category 1:** No evidence

**Category 2:** Pedlow and Carey, 2004

**Category 3:** No evidence

Pedlow and Carey, 2004 commented on four studies (Coyle et al., 2001; Levy et al., 1995; Aarons et al., 2000; Shrier et al., 2001) that incorporated booster sessions into their interventions. They stated that, "All studies that provided booster sessions were effective in reducing sexual risk behaviours. Suggesting that extended delivery of interventions is a promising strategy for reaching youth during development periods.

The use of extended interventions is different from interventions with a longer “dose”. Prior reviews have shown that intervention dose is not necessarily related to effectiveness” (p.175).

This evidence is in accordance with the recommendation by Kirkby et al. (1994), included in the original Evidence Briefing (Ellis and Grey, 2004), for future research to assess whether re-inforcement measures, such as booster sessions, are effective in sustaining the desired intervention outcome (Ellis and Grey, 2004) (p50).

**Changed evidence statement: There is tentative review-level evidence to conclude that extended delivery using ‘booster’ sessions enhances intervention effectiveness.**

#### **4.5.7 Use of peers and community opinion leaders**

We found three Category 1 and 2 reviews to add to the eight Category 1, 2 and 3 reviews from the original Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** DiClemente et al., 2004.

**Category 2:** Pedlow and Carey, 2004; Robin et al., 2004

**Category 3:** No evidence

DiClemente et al. (2004) reported on two interventions involving peers (DiClemente et al., 2004b; Gillmore et al., 1997). Only one study, (DiClemente et al., 2004b) which used a multi-component approach, reported positive outcomes for consistent condom use.

In relation to peer-led interventions, Robin et al. (2004) found one study (Jemmott et al., 1998) that suggested there was no difference in effectiveness between adult versus peer-led interventions.

Pedlow and Carey (2004) reported on several studies that aimed to improve peer norms or used peer educators. Six out of the seven studies measuring peer norms for condom use or abstinence reported improvements in peer norms. In addition, five out of six studies that aimed to improve peer norms also achieved reductions in sexual risk behaviour. Pedlow and Carey concluded, “improvements in peer norms for safer sex and sexual communication skills were strongly associated with reductions in sexual risk behaviour” (p.181). One promising strategy reported by Pedlow and Carey (2004) for directly influencing peer norms involved working with young people in existing friendship groups.

**Evidence statement: No change from Ellis and Grey (2004). There is tentative review-level evidence to conclude that interventions that use peers and community opinion leaders are effective at reducing risk-taking behaviour.**

#### **4.5.8 Targeted and tailored (in terms of age, gender, culture, development etc), making use of needs assessment or formative research**

We found four relevant Category 1 and 2 reviews to add to the 11 Category 1, 2 and 3 reviews in the original Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** DiClemente et al., 2004; Ward et al., 2004; Ward et al., 2005

**Category 2:** Pedlow and Carey, 2004

**Category 3:** No evidence

Ward et al. (2004) stated that, “study interventions that were appropriately tailored to their population following extensive formative research were more likely to reduce subsequent bacterial STIs than those that were not” (p. 55). Ward et al. (2004) also stated that, “the most effective interventions were developed through extensive formative research” (p.386). Ward et al. (2005) noted, with reference to clinic-based interventions, that, “extensive formative research, including interviews, focus groups, input from community representatives, and pilot testing, was reported by the four most effective trials” (p.390).

DiClemente et al. (2004) stated that all effective elements of interventions uncovered should be tailored to gender and race.

With regard to pre- and young adolescents, Pedlow and Carey (2004) noted that interventions “must be tailored to meet the unique needs of younger versus older youth or sexually naïve versus experienced teens” (p.174). Characteristics of successful and developmentally appropriate interventions were, for example, prevention interventions aimed at adolescents who have not yet initiated sex, booster sessions, illustrated abstract concepts with examples, peer educators and skill-building activities.

Pedlow and Carey (2004) also argued that literature relating to pre- and young adolescents is limited because it fails to measure menarche, which is a developmental transition that has implications for sexual risk behaviour.

**Evidence statement: No change from Ellis and Grey (2004). There is sufficient review-level evidence to conclude that interventions are more likely to be effective if they are targeted and tailored for specific populations, making appropriate use of formative research or needs assessments.**

## 4.6 Multi-component and multi-level interventions

See also section 4.5 for 'features of effective interventions'. These findings from seven Category 1, 2 and 3 reviews suggest that interventions with multiple components are more likely to be effective than those without. This adds to the five Category 1 and 3 reviews in the original Evidence Briefing (Ellis and Grey, 2004).

**Category 1:** DiClemente et al., 2004; Ward et al., 2004; Ward et al., 2005; Manhart and Holmes, 2005

**Category 2:** Pedlow and Carey, 2004; Robin et al., 2004.

**Category 3:** Schhalma et al., 2004

Ward et al. (2004; 2005) concluded that the several clinic-based trials using behavioural interventions observed greater reduction in STI rates. Interventions used personal goal setting, condom negotiation, risk-perceptions, role-play, group discussion, modelling behaviours and skills-building.

DiClemente et al. (2004) summarised that effective interventions included the following cornerstones: (1) providing timely and accurate STI-prevention information in clear, understandable language, (2) developing and mastering social (e.g., sexual negotiation/communication) and technical competency (e.g., condom application) skills through observational learning and active learning techniques (e.g. role playing, preferably a series of graded-intensity of high-risk situations), (3) enhancing adolescents' self-efficacy to communicate assertively and effectively with sex partners, (4) motivating adolescents to use newly acquired STI-prevention knowledge and risk-reduction skills; and (5) tailoring all the aforementioned messages and activities for gender and, if possible, race (p.215). DiClemente et al. (2004) also commented that the next generation of clinic-based STI risk-reduction programs should include a two-tier system, with the first tier consisting of clinic-based counselling and the second tier consisting of community-based prevention accessed through physician referral (p.216).

Manhart and Holmes (2005) reported on two studies (Celentano et al., 2000; Lonczak et al., 2002). Celentano et al. (2000) examined a multi-component behavioural intervention aimed at Thai army conscripts. Participants receiving the intervention showed a greater than 80% reduction in STI recurrence than controls. However, units were not randomly assigned to the intervention or the control. Lonczak et al. (2002) examined an intervention carried out in public schools in high-crime areas using a multi-component design that included teacher training, child social and emotional skills, and parent training. The African American subset of the intervention group reported a statistically significant decrease in self-reported STIs by aged 21 years (odds ratio (OR) 0.11;  $p < 0.01$ ).

Pedlow and Carey (2004) commented that the use of multiple intervention strategies should be used in prevention intervention design targeting adolescents and they called for "the continued development of multifaceted interventions that address biological, psychological, and social influences on sexual behaviour" (p.182).

Robin et al. (2004) concluded that effective interventions contained skills-building activities such as sexual communication, decision-making and problem solving and that “this may reflect a shift toward multi-component interventions that target a variety of youth competencies” (p.23).

Schaalma et al. (2004) made the point that behaviour change cannot be achieved through increasing knowledge alone, they maintained that interventions also need to influence the “proximal cognitive determinants of decision-making and goal enactment...[and should]..be informed by cognitive theories that have been successfully applied to a variety of other health related behaviours” (p.262).

**Evidence statement: No change from Ellis and Grey (2004). There is sufficient review-level evidence to conclude that multi-component interventions are more likely to be effective than single-component interventions.**

**Evidence statement: No change from Ellis and Grey (2004). There is insufficient review-level evidence to support or discount the effectiveness of multi-level interventions.**

#### **4.7 Cost-effectiveness of sexual health interventions**

**Category 1:** No evidence

**Category 2:** No evidence

**Category 3:** No evidence

We found no review level evidence regarding the cost-effectiveness of STI prevention interventions to add to the findings of the previous evidence briefing.

**Changed evidence statement: There is no new review-level evidence to support or discount the cost-effectiveness of STI interventions.**

The original evidence statement declared that there was tentative review-level evidence to conclude that STI prevention interventions are cost effective, and can be cost saving. However, there is no current evidence to demonstrate that recent interventions are either cost effective or cost saving.

#### **4.8 Interventions to address inequalities in sexual health**

**Category 1:** No evidence

**Category 2:** No evidence

**Category 3:** No evidence

We found no review level evidence regarding interventions to address inequalities in sexual health to add to the findings of the previous evidence briefing. As such we recommend no change from the previous evidence statement.

**Evidence statement: No change from Ellis and Grey (2004). There is no review-level evidence to support or discount the effectiveness of interventions to address inequalities in sexual health.**

## 5 Discussion, conclusions and research recommendations

This evidence briefing update aims to address the following research questions:

- What works to prevent STI transmission? What works to reduce the risk behaviours for STI transmission? What works to address the determinants of STI risk?
- Are multi-component and multi-level interventions more likely to be effective in influencing sexual risk behaviours?
- What works to reduce inequalities in sexual health?
- What interventions are cost-effective?

In the Evidence section (4), we considered the evidence from Category 1, 2 and 3 reviews regarding the effectiveness of STI prevention interventions giving consideration to the level and feature of interventions to inform our evidence statements regarding effectiveness.

In this section we consider the methodological issues. We explore methodological issues and provide research recommendations relating to outcome measures of effectiveness (5.1.1), behavioural indicators (5.1.2), limitations identified by the reviews (5.1.3), limitations and gaps in the evidence (5.1.4) and the limitations of this review (5.1.5).

Where we have not found additional review-level evidence to add to the recommendations of the original Evidence Briefing (Ellis and Grey, 2004) we have stated that there is no change and reported the previous recommendation. All recommendations ought to be considered in conjunction with those of the previous review (Ellis and Grey, 2004).

### 5.1 Methodological issues

#### 5.1.1 *Outcome measures of effectiveness*

The original Evidence Briefing found limited information regarding the effects of STI prevention intervention approaches on health promotion outcomes such as health literacy (e.g. sexual negotiation, condom skills). We also found that the majority of reviews selected primary studies for inclusion based upon health outcomes (e.g. STI incidence) or made conclusions of intervention effectiveness based upon intermediate health outcomes (e.g. behaviour). We did find reviews that included primary studies with health promotion outcomes (DiClemente et al., 2004; Manhart and Holmes, 2005; Pedlow and Carey, 2004). However, only one review (Pedlow and Carey, 2004) made conclusions regarding health promotion outcomes (knowledge and self-efficacy; condom use skills and attitudes to condoms, respectively) and this was in conjunction with intermediate health outcomes.

Similar to the original evidence briefing, we found that reviews called for more robust research using intermediate health outcomes to determine effectiveness (DiClemente et al., 2004; Ward et al., 2004). Also, we found that instead of authors calling for small-scale studies to measure outcomes at different

stages along the causal pathway (which would include measuring the personal and structural determinants of risk (e.g. knowledge or skills)) (as recommended by Ellis and Grey, 2004), there were calls for guidance on how to scale-up successful small scale interventions. However, DiClemente et al. (2004) highlight that health outcomes (e.g. STI incidence) should be measured in clinic-based interventions. DiClemente et al. (2004) also emphasise that many of the clinic-based interventions they examined did not measure health outcomes and they recommend that future clinic-based studies should measure STI incidence. In addition to these comments, Pedlow and Carey (2004) recommended that risk perception be linked to actual behaviour, however they also recommended that there is a need to measure process outcomes of developmental factors.

For further discussion of the conclusions of effectiveness and their implications, see the Evidence (4) and Conclusions and recommendations for policy and practice (5.2) sections. We conclude that there are no further research recommendations to add to those from the original Evidence Briefing.

**Recommendations: No change from Ellis and Grey (2004). A key research recommendation is that intervention evaluations should measure outcomes relating to the personal and structural determinants of risk (e.g. knowledge, attitudes, skills, behavioural intentions, access to condoms, peer norms). This should be done in addition to the measurement of intermediate health outcomes (e.g. changes in behaviour) and, where appropriate (e.g. for large-scale multi-component interventions or programmes), health outcomes (changes in STI incidence). In turn, reviews should cease to exclude studies that only include data on health promotion outcomes (e.g. knowledge or skills) alongside their effects on intermediate health outcomes (e.g. behaviour) and health outcomes (e.g. STI incidence). Reviews should fully report all of these outcomes where possible.**

### **5.1.2 Methodological issues: behavioural indicators**

The previous Evidence Briefing found that indicators of 'risk' were unsophisticated and defined as, for example, number of partners, condom use and contraceptive use. We found no evidence to show that the terminology for risk indicators has become more specific. As such we agree with the research recommendations from the previous Evidence Briefing.

**Recommendations: No change from Ellis and Grey (2004). It is imperative that data on intermediate health outcomes (i.e. sexual behaviour surveys) are more specific about the context in which certain behaviours take place. Primary studies and future reviews should therefore focus on more meaningful risk indicators when making judgements about the relative effectiveness of interventions in influencing so-called 'risky' behaviours. Where feasible and appropriate these should be correlated with biological behavioural indicators and other socio-demographic variables. In conclusion, we need a consensus on the appropriate indicators for assessing the effectiveness of STI prevention programmes with different target populations.**

### **5.1.3 Methodological issues: limitations identified by the reviews**

The reviews in this update reported similar limitations to those reported in the original Evidence Briefing (Ellis and Grey, 2004). Reviews reported that their inclusion criteria limited their findings and although most reviews only included RCTs, authors reported on the poor quality of the primary studies (DiClemente et al., 2004; Manhart and Holmes, 2005; Ward et al., 2005) and called for further rigorous trials. One review noted that the results of studies were limited in their generalisability (Ward et al., 2004). Reviews also highlighted the weaknesses of the effect sizes due to differences in follow-up periods (Robin et al., 2004; DiClemente et al., 2004) as well as sample size and appropriateness of the comparison group (DiClemente et al., 2004).

Other inconsistencies reported referred to the differences among groups that were reported but not controlled for in the analysis (Robin et al., 2004). It has also been highlighted that interventions aimed at adolescents have reported inconsistent findings from studies that have not been replicated (Pedlow and Carey, 2004).

Other limitations expressed by the reviews included the absence of reporting rates of attrition, the absence of intent-to-treat analyses, lack of power analyses, the lack of description in the primary studies relating to RCT methods (DiClemente et al., 2004). In addition to these limitations Manhart and Holmes (2005) and Ward et al. (2005) also commented on the potential for publication bias in their reviews.

***Recommendations: There is a need for more rigorous evaluations of UK-based STI prevention interventions. It is necessary for researchers to clearly report the methodology that they use, including their methods for randomisation. Future research should include appropriate comparison groups and should consider longer follow-up periods. In these cases research should report: levels of attrition, intent-to-treat analysis, and effect sizes. There is also a need for primary studies to be standardised in their reporting.***

### **5.1.4 Methodological issues: limitations and gaps in the evidence**

In the reviews included in this evidence briefing update we found many of the same limitations and gaps as those reported in the original Evidence Briefing (Ellis and Grey, 2004). As such the limitations we highlight here should not be considered as an exhaustive list but should be considered in conjunction with those of the original review.

The main issues we found with the current review level evidence are stated below. For implications of the limitations, inconsistencies and gaps in the evidence see the Conclusions and recommendations for research section (5.2).

There was a dearth of UK-based evidence on intervention effectiveness. Thus, one of the main limitations we found was the lack generalisability to the UK population. We found that much of the literature included

in the reviews focused upon adolescents with only very little review-level evidence concentrated on interventions with adults. Specifically, there was a lack of evidence relating to commercial sex workers (CSWs), men who have sex with men (MSM) and other high-risk groups in the UK.

It is also clear from the evidence that there is a lack of evidence relevant to community-based interventions (see section 4.3). To this gap in the evidence, we add that there is a lack of review-level evidence relating to the cost-effectiveness of STI prevention interventions in all areas including, for example, clinics, schools and youth services.

There is also a dearth of information regarding the impact of interventions on inequalities or interventions addressing socio-political issues. In particular, there is a lack of evidence addressing the impact of interventions on socio-economic status and on vulnerable groups (e.g. looked after children).

***Recommendations: In addition to the recommendations from Ellis and Grey (2004), for example, to be more transparent about the process used; to include more details of the intervention delivery and; to publish null findings, we recommend that further research is needed on the cost-effectiveness of STI prevention interventions in different settings. There is also a need for further research aimed at vulnerable 'high-risk' groups in the UK such as CSWs and looked-after children. Finally, there is a need for further research to explore the effectiveness of interventions that aim to address inequalities and socio-political issues specific to target populations.***

### **5.1.5 Limitations of this review of reviews**

This update followed the same methodology as the original Evidence Briefing and therefore has all the same limitations reported by Ellis and Grey (2004). In addition to these limitations we add that although all efforts were made to retrieve shortlisted documents we were unable to obtain 8% of the literature, which may have resulted in some relevant paper being missed.

We also note that the reviews in this update will include many of the same primary studies that were included in the original Evidence Briefing. Our most recent Category 1 papers were published in 2005 (Manhart and Holmes, 2005; Ward et al., 2005), and the most recent primary studies presented within this level were published in 2004. This updates the evidence base of reviews by two years.

## **5.2 Conclusion and recommendations for research**

In this section we consider the findings based upon the evidence statements and examine their relevance to the UK population in order to inform our recommendations that follow each section. Where we have found no further evidence to inform additional recommendations we have stated that there is no change from the original Evidence Briefing (Ellis and Grey, 2004) and repeat the previous recommendation.

## **5.2.1 What works in STI prevention interventions**

### *5.2.1.1 Clinic-based sexual health promotion: conclusions and research recommendations*

As discussed in the Evidence section (4) there was **tentative review-level evidence** for the effectiveness of individual risk counselling.

Of the studies involving individual risk counselling (see section 4.1.1), only two studies (VCT Efficacy Study Group, 2000; EXPLORE Study Group, 2004) considered counselling in conjunction with HIV testing. In addition, all of the studies were either carried out in the US or Africa and not in the UK.

***Recommendations: No change from Ellis and Grey, 2004. We urgently need more UK-based evaluations of risk counselling interventions for STIs other than HIV. We urgently need more UK-based evaluations of skill-based training.***

### *5.2.1.2 Partner notification*

We found **sufficient review-level evidence** regarding the effectiveness of partner notification for detecting new infections.

***Recommendations: No change from Ellis and Grey, 2004. More research is needed to understand the consequences of partner notification for infected persons and their partners.***

### *5.2.1.3 Improved communication between parents and adolescents (parent/family intervention): conclusions and research recommendations*

Overall, we concluded that there was **insufficient review-level evidence** regarding the effectiveness of improved communication between parents and adolescents at reducing sexual risk behaviour. Although several authors commented upon the effectiveness of interventions such as parental monitoring, it must be noted that none of the studies examined were carried out in the UK.

DiClemente et al. (2002) recommended that as a method of intervention, families could be mobilised to communicate important values, model appropriate behaviours, monitor adolescents' behaviour, and encourage protective behaviours. The improvement of familial communication and skills may strengthen the family unit and encourage adolescents, as well as other family members, to adopt and maintain protective behaviours.

***Recommendations: We urgently need more UK-based evaluations of interventions that incorporate parental/adolescent communication/monitoring as a means to reduce sexual risk-taking behaviour.***

#### 5.2.1.4 Clinic-based interventions aimed at adolescents and general clinic attendees: conclusions and research recommendations

The evidence presented in sections (4.1.1) and (4.2.1) led us to conclude that there is **insufficient review-level evidence** of clinic-based interventions aimed at adolescents. We also found **tentative review-level evidence** for the effectiveness of clinic-based interventions, especially those that include skills training, for instance, to increase the levels of condom use.

However, only one study was carried out in a UK-based GUM clinic (Imrie et al., 2001) and the findings from this study showed that clinic-based interventions were ineffective at changing sexual risk behaviour. Although only one study, it shows that one cannot infer the transferability of studies from other countries. These findings suggest that there is a need for further rigorously evaluated primary studies in the UK. Studies should examine new interventions based on the format of those that have demonstrated effectiveness in US settings. In addition, studies should examine the effectiveness of behavioural interventions in GUM clinics, where new approaches to reducing infection rates are urgently needed (recommendations from Ward et al., 2004 and 2005).

**Recommendations: There is a need for more primary studies to evaluate the components of effective clinic-based interventions. When sufficient primary studies are available a methodologically sound review of UK clinic interventions should be carried out in order to inform the evidence base in the UK.**

#### Parental involvement in clinic-based interventions

We conclude that there is **insufficient review-level evidence** to support or discount the effectiveness of parent involvement in clinic-based interventions.

**Recommendations: More UK research is needed to discern the effectiveness of parent involvement in clinic-based interventions and the effects of counselling/education on parent/adolescent communication and the subsequent impact (if any) on sexual risk-taking behaviour.**

#### 5.2.1.5 Group work: conclusions and research recommendations

From the evidence presented in section (4.2.4) we conclude that there is **sufficient review-level evidence** to conclude that small-group work, especially that involving skills-building activities, can be effective. Interventions reporting increased condom use outcomes frequently used role-play, games and discussion.

However, only one study was carried out in the UK (Imrie et al., 2001) and thus the findings from these reviews are limited in their generalisability. Although group work can be resource intensive, DiClemente et

al. (2004) recommended that further research should be carried out involving group work with clinicians or healthcare workers and patients.

***Recommendations: More UK research is needed to discern the effectiveness of small group work relevant to specific target groups. It is imperative that evaluations of these interventions consider the cost-effectiveness and resource implications of this type of intervention compared to individual level interventions.***

#### 5.2.1.6 School-based sex education programmes: conclusions and research recommendations\*

Overall, there is **sufficient review-level evidence** to conclude that school-based sex education can be effective at delaying the onset of sex and encouraging condom use in those who are already sexually active (section 4.2.3).

School-based sex education programmes most frequently included elements such as role-play, discussion and skills-training. Some school-based interventions also involved the provision of condoms and clinic services.

Evidence of effectiveness is primarily based upon interventions carried out in the US and Africa. However, one study was carried out in The Netherlands and another was carried out in Scotland. This one UK-based intervention adds to the two others reported in the original evidence briefing (Ellis and Grey, 2004), all from Category 3 reviews. As such, there remains a dearth of review-level evidence regarding UK studies of school-based sex education programmes.

We examined the review-level evidence concerning the provision of condoms in schools (section 4.2.2). We conclude that there is **insufficient review-level evidence** that condom availability in schools can be effective at increasing condom use in sexually active young people. However, the reported studies took place only in the US and may have limited generalisability to the UK population. Schmiel et al. (2004) cited Cohen et al. (1999) who recommended that barriers to condom use be eliminated and condoms provided free of charge. They also stated that with the appropriate resources and support “school nurses [could] develop successful school-based condom disbursement programs that effectively reduce teen’s exposure to STDs and HIV “ (p.20).

Schaalma et al. (2004) also highlight the fact that health behaviour not only refers to individual behaviour but to the actions of groups and organisations also. Schaalma at al. (2004) stated that, “condom accessibility may depend on individual knowledge, motivation, and skills, but is also determined by the actions of legislators, health authorities, schools, and other decision-making groups. Therefore, interventions may be required at each of these levels if condom availability is to be increased among sexually active young people” (p260).

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\* See evidence briefing on teenage pregnancy and parenthood (Swann et al., 2003a).

***Recommendations: There is a need to address the practicality of providing clinic and condom services in schools. Evaluations of clinic services and condom distribution schemes in schools should also ensure that as well as addressing the effectiveness of condom distribution in schools, they address related issues of parental consent, motivation for sexual activity pre- and post-interventions, level of pubertal development and changing social norms as well as behavioural outcomes. Also, school-based interventions should be developmentally appropriate, and should use multiple strategies compatible with adolescents' cognitive ability, including managing emotions and risk perception (recommendation from Pedlow and Carey, 2004).***

Further conclusions regarding the effects of condom distribution and sex education on the sexual practices of young people and further views on elements of effective school interventions were also elicited from the reviews. We have addressed these points separately below.

### **Condom distribution in schools does not increase sexual activity**

We identified **insufficient review-level evidence** to conclude that condom distribution in schools does not increase sexual activity. One Category 3 review (Schmeidl, 2004) referred to several studies (Schuster et al., 1998; Wolk and Rosenbaum, 1995; Guffmacher et al., 1997; Kirby et al., 1999; Blake et al., 2003) and concluded that condom distribution does not increase sexual activity.

***Recommendations: Once there are sufficient primary studies a methodologically sound review will be needed to support or discount the tentative conclusion that school-based condom distribution does not increase sexual activity.***

### **Sex education should start early, prior to sexual initiation**

Overall, we conclude that there was **tentative review-level evidence** that sex education should start early and before sexual debut in an effort to delay the onset of sexual activity. However, further UK research is necessary to discern the most effective age and format of pre-adolescent sex education.

***Recommendations: Primary research is needed to evaluate school-based interventions and their effectiveness. In addition to the length, format and content of interventions, evaluations should consider effectiveness of interventions at different ages, gender, sexual experience and stage of pubertal development. When sufficient primary evidence is available a methodologically sound review should be carried out to inform the UK evidence base.***

### **Parental involvement in school interventions**

The evidence presented in section 4.2.3 (ii) leads us to conclude that there is **insufficient review-level evidence** for the effectiveness of parental involvement in school interventions that can reduce the number of partners and rate of pregnancy during adolescence.

Once again there no UK evidence identified to support this conclusion and further research is needed. Schaalma et al. (2004) recommended that, “health promotion planners could focus on mobilising parental support for comprehensive sex education” (p267).

***Recommendations: More research is needed to explore how parental involvement in sexual health interventions could complement school-based interventions and impact adolescents’ sexual risk taking behaviour.***

#### *5.2.1.7 Detached education and outreach by health professionals: conclusions and research recommendations*

Overall, we conclude that there is **tentative review-level evidence** for the effectiveness of detached education, including condom distribution. The studies we found primarily focused upon CSWs and their customers, however, none of the studies took place within the UK and as such the findings may be limited in their generalisability.

***Recommendations: More research is needed to explore the effectiveness of detached education and outreach for different target populations in the UK. Studies should also consider the effectiveness of individual intervention components and cost-effectiveness. Once sufficient primary studies are available a methodologically sound review of interventions ought to be undertaken.***

#### *5.2.1.8 Community level interventions: conclusions and research recommendations*

In section 4.3 we report on studies of community level interventions from two reviews. We conclude that there is **insufficient review-level evidence** for the effectiveness of community outreach.

***Recommendations: Further research is needed to determine the effectiveness of community-based interventions in the UK, such as condom provision and community empowerment schemes as well as the effects of mass media on risk taking behaviour. Also, research should explore the potential harms of mass media interventions with reference to specific target groups and the impact upon clinic services.***

#### *5.2.1.9 Socio-political interventions: conclusions and research recommendations.*

We found **insufficient review-level evidence** to support or discount the effectiveness of legislation, policy, equality work or regulation. We found two reviews that addressed skills-based sex education programmes available nationally in schools and we also found evidence of effective condom distribution policies. However, they do not refer to UK policies and are limited in their generalisability. Therefore, we conclude that there has been no change since the original evidence briefing and as such the previous recommendations remain.

**Recommendations: No change from Ellis and Grey (2004). We urgently need more UK evaluations – and in turn, reviews- of socio-political interventions or actions. As it is difficult to conduct controlled trials of most of these types of ‘interventions’, it is likely that observational research will be most useful in looking at the impact of policies, regulations, and strategies to tackle wider determinants of risk such as education, employment, poverty and discrimination. More specifically, research is needed on use, acceptability and sexual behaviour. As well as research on the interventions themselves, there is also a need for research to identify the structural determinants of sexual risk for difference populations, which are often (but not exclusively) addressed by socio-political interventions.**

#### 5.2.1.10 Features of effective interventions:<sup>\*</sup> conclusions and research recommendations

We examined the review-level evidence for features of effective interventions in section 4.5. We would like to emphasize that this does not constitute an exhaustive list of features within the reviews. However, they are features of successful interventions that have been specifically highlighted by the authors.

#### **Use of theoretical models**

We conclude that there is **sufficient review-level evidence** that theory-based interventions are effective at influencing sexual risk-taking behaviour. A number of reviews reported on the successful use of theoretical models (Manhart and Holmes, 2005; Ward et al., 2004; Ward et al., 2005; Pedlow and Carey, 2004; Schaalma et al., 2004). Although it is the case that studies are clearly reporting the theory used they do not explain the reason for their choice and why it is appropriate for the population under investigation.

Only one of the reviews (Pedlow and Carey, 2004) addressed issues for consideration regarding theoretical models. They argued that existing theoretical models should be modified and specifically aimed at young people.

**Recommendations: It is important that studies report the theoretical model they use and their reason for its use. Evaluations ought to consider the effectiveness of each theory and their components on different target groups.**

#### **Emphasis on risk reduction**

We conclude that there is **tentative review-level evidence** for the effectiveness of interventions that emphasise risk-reduction. There is **insufficient review-level evidence** to support or discount the effectiveness of school-based abstinence only approaches. DiClemente et al. (2004) concluded that interventions are more effective if they have an emphasis on risk reduction as opposed to abstinence alone.

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<sup>\*</sup> Also, see evidence briefing on teenage pregnancy and parenthood (Swann et al., 2003a).

It is important to note that the majority of these studies focused solely upon adolescents and as such this has impacted on the recommendations.

**Recommendations:** *In addition to the recommendation in the previous Evidence Briefing (Ellis and Grey, 2004) that ‘We need a methodologically sound review of the effectiveness of risk-reduction interventions, compared with abstinence-only approaches, for young people. In particular, it may be timely for a good quality review into the effectiveness of school-based abstinence-only programmes compared with programmes which emphasise risk reduction’, we add that that it is necessary for school-based evaluations to consider age, sexual knowledge and sexual experience. It is also imperative that further research is carried out to discern the effectiveness of risk reduction on other target groups.*

### **Use of behavioural skills training**

Overall, there is **sufficient review-level evidence** to conclude that behavioural skills training is an important and effective component of STI prevention interventions (see section 4.5.3). Pedlow and Carey (2004) recommended the inclusion of skills such as emotion management, risk perception, communication skills and negotiation skills.

**Recommendations:** *In addition to the previous Evidence Briefing recommendation that ‘Research is needed to identify the most effective methods of behavioural skills training with different populations’ we recommend that further rigorous research is needed to distinguish between the effectiveness of behavioural skills training specific to sexual health, behavioural skills that are more general ‘social/life skills’, and those skills that aim to increase adolescent*

### **Provide basic accurate information**

Evidence included in the original evidence briefing (Ellis and Grey, 2004) and in this update (see section 4.5.4) suggests that there is **sufficient review-level evidence** that information provided in a clear and accurate manner is likely to be effective in combination with, for example, behavioural skills-training.

**Recommendations:** *No change from Ellis and Grey (2004). Primary and secondary research needs to measure and report the impact upon health promotion outcomes such as knowledge and awareness. Research is needed to identify the effective elements of training and materials to support the providers of sexuality information (teachers, parents and peers). Research in this area should attempt to explore the interaction between, and relative importance of, the nature of the provider (including their comfort with the issues and their relationship with the student), and the nature of the training or materials.*

## Trained facilitator

Evidence in section 4.5.5 suggests that there is **tentative review-level evidence to conclude** that trained adult facilitators are effective at delivering interventions in a school environment.

***Recommendations: Further research is needed to support or discount the tentative finding that trained facilitators are effective at delivering school-based STI prevention interventions. Research is also needed to support or discount the effectiveness of teacher training on the delivery of sex education in schools.***

## Duration, length, and intensity

We identified **tentative review-level evidence** to conclude that extended delivery of an intervention is related to its effectiveness (see section 4.5.6). There is also **tentative review-level evidence** to support the use of 'booster' sessions to aid the extended delivery of interventions. Pedlow and Carey (2004) highlighted that extended interventions aimed at young people can allow researchers to explore transitional phases such as entering puberty and initiating sexual activity. Extended delivery, especially that using booster sessions allows researchers to reinforce the intervention months or years after the initial intervention has finished, thereby refreshing information and skills that may become more meaningful as sexual awareness and experience develops.

Robin et al. (2004) raised the difficulty of determining programme length, as multiple sexual risk-reduction interventions took place at the same time, thereby affecting the dosage received. They also reported on the failure of studies to state the duration and dose of interventions.

***Recommendations: We agree with the original recommendation from Ellis and Grey (2004) that, 'Research needs to report more specific variables about the intervention's duration and intensity, for example the amount of personal exposure to the facilitator and the number and length of 'sessions'. Longer-term follow-up (i.e. well beyond six months, ideally up to one year and beyond) should assess the durability of measured effects and determine whether re-inforcement, for example booster sessions, are necessary to sustain outcomes'. We also recommend that researchers use models such as Intervention Mapping or PRECEDE/PROCEED model to ensure, through educational diagnosis, that optimal circumstances prevail for implementing the interventions (e.g. that it does not overlap with other planned programmes).***

## Use of peers and community leaders

Overall, there was **tentative review-level evidence** to conclude that the use of peers and community leaders was effective. However, none of the studies that used peers or community leaders were carried out in the UK. Also, as evidence suggests that trained adult facilitators are effective at delivering STI prevention interventions in schools, more research is needed to support or discount these findings and clarify their effectiveness with different target groups and types of interventions.

***Recommendations: No change from Ellis and Grey (2004). We need methodologically sound primary research into the effectiveness of peer-led interventions and into the reasons for their success (or failure). A literature review should determine the availability of UK research for conducting a review of effectiveness in this area.***

### **Use of targeted and tailored interventions**

The evidence in section 4.5.8 leads us to conclude that there is **sufficient review-level evidence** for the effectiveness of targeted and tailored interventions.

Ward et al. (2005) explained that, “formative research seeks to identify the behaviours, motivations, and beliefs within the target population that lead to increased risk, and link these to the key elements of an interventions” (p.392). Ward et al. (2004; 2005) included studies that were based upon extensive formative research including work on cultural norms or sexual beliefs of different groups. Formative research can also include the use of needs assessments that gather information on cultural diversity and gender issues appropriate to target groups.

Pedlow and Carey (2004) highlighted some of the limitations of formative research targeting young people and stated that researchers have failed to “measure onset of menarche, a developmental transition with strong implications for sexual risk behaviour” (p.175). DiClemente et al. (2004) stated that studies need to be expanded to include other groups in addition to adolescents and consider their family and social environment (p.215).

***Recommendations: We agree with the recommendations from the previous Evidence Briefing that more needs assessments and formative research relative to specific populations are required and that authors should share their findings (Schaalma et al., 2004); that studies ought to report on how this research contributed to the interventions; the transferability of the formative research; and that reviews ought to report on needs assessments and formative research (Ellis and Grey, 2004). To this we add that further formative research targeting young people ought to focus upon pubertal development and ought to include measures of cognitive functioning, future-time perspective, and decision-making. We also suggest that future research should not consider young people alone, but ought to consider their wider social influences of peers and parents (recommendations from Pedlow and Carey, 2004).***

### **Multi-component and multi-level interventions**

From the evidence presented in section 4.6 we conclude that there is **sufficient review-level evidence** that multi-component interventions are effective. These interventions incorporate elements such as education, counseling and skills-building (e.g. communication and goal enactment). There is **insufficient review-level evidence** to support or discount the effectiveness of multi-level interventions.

**Recommendations: No change from Ellis and Grey (2004). We need further evaluations, and in turn reviews, of multi-component interventions. Research needs to investigate the relative contribution of the different components of interventions effectiveness. We also urgently need evaluations and reviews of multi-level interventions or programmes. Evaluations of multi-level interventions need to ensure that they capture all relevant health promotion outcomes (e.g. knowledge), peer norms, anti-discrimination policies alongside any intermediate health outcomes (e.g. behaviour) and health outcomes (e.g. STI incidence).**

### **5.2.2 What interventions are cost effective: conclusions and research recommendations**

Section 4.7 shows that we identified **no review-level evidence** relating to cost-effective interventions. Manhart and Holmes (2005), Ward et al. (2004) and Ward et al. (2005) all called for further research on the cost-effectiveness of STI prevention interventions to ensure that limited resources are effectively utilized.

**Recommendations: We agree with the recommendations of the previous review (Ellis and Grey, 2004) that more UK studies of cost-effectiveness should be carried out and followed by a review of the cost-effectiveness literature. To this we add that information is needed on the cost-effectiveness of interventions specific to different settings and estimates for the relative cost-effectiveness of altering approaches.**

### **5.2.3 What works to reduce inequalities in sexual health: conclusions and research recommendations**

As can be seen in section 4.8 there is **no review-level evidence** regarding interventions to reduce inequalities in sexual health. In particular, we found no review-level evidence relating to socio-economic status, sexuality, gender and ethnicity.

**Recommendations: No change from Ellis and Grey (2004). There is an urgent need to conduct evaluations of interventions to determine their effectiveness in addressing inequalities in sexual health; in particular, whether there is any differential impact of interventions according to the socio-economic and demographic characteristics (including sexuality, ethnicity, refugee status) of individuals within the population being targeted. All intervention research should therefore routinely record such socio-economic and demographic variables.**

#### **5.2.4 Implications for policy and practice**

Due to the limitations of the evidence identified (see section 5.1) we are unable to make recommendations for policy and practice. We have, however, made recommendations for research. We also emphasise that practitioners and policy makers should not consider this review of reviews alone, but in conjunction with other the original Evidence Briefing (Ellis and Grey, 2004), non-review evidence and other relevant source information.

## Appendix A. Example of a search strategy

### Medline search

- 1 meta-analysis/
- 2 review literature/
- 3 (meta-analy\$ or meta analy\$ or metaanaly\$).ti,ab.
- 4 (systematic\$ adj4 (review\$ or overview\$)).mp.
- 5 meta-analysis.pt.
- 6 review.pt.
- 7 review.ti.
- 8 review literature.pt.
- 9 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
- 10 Case Report/
- 11 letter.pt.
- 12 historical article.pt.
- 13 review of reported cases.pt.
- 14 review, multicase.pt.
- 15 10 or 11 or 13 or 14
- 16 9 not 15
- 17 animal/
- 18 human/
- 19 17 not (17 and 18)
- 20 16 not 19
- 21 sexually transmitted diseases/
- 22 Sexually Transmitted Diseases, Bacterial/
- 23 Sexually Transmitted Diseases, Viral/
- 24 chancroid/
- 25 chlamydia infections/
- 26 lymphogranuloma venereum/
- 27 gonorrhea/
- 28 granuloma inguinale/
- 29 syphilis/
- 30 condylomata acuminata/
- 31 herpes genitalis/
- 32 chlamydia.ti,ab.
- 33 (gonorrhea or gonorrhoea).ti,ab.
- 34 syphilis.ti,ab.
- 35 (genital herpes or herpes genitalis).ti,ab.
- 36 chancroid.ti,ab.
- 37 lymphogranuloma venereum.ti,ab.
- 38 granuloma inguinale.ti,ab.
- 39 condylomata acuminata.ti,ab.

41 sexually transmitted disease\$.ti,ab.  
42 sexually transmitted infection\$.ti,ab.  
43 venereal disease\$.ti,ab.  
44 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or  
38 or 39 or 40 or 41 or 42 or 43  
45 (hiv or aids).mp.  
46 45 not (44 and 45)  
47 44 not 46  
48 20 and 47  
49 limit 48 to english language  
50 limit 49 to english language  
51 limit 49 to yr=2001-2006

## Appendix B. CAT screening tool

The CAT is divided into two stages. The first stage assesses the strengths of the methods used to identify and select all of the available literature, since this is regarded as one of the most important factors in ensuring a balanced view of the evidence. If a paper passes this first stage, then the quality of its methodological analysis and the appropriateness of its conclusions are assessed.

Authors: _____			
Title: _____			
Source: _____			
Does this paper address your topic area?	Yes	No	Unsure
Circle whether the paper is a:			
• Systematic review	• Meta-analysis		
• Synthesis	• Literature review		
• Other review (please specify)			
Does it address (circle as appropriate):			
• Effectiveness (interventions and treatments)	• Causation		
• Monitoring and surveillance trends	• Cost		
• Other (please specify)			
Does the paper have a clearly focused aim or research question? (1)	Yes	No	Unsure
Consider whether the following are discussed:			
The population studied	Yes	No	Unsure
The interventions given	Yes	No	Unsure
The outcomes considered	Yes	No	Unsure
Inequalities	Yes	No	Unsure
Do the reviewers try to identify all relevant English language studies?	Yes	No	Unsure
Consider whether details are given for:			
Databases searched (2a)	Yes	No	Unsure
References followed up (2b)	Yes	No	Unsure
Experts consulted (2b)	Yes	No	Unsure
Grey literature searched (2b)	Yes	No	Unsure
Years searched (2c)	Yes	No	Unsure
Search terms specified (2c)	Yes	No	Unsure
Inclusion criteria described (2d)	Yes	No	Unsure
Is it worth continuing?	Yes	No	
Why / Why not? _____			
_____			

Do the authors address the quality (rigour) of the included studies? (3, 3d)	Yes	No	Unsure
Consider whether the following are used:			
A rating system (3b)	Yes	No	Unsure
More than one assessor (3c)	Yes	No	Unsure
If study results have been combined, was it reasonable to do so?	Yes	No	Unsure
Consider whether the following are true:			
Are the results of included studies clearly displayed? (4a)	Yes	No	Unsure
Are studies addressing similar research questions? (4b)	Yes	No	Unsure
Are the studies sufficiently similar in design? (4b)	Yes	No	Unsure
Are the results similar from study to study (test of heterogeneity)? (4b)	Yes	No	Unsure
Are the reasons for any variation in the results discussed?	Yes	No	Unsure
What is the overall finding of the review? Consider: How the results are expressed (numeric – relative risks, etc); whether the results could be due to chance (p-values and confidence intervals).			
_____			
_____			
Are sufficient data from individual studies included to mediate between data and interpretation/conclusions? (5)	Yes	No	Unsure
Does this paper cover all appropriate interventions and approaches for this field (within the aims of the study)?	Yes	No	Unsure
If no, what? _____			
Relevance			
Can the results be applied/are generalisable to a UK population/population group?	Yes	No	Unsure
Are there cultural differences from the UK?	Yes	No	Unsure
Are there differences in healthcare provision with the UK?	Yes	No	Unsure
Is the paper focused on a particular target group (age, sex, population sub-group etc)?	Yes	No	Unsure
Accept for inclusion in the evidence briefing?	Yes	No 1,2,3	Refer to 4,5 third party
Use to inform the review of effectiveness?	Yes	No	
Use to inform the background discussion?	Yes	No	
Additional comments: _____			
_____			

## Appendix C. List of reviews by Category 1-5

### Category 1

- DiClemente, R. J., Milhausen, R., Sales, J. M. et al. (2005). A programmatic and methodologic review and synthesis of clinic-based risk-reduction interventions for sexually transmitted infections: research and practice implications. *Seminars in Pediatric Infectious Diseases* 16 (3): 199-218.
- Manhart, L. E. and Holmes, K. K. (2005). Randomized controlled trials of individual-level, population-level, and multilevel interventions for preventing sexually transmitted infections: what has worked? *Journal of Infectious Diseases* 191 (Suppl 1): S7-24.
- Ward, D. J., Rowe, B., Pattison, H. et al. (2004). Behavioural interventions to reduce the risk of sexually transmitted infections in genitourinary medicine clinic patients: a systematic review. Birmingham, UK: West Midlands Health Technology Assessment Collaboration, Department of Public Health and Epidemiology, University of Birmingham.
- Ward, D. J., Rowe, B., Pattison, H. et al. (2005). Reducing the risk of sexually transmitted infections in genitourinary medicine clinic patients: a systematic review and meta-analysis of behavioural interventions. *Sexually Transmitted Infections* 81 (5): 386-393.

### Category 2

- Pedlow, C. T. and Carey, M. P. (2004). Developmentally appropriate sexual risk reduction interventions for adolescents: rationale, review of interventions, and recommendations for research and practice. *Annals of Behavioral Medicine* 27 (3): 172-184.
- Robin, L., Dittus, P., Whitaker, D. et al. (2004). Behavioral interventions to reduce incidence of HIV, STD, and pregnancy among adolescents: a decade in review. *Journal of Adolescent Health* 34 (1): 3-26.

### Category 3

- DiClemente, R. J., Crosby, R. A., and Wingood, G. M. (2002). Enhancing STD/HIV prevention among adolescents: the importance of parenteral monitoring. *Minerva Pediatrica* 54 (3): 171-177.
- Schaalma, H. P., Abraham, C., Gillmore, M. R. et al. (2004). Sex education as health promotion: what does it take? *Archives of Sexual Behavior* 33 (3): 259-269.
- Schmiedl, R. (2004). School-based condom availability programs. [Review] [23 refs]. *Journal of School Nursing* 20 (1): 16-21.
- Shrier, L. A. (2004). Sexually transmitted diseases in adolescents: biologic, cognitive, psychological, behavioral, and social issues. *Adolescent Medicine Clinics* 15 (2): 215-234.

### Category 4 – see Reference for full details

<b>Author (s)</b>	<b>Year</b>	<b>Reason for not including in Category 1-3</b>
Abdullah A.S., et al.	2004	Not a review, but points to gaps in the research
Gil A.G. & Tubman J.G.	2005	Not a synthesis. Includes relevant evidence.
Gott M.	2004	Not a synthesis, but points to gaps in the evidence
Irwin R.	2003	Not a review of prevention, but contains some information on evidence
Jackson, D. et al.	2004	Not a review of behavioural interventions
Kirby B.D.	2002	Not a synthesis, but contains information in Emerging Answers review
Mayaud, P. & Mabey D.	2004	Not a review of behavioural interventions, but has some useful information
Miller, K. E., et al.	2003	Not a review but has guidelines on prevention
Oberg C., et al.	2002	Not a review, but points to gaps in the research
Patel R.	2004	Not a synthesis, but contains recommendations
Rekart M.L.	2005	No risk behaviour included, includes preventative information
Reyna V.F.	2005	Not a review of prevention, but contains some information on evidence
Speizer I.S., et al.	2003	Developing countries
Zenilman J.M., et al.	2005	Not a review - includes some prevention programmes and theories

### **Category 5 – see Reference for full details**

<b>Author (s)</b>	<b>Year</b>	<b>Reason for not including in Category 1-3</b>
Anonymous	2002	Not a review
Bergk A., et al.	2005	Not a review of STI prevention interventions
Blair, M.	2004	Not STI prevention
Bonner K.	2001	Focused on HIV prevention (male circumcision).
Bonsu IK.	2005	Not a review
Casper C. & Wald A.	2002	Condom effectiveness, not an STI prevention review
Chorba T. et al.	2004	Not a review of STI prevention
Coetzee N., et al.	2003	Duplicates Mathews et al., 2002
Cothran M.M. & White J.P.	2002	Not a review of STI prevention
Dehne K.L. & Riedner G.	2001	STI services not prevention interventions
Dulmus C.N.E. & Rapp-Paglicci L.A.E.	2005	Not a review
Elwy A.R. et al.	2002	Included in previous Evidence Briefing.
Fenton K.A. & Hughes G.	2003	Not a review
Feroli K.L. & Burstein G.R.	2003	Not a review of STI prevention interventions
Fitch J.T.	2001	Not a review
Fortenberry J.D.	2002	Included in previous Evidence Briefing.
Genuis S.J. & Genuis S.K.	2005	Not a review
Gilson R.J. & Mindel A.	2001	Not STI prevention
Glik D. et al.	2002	HIV focus
Heinz M.	2004	Not a review. No prevention interventions.
Henderson Z. et al.	2005	Not a review of STI prevention interventions
Hingson R.W. & Howland J.	2002	HIV and pregnancy interventions - exclusion criteria
Holmes K.K., et al.	2004	Condom effectiveness not an STI prevention intervention review
Honey E., et al.	2002	Cost effectiveness - but screening
Jungmann E.	2005	Not a review. About treatment not prevention.
Kirby D., et al.	2002	Included in the original review (Cat 3)
Klein J.D. & Matos A.M.	2002	Not prevention
Kotchick B.A. et al.	2001	Not a synthesis of prevention interventions
Lee J.D. & Clarke J.	2004	Condoms and not a review
Leone P.	2005	Not a review. Treatment not prevention.

Low N.	2004	Not a review of STI prevention. Effects of treatment.
Marra C.M.	2004	Not a review
Mathews, C. et al.	2004	Not a synthesis
Mathews, C. et al.	2002	Included in the original review (Cat 4)
Mathews, C..et al.	2002	Duplicate
Mathews, C. et al.	2002	Duplicate
Mathews, C., et al.	2001	Publication of Cochrane review (included in the original Evidence Briefing (Cat 1))
McEvoy M. & Coupey S.M.	2002	Not a review
Meade & Ickovics	2005	Not a synthesis
Minnis A.M. & Padian N.S.	2005	Not a review of behavioural interventions
Moran J.	2005	Not a review. About treatment of STIs.
Myer L., et al.	2001	Protocol, not review
Oberdorfer A., et al.	2002	Protocol, not a review
Pozniak A.	2003	Not a review of prevention intervention
Roberts C.	2005	Not a review of prevention
Robin L., et al.	2004	Duplicate
Ross M. W. & Williams M.L.	2002	Included in the previous review
Sangani P. et al.	2001	HIV and treatment exclusion criteria
Sarkar N.N.	2001	Not a review
Scholes D. et al.	2003	Not a review of STI prevention
Serrant-Green L.	2005	Not STI prevention
Sitruk-Ware R.	2005	Exclusion criteria, not a review of prevention interventions
Smith C.	2003	Overview of service structures.
Steenbeck A.	2004	Not a relevant population to the UK.
Sternberg P. & Hubley J.	2004	Not STI prevention review, focuses on HIV prevention.
Suarez T. & Miller J.	2001	Not a review of STI prevention
Sulak P.J.	2004	Not a review
Teran S., et al.	2001	Not a review
Thachil A. & Bhugra D.	2006	Not about STI prevention intervention effectiveness
Tillett J.	2005	Not a review
Tobin J.M.	2002	Cost effectiveness, but screening.
Toroitich R, et al.	2001	Protocol for a Cochrane review (withdrawn)
Toups M.L. & Holmes W.R.	2002	Not a synthesis
Tripp J., & Viner R.	2005	Not a review of prevention interventions
Warner L., et al.	2006	Condom effectiveness not an STI prevention intervention review
Weller , S. & Davis Beaty , K.	2002	Protocol, not a review
Wilson M.M.	2003	Not a review

## Appendix D. In depth summaries of category one, two and three reviews

### Category one reviews

#### DiClemente R.J. et al. (2004) A programmatic and methodologic review and synthesis of clinic-based risk-reduction interventions for sexually transmitted infections: research and practical implications

<b>Data pool:</b>	
Population	Adolescents
Setting(s)	Clinic venues
Interventions	Clinic-based sexual risk-reduction interventions
Searches	Searches were conducted in: PubMed, Academic Search Premier, AltHealthWatch, MEDLINE, Health Source: Nursing/Academic Edition, PsycARTICLES, Cambridge Scientific Abstracts (Biological Sciences, AIDS and Cancer Research Abstracts), Lexis Nexis Health and Medical Journals, PsycInfo, Web of Science, Science Direct, Ingenta, and Journals at Ovid.
Selection/inclusion criteria	Studies were included if they were: (1) clinic-based (ie, the majority of sample had to be recruited from a medical clinic), (2) randomised controlled trials (RCTs) of interventions to decrease sexual risk-taking behavior among adolescents, and (3) published in peer-reviewed journals.
Quality assessment	16 methodological criteria were identified to assess the studies: (1) clear description of study site and sample; (2) specification of theoretical framework; (3) description of program implementation; (4) description of intervention content and behavior change techniques sufficiently detailed to permit replication; (5) description of content for control group treatment; (6) specification of length of follow-up; (7) use of blinding procedures to prevent bias; (8) specification of retention rates reported for each study condition; (9) adherence to intention-to-treat principles in the data analysis; (10) assessment of pretest equivalence on socio-demographic and behavioral factors between study conditions; (11) clear description of data analytic techniques; (12) specification of a measure of variability for the designated effect size; and (13) sample size justification.  In addition to these criteria authors also used the JAMA checklist.
Types of studies	Randomised controlled trials
Number of studies	9 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Sexual intercourse; number of partners; condom use
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Only a few of the programmes included STI incidence as an outcome.</li> <li>• STI risk-reduction programs may not be of sufficient intensity or dosage to sustain</li> </ul>

	<p>health-promoting effects over the course of time.</p> <ul style="list-style-type: none"> <li>• There were many methodological limitations of the studies.</li> <li>• The authors state that 'Findings suggest that clinic-based STI risk-reduction programmes have not yet reached a level of success that should be considered satisfactory'.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• The authors report a plethora of methodological limitations such as sample size; lack of specified power analysis; the appropriateness of the control/comparison group; the absence of descriptive information regarding the randomisation process; the absence of appropriate follow up period; the absence of reporting rates of attrition; the absence of intention-to-treat.</li> </ul>
<b>Research recommendations:</b>	<ul style="list-style-type: none"> <li>• More rigorous studies of clinic-based risk reduction interventions to reduce sexually transmitted infections need to be undertaken.</li> <li>• Consider interventions based on paediatrician/healthcare worker group work with patients.</li> <li>• Supplemental programmes ought to be considered to promote longer-term effectiveness.</li> <li>• There is a need to improve research related to STI prevention technology.</li> </ul>

**Manhart L.E. and Homes K.K. (2005) Randomised controlled trials of individual-level, population-level and multilevel interventions for preventing sexually transmitted infections: What has worked?**

<b>Data pool:</b>	
Population	Any
Setting(s)	Any
Interventions	Behavioural interventions to reduce STIs
Searches	Searches were carried out in: MEDLINE, the Cochrane Central Register of controlled trials and unpublished presentations.
Selection/inclusion criteria	<p>Studies were included if they:</p> <ul style="list-style-type: none"> <li>• Used a randomised controlled trial.</li> <li>• Included biological markers of a prospectively measure objective STI outcome.</li> <li>• Were published in the English language.</li> <li>• Were Peer-reviewed literature or presentation at international conferences but not yet published.</li> </ul>
Quality assessment	See selection/inclusion criteria.
Types of studies	Randomised controlled trials
Number of studies	15 studies included behavioural interventions (41 studies overall)
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	STI rates; risky sexual behaviour
<b>Review findings:</b>	<p>The review found that:</p> <p>Individual level</p> <ul style="list-style-type: none"> <li>• Risk-reduction counselling was the most common intervention used. These interventions resulted in a reduction in the rate of STIs, but were not statistically significant.</li> <li>• One study that used ARRM and counselling without HIV testing showed no reduction in STI acquisition. However, it had low participation and follow-up rates.</li> <li>• One counselling intervention study showed a non-significant reduction in HIV acquisition and also showed a significant reduction in unprotected anal intercourse.</li> </ul> <p>Group level</p> <ul style="list-style-type: none"> <li>• Results of one study showed no difference in STI acquisition or risk behaviour between studies with a differing number of sessions.</li> <li>• The majority of studies using small group interventions showed reductions in (study 1) STI symptoms; incidence of gonococcal infection in men; (study 2) gonococcal and chlamydia infection in women; (study 3) new cases of STIs; (study 4) STIs and unplanned pregnancy. Only one study using small group interventions showed no difference between the intervention and comparison groups.</li> <li>• One using information as well as condom distribution showed no difference between intervention and comparison groups.</li> <li>• One study using information as well as male/female condom use showed a non-significant reduction in the incidence of STIs compared to the comparison group that had access to only male condoms.</li> </ul>

	<p>Community level</p> <ul style="list-style-type: none"> <li>• The mixed modality intervention results showed that those receiving IEC showed a reduction in the HSV seroconversion and those receiving IEC and treatment showed a reduction in the incidence of both syphilis and gonorrhoea. As well as an increase in condom use (all groups).</li> <li>• One study that used a four component random assignment to school-based sexual health and reproductive health education, enhanced reproductive health services for youth, condom distribution, and community activities. Results showed no difference between intervention and comparison groups.</li> </ul> <p>-----</p> <p>Non-RCT mentioned in the text, summary of findings show:</p> <p>Individual level (RCT)</p> <ul style="list-style-type: none"> <li>• Chart reviews, reported symptoms, and self-reported STIs all found no significant difference.</li> </ul> <p>Group level (RCT)</p> <ul style="list-style-type: none"> <li>• Decreased incidence of STIs were reported in group interventions using video and discussion, role-play and condom negotiation (successful with men only).</li> <li>• A cognitive behavioural intervention for MSM resulted in a non-significant reduction in unprotected anal sex, however it also showed a significant increase in STIs.</li> </ul> <p>(non-RCT)</p> <ul style="list-style-type: none"> <li>• A multi-behavioural intervention in Thai military men resulted in a greater than 80% reduction in STI recurrence.</li> <li>• Non-significant reductions were found in repeat attendances to clinics providing group discussion and condoms.</li> </ul> <p>Community level (non-RCT)</p> <ul style="list-style-type: none"> <li>• Findings showed that condom distribution among brothel based CSWs resulted in a reduction in HIV and STIs</li> <li>• Multi-component school-based interventions showed a decrease in self-reported STIs at aged 21 for the African American cohort.</li> </ul> <p>(RCT)</p> <ul style="list-style-type: none"> <li>• Partner notification strategies (Peru) by either patient or healthcare worker showed no difference.</li> <li>• Condom distribution in a hotel used by CSWs resulted in an increase in condom use.</li> </ul> <p>-----</p> <p>Summary</p> <ul style="list-style-type: none"> <li>• Overall no one theoretical framework was more successful than another.</li> <li>• No specific approach was more successful than another.</li> <li>• All counselling sessions used at least two sessions however the number of sessions did not affect the success of the intervention.</li> </ul>
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<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• Study quality</li> <li>• Potential for publication bias</li> </ul>
<b>Research recommendations:</b>	<p>Due to the costs of intervention trials, criteria for prioritising and selecting intervention warranting evaluation are imperative.</p> <p>It is important to incorporate outcome and impact evaluations and cost-benefit analyses into future studies on effective interventions to ensure that limited resources are effectively utilised.</p>

**Ward D. J. (2004) Behavioural interventions to reduce the risk of sexually transmitted infections in Genitourinary Medicine Clinic patients: a systematic review**

<b>Data pool:</b>	
Population	Any
Setting(s)	Genitourinary medicine clinics (almost all in North America)
Interventions	Behavioural interventions
Searches	Searches were carried out in: MEDLINE, Cochrane database of systematic reviews, Database of abstracts of reviews of effectiveness (DARE), Health technology assessment (HTA), CINAHL, Embase, PsychINFO, Applied Social Sciences Index and Abstracts (ASSIA), Cochrane library of controlled clinical trials register (CCTR), National Research Register.
Selection/inclusion criteria	<p>Studies were included if they:</p> <ul style="list-style-type: none"> <li>• Used a randomised controlled trial.</li> <li>• Had a study population recruited from those attending a GUM clinic or equivalent (public clinic offering free services and self-referral for the screening, diagnosis and treatment of STIs).</li> <li>• Had a population that was not primarily recruited from those with known HIV infection or AIDS.</li> <li>• The intervention was behavioural and was aimed at reducing the future likelihood of acquiring an STI, but excluded the provision of HIV testing with or without counselling as the principle intervention.</li> <li>• Outcomes were related to clinically or laboratory diagnosed STI rates, self-reported STI rates, or to self-report of quantifiable behavioural changes (e.g. condom use, number of partners etc.), but not attitudinal or knowledge based measures alone, and not related to partner notification alone.</li> </ul>
Quality assessment	<p>See selection/inclusion criteria.</p> <p>The authors also used a Jadad scoring system and included the method of randomisation, concealment, blinding, completeness of follow-up and the use of intention-to-treat analyses.</p>
Types of studies	Randomised controlled trials
Number of studies	14 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	STIs; Condom use; number of partners etc.
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Four studies reported lower STI rates at follow-up in their intervention groups relative to the control group. The result was statistically significant for two of these studies.</li> <li>• No clear pattern of intervention format or number of sessions and reported effects were noted [enhanced vs. control RR 0.78 (95% CI 0.65, 0.95), brief vs. control RR 0.82 (95% CI 0.68, 0.99)].</li> <li>• Duration of intervention was also not significant.</li> </ul>

	<ul style="list-style-type: none"> <li>• One study (Kenya) presented statistically significant results in the reduction of STIs however, did not describe how they were found.</li> <li>• Results from self-reported STIs showed a non-significant reduction.</li> <li>• Mixed results were reported for the number of characteristics of sexual partners.</li> <li>• All but one study reported results that favoured increased consistent condom use among the intervention group and in two studies this is statistically significant (<math>p &lt; 0.05</math>).</li> <li>• Only one study indicated a clear relationship between the intervention and an increase in the proportion of protected sexual encounters.</li> <li>• Results show that those interventions using a theoretical framework based on social cognitive theory may have been more successful in increasing the rate of consistent condom use.</li> </ul> <p>Key point: “This review did not find that behavioural interventions consistently reduce STI rates in patients attending GUM clinics”.</p> <p>“This review did find evidence that behavioural interventions may alter certain aspects of behaviour in the population of interest”.</p>
<p><b>Gaps and inconsistencies identified by the review:</b></p>	<ul style="list-style-type: none"> <li>• Few studies of behavioural interventions were identified.</li> <li>• The results are limited in their generalisability, due to the population studied and the setting.</li> <li>• The applicability of study results to UK practice also relates to the feasibility of introducing the experimental interventions into a GUM clinic setting as current services are over stretched, overcrowded and under resourced.</li> <li>• The quality of identified studies was frequently poor.</li> <li>• There was also evidence of differential follow-up rates between study arms in five studies and many reported a low rate of intervention adherence.</li> <li>• Studies also showed low recruitment rates.</li> </ul>
<p><b>Research recommendations:</b></p>	<ul style="list-style-type: none"> <li>• There is a need for further research in this topic.</li> <li>• Future studies should aim to include patients who are representative of a UK GUM clinic and include groups who are most affected by STIs and suffer inequality in their sexual health.</li> <li>• Any proposed clinical trails should use rigorous methodology, including using a control arm that simulates typical current UK practice, minimising bias by improving methods of blinding, and including laboratory based or biological diagnoses.</li> <li>• Trial should also consider cluster-randomisation by clinic or another natural unit.</li> <li>• Future research should consider addressing both clinical and cost-effectiveness and consider the likely uptake of behavioural interventions in this setting.</li> </ul>

**Ward D.J. et al. (2005) Reducing the risk of sexually transmitted infections in genitourinary medicine clinic patients: a systematic review and meta-analysis of behavioural interventions**

<b>Data pool:</b>	
Population	Any
Setting(s)	Genitourinary medicine clinics (almost all in North America)
Interventions	Behavioural interventions
Searches	Searches were conducted in: MEDLINE, CINAHL, Embase, PsychINFO, Applied Social Sciences Index and Abstracts (ASSIA), Cochrane library of controlled clinical trials register (CCTR), National Research Register (1966 to January 2004).
Selection/inclusion criteria	Studies were included if: <ul style="list-style-type: none"> <li>• They were randomised controlled trials of behavioural interventions aimed to reduce the risk of STIs in patients attending GUM, or equivalent, clinics.</li> </ul>
Quality assessment	See selection/inclusion criteria. The authors also used a Jadad scoring system and included the method of randomisation, concealment, blinding, completeness of follow-up and the use of intention-to-treat analyses.
Types of studies	Randomised controlled trials
Number of studies	14 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	STI rates; changes in risky sexual behaviour
<b>Review findings:</b>	<p>This study is a journal article using many of the 2004 Ward et al. report.</p> <ul style="list-style-type: none"> <li>• Four studies reported lower STI rates at follow-up in their intervention groups relative to the control group. The result was statistically significant for two of these studies. Pooled results do not indicate an overall effect (RR 1.00 (95% CI 0.81 to 1.23)). However, visual examination of the Forest plot and statistical testing suggest heterogeneity between trials, as such one ought not to rely heavily on the summary measures of effect. Also, funnel plot analysis suggests publication bias.</li> <li>• Trials reporting significant effects had the greatest adherence and follow up rates. They also reported more protective effects but pooled results were not significantly different.</li> <li>• Format and length of intervention was not significant.</li> <li>• Duration of intervention was found not to be significant.</li> <li>• Theoretical framework was related to effectiveness, although pooled results were not significant.</li> <li>• Four studies considered clinically diagnosed STIs. One study found no reduction and others observed increased rates of STIs in the intervention groups. Pooled results show an overall effect (RR 1.23 (1.01 to 1.50)) with no evidence of heterogeneity.</li> <li>• Studies considering self-reported diagnoses showed no significant effects.</li> <li>• Six out of seven trials reporting consistent condom use observed a greater increase</li> </ul>

	<p>in their intervention groups than controls.</p> <ul style="list-style-type: none"> <li>• Trials also reported increases (non-significant) in condom protected sexual encounters, inconsistent effects on refusing unsafe sex, and using condoms with recent partners.</li> <li>• Five out of seven trials reported fewer sexual partners among the intervention groups than controls. However, two also reported fewer partners among the control group.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• Trial quality was poor</li> <li>• Only RCTs were included</li> <li>• Publication bias was found for the laboratory confirmed infections (primary outcome).</li> </ul>
<b>Research recommendations:</b>	<ul style="list-style-type: none"> <li>• There is a need for research on behavioural interventions in a UK setting, where new approaches to reducing infection rates are urgently required.</li> <li>• Information is needed on the likely effect size, acceptability, and cost-effectiveness of introducing behavioural interventions into the UK GUM setting.</li> <li>• Future studies should develop new interventions based on those that have been successful in US settings.</li> </ul>

## Category two reviews

### Pedlow C.T. and Carey M.P. (2004) Developmentally appropriate sexual risk reduction interventions for adolescents: rationale review of intervention and recommendations for research and practice.

<b>Data pool:</b>	
Population	Adolescents
Setting(s)	Any
Interventions	Sexual risk reduction interventions to change behaviour
Searches	Searches were conducted using Medline, PsychINFO and Cinahl
Selection/inclusion criteria	Randomised controlled trials were included if they: Evaluated adolescent risk reduction interventions that were published before February 2003; included adolescents aged 11 to 18 years; used randomised controlled trial design; and measured sexual behaviour outcomes.
Quality assessment	None
Types of studies	Randomised controlled trials
Number of studies	24 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Biological, psychological and social outcomes
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• 11 studies delivered interventions to preadolescents (9-12 years old) or younger adolescents (13-15 years old). These studies showed that interventions with pre-adolescents were effective in delaying the onset of sex and improving condom use among sexually active youth. Studies with young adolescents were effective in increasing condom use, reducing unprotected sex and reducing the frequency of sex.</li> <li>• Only one study showed a limited effect of interventions aimed at promoting abstinence.</li> <li>• All studies that provided booster sessions were effective in reducing sexual risk behaviour later.</li> <li>• Nearly all the studies that showed improvements in risk perception also achieved reductions in sexual risk behaviour at follow up.</li> <li>• Strategies to manage emotion were also included in the interventions however, no differences were found at follow up and the authors acknowledged difficulty in establishing a valid measure of this construct. Although, these studies were effective at reducing the number of sexual partners at follow up.</li> <li>• Studies used cognitive restructuring techniques (replacing negative for positive thoughts). None measured the cognitive restructuring however, all three studies were effective at improving condom use and reducing the frequency of unprotected intercourse.</li> <li>• Interventions that recognised adolescent cognitive functioning through, for example goal-setting, decision-making skills, preparation for risky situations, were successful at reducing sexual activity, increasing condom use and delaying sexual initiation.</li> <li>• Youth who had higher cognitive complexity reported greater reduction in risk behaviour at follow up.</li> </ul>

	<ul style="list-style-type: none"> <li>• Improvements in condom application skills (observing the application) were not associated with increased condom use and non-significant findings for condom use skills were associated with risk reduction outcomes in another study.</li> <li>• Many studies provided appropriate communication skills training (21/25). Six studies measured sexual communication behavioural skills, all six demonstrated significant improvements at follow up and five of the six were also effective at reducing sexual risk behaviour.</li> <li>• Mixed results were reported for those studies that provided risk reduction information to peers as a means to reduce peer pressure for risky sex.</li> <li>• Studies measuring peer norms for condom use or abstinence showed improved peer norms. Studies with improved peer norms for sexual risk behaviour were also effective at delaying onset of sex and improving condom use.</li> <li>• A school-based intervention addressing social influences at home, in school and in the community still showed effects two and a half years later on improved teen-parent communication, attitudes to condom use, increased condom use and less unprotected sex.</li> <li>• Mixed results were observed in those interventions that considered parental influence.</li> </ul>
<p><b>Gaps and inconsistencies identified by the review:</b></p>	<ul style="list-style-type: none"> <li>• Literature failed to measure the onset of menarche and its implication on sexual activity.</li> <li>• Measurement for risk perception varied from study to study, greater use of standardised measures in the future will verify the importance of risk perception.</li> <li>• Only one third of interventions provided multiple intervention exercises that were cognitively appropriate for adolescents.</li> <li>• Only two interventions included exercises to assist teens in considering their risk behaviour.</li> <li>• Only one intervention illustrated abstract concepts with concrete real-life examples to be consistent with adolescents' limited ability to hypothesise.</li> <li>• Only one study measured a marker of cognitive development.</li> <li>• Although many risk reduction interventions for youth have been implemented, their outcomes have been inconsistent and few studies have been replicated.</li> <li>• Most of the theories applied were developed for adult interventions.</li> </ul>
<p><b>Research recommendations:</b></p>	<ul style="list-style-type: none"> <li>• Modifying existing theoretical models will advance intervention development, implementation and evaluation.</li> <li>• Researchers ought to use multiple strategies compatible with adolescent cognitive ability, including managing emotions associated with sexual risk reduction.</li> <li>• Researchers ought to include measures of cognitive functioning, future-time perspective, and decision-making in formative research.</li> <li>• Risk perception ought to be linked to actual behaviour and reporting findings for sexually inexperienced versus experienced youth.</li> <li>• The inclusion of communication skills and negotiation skills are encouraged.</li> <li>• It is important to provide multiple opportunities for skills training that are consistent with adolescents' cognitive level.</li> </ul>

	<ul style="list-style-type: none"><li>• Booster sessions may reinforce the skills acquisition as youth's relationships change.</li><li>• There is a need to develop new, more effective risk reduction interventions that address biological, psychological and social influences on sexual behaviour.</li><li>• Studies that compare different intervention strategies, identify effective components and measure process outcomes of developmental factors are needed.</li></ul>
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**Robin L. et al. (2004) Behavioural interventions to reduce incidence of HIV, STD and pregnancy among adolescents: A decade in review.**

<b>Data pool:</b>	
Population	Adolescents and ethnic minorities
Setting(s)	Any
Interventions	Behavioural interventions to reduce sexual risk-taking
Searches	Six electronic databases were searched: Medline, Psychlit, Popline, ERIC, Sociofile and CHID. Unspecified manual searches were also carried out.
Selection/inclusion criteria	<p>Studies (randomised control trials or quasi-experimental design with controls) were included if they:</p> <ul style="list-style-type: none"> <li>• Specified a theoretical basis for the intervention programme.</li> <li>• Provided information about the intervention (e.g. duration, content, facilitators).</li> <li>• Defined clear aims.</li> <li>• Random assignment or matched control groups using a quasi-experimental design that matched units through stratification of risk behaviours and demographic variables.</li> <li>• If researchers controlled statistically for any differences at baseline.</li> <li>• Studies were included if they had more than 16 participants per condition, followed participants for at least four weeks post-intervention, or had immediate pre- or post-test for interventions lasting four months or longer.</li> <li>• Had attrition rates of less than 40% at follow-up four weeks after the end of the intervention.</li> <li>• Studies were also included if they measured sexual intention for those 13 years or younger.</li> </ul>
Quality assessment	None
Types of studies	Randomised control trials or quasi-experimental design with controls.
Number of studies	24 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Abstinence; reduced sexual activity or number of sexual partners; less risky sexual behaviours; reduced number of pregnancy or repeat pregnancy; or reduced STD prevalence.
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Most interventions were based on multiple theories however no clear pattern of study method presented itself, the most commonly used theories were: social cognitive theories; the Health Belief Model; social learning theories; and social influence theories.</li> <li>• Among commonly measured behaviours (8 out of 12 studies), condom use was affected most consistently, and delayed initiation of sexual intercourse was least affected (4 of 11 studies).</li> <li>• Among measures less commonly used, pregnancy or partner impregnation was recorded.</li> <li>• Three studies recorded negative results; increased likelihood of males engaging in sexual intercourse in the last month compared to the control group; increased reports of pregnancy and STDs; less contraceptive use at most recent sexual encounter for females who were sexually inexperienced at baseline or; less contraception efficiency among females in the intervention group.</li> </ul>

	<ul style="list-style-type: none"> <li>• Once studies were aggregated into the 17 programmes and variants, 10 programmes had positive effects, one had mixed effects and four had null effects and two had negative effects.</li> <li>• Studies with positive effects were published after 1995, included both males and females, targeted African American youth and took place in schools.</li> <li>• Programmes that produced positive effects used trained adult facilitators.</li> <li>• Effective programmes included content that was specific to reducing sexual risk behaviour (e.g. sexual refusal strategies and condom-use skills).</li> <li>• Effective programmes employed interactive and participatory educational strategies.</li> <li>• Programmes that emphasised skills to reduce specific behaviours, interventions more generally targeted toward increasing youth resiliency and competencies show promising approaches to reducing sexual risk behaviour.</li> </ul>
<p><b>Gaps and inconsistencies identified by the review:</b></p>	<ul style="list-style-type: none"> <li>• Limitations included differences among groups that were reported but not controlled for in the analysis, and the unit of randomisation not matching the unit of analysis.</li> <li>• Limits on the strength of effect sizes due to the differences in follow-up periods and possible limits on information available from the primary studies included.</li> </ul>
<p><b>Research recommendations:</b></p>	<p>Future programmes ought to focus upon appropriate skills, adapting programmes for length, being clear what constitutes a given programme and decide who ought to facilitate them</p> <p>Resiliency-based programmes ought to be further explored with regard to reducing the sexual risk behaviour of adolescents.</p> <p>Researchers should design studies that will clearly reveal which programme characteristics drive positive effects in sexual risk-reduction.</p>

## Category three reviews

### DiClemente R.J., et al., (2002) Enhancing STD/HIV prevention among adolescents: the importance of parental monitoring.

<b>Data pool:</b>	
Population	Adolescents (US)
Setting(s)	Any
Interventions	Parental interventions
Searches	Not specified
Selection/inclusion criteria	Observational studies of parental monitoring that report the impact on risk behaviour and clinic and community based STD/HIV interventions. No other criteria specified.
Quality assessment	Not specified
Types of studies	Observational studies
Number of studies	Unclear
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Condom use; risky sexual behaviour
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Health risk behaviours: At least two studies have shown that lack of parental monitoring has been associated with less contraceptive use.</li> <li>• Sexual risk behaviours: empirical investigations have found associations between lack of parental monitoring and 1) unprotected sexual activity, 2) earlier initiation of sexual activity, 3) sex with non-monogamous male partners among adolescent females. Also, noted was an increase in STDs, multiple sexual partners and risky sexual partners. Increased parental monitoring has been shown to help delay sexual initiation, report fewer sexual partners and less frequent sexual intercourse</li> <li>• Other family-related variables: One study of African American females showed lack of parental monitoring was associated with 1) less frequent communication between adolescents and parents, 2) lower levels of perceived family support, 3) a living arrangement that did not include both parents living in the same home.</li> <li>• Clinic-level interventions: counselling sessions with adolescents' parents have been recommended by two studies.</li> <li>• Community-level interventions – community based organisations (churches, agencies, schools) could provide programmes for both adolescents and parents together, as well as support groups and discussion.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• Reliance on the validity of adolescents self-reports for assessment of outcome measures.</li> <li>• Psychological interventions that target sexual risk behaviours of adolescents have failed to achieve lasting effects.</li> </ul>
<b>Research recommendations:</b>	<ul style="list-style-type: none"> <li>• Families can be mobilised to communicate important values, model appropriate behaviours, monitor adolescents' behaviours, and encourage protective behaviours.</li> <li>• Family-level interventions could be designed to provide parents with guidance for their adolescents.</li> </ul>

	Research should encourage strengthening the family unit as an intervention strategy designed to promote adolescents' adoption and maintenance of health protective behaviours.
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**Schaalma H. P. (2004) Sex education as health promotion: what does it take?**

<b>Data pool:</b>	
Population	Young people and sex education in schools
Setting(s)	Any
Interventions	School-based sex education programmes
Searches	Not specified
Selection/inclusion criteria	School-based sex education programmes, no other specified.
Quality assessment	Not specified
Types of studies	Not specified
Number of studies	Unclear
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Condom use, risky sexual behaviour and abstinence
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Interventions carried out within the ARRM framework have been shown to correlate with condom use and perceived control over behaviour (heterosexual studies). These results have also been found in studies applying theories of reasoned action, planned behaviour, and social cognitive theory. As such, 'education design must target psychological change beyond increases in knowledge', also, 'theories of sexual behaviour and sex education interventions demonstrates that despite the particularities of sexual behaviour, sexual health promotion should be informed by cognitive theories that have been successfully applied to a variety of other health-related behaviours'.</li> <li>• Social rehearsal on sexual negotiation ought to be learned through instruction and guided practice (SHARE and Long Live Love programmes). Long Live Love showed favourable effects on social-cognitive mediators of consistent condom use and risk-reduction behaviour</li> <li>• Reviews of abstinence programmes show that they have not succeeded in changing attitudes towards abstinence. However, very few abstinence programmes have been rigorously evaluated therefore results need to be interpreted cautiously.</li> <li>• Health promotion should be evidence-based, needs-driven, and ecological in its perspective.</li> <li>• In relation to the cognitive determinants of health behaviour, sexual health promotion draws on the same research base as other areas of health promotion.</li> <li>• Teaching social skills relevant to sexual behaviour in classroom settings requires specialist expertise both in programme design and delivery by teachers or facilitators.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	See Review findings
<b>Research recommendations:</b>	<ul style="list-style-type: none"> <li>• Researchers should continue to conduct and share the results of needs assessment research.</li> <li>• Researchers should target those who could potentially change the policy context in</li> </ul>

	<p>which sex education is designed.</p> <ul style="list-style-type: none"><li>• Schaalma concludes that, "To facilitate widespread adoption of effective sexual health promotion programmes, health promotion planners could focus on mobilising parental support for comprehensive sex education. This would involve designing community empowerment programmes that would be deemed effective if they prompted parents to act politically to demand comprehensive sex education (e.g. by writing to politicians, or schools and media advocacy)".</li></ul>
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**Schmiedl R. (2004) School-based condom availability programs**

<b>Data pool:</b>	
Population	Young people (US)
Setting(s)	School-based in US
Interventions	Condom distribution in schools; abstinence
Searches	Not stated
Selection/inclusion criteria	Not stated
Quality assessment	Not stated
Types of studies	Unclear
Number of studies	8 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Condom use; sexual initiation.
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Findings from studies examining condom distribution on schools showed that condom availability was not associated with an increase in teen sexual activity.</li> <li>• Data also showed that most programmes indicated increased use of condoms by sexually active young people.</li> <li>• Parental consent is usually required for students to participate in school-based condom distribution schemes (passive or active).</li> <li>• Counselling teens prior to condom distribution has also been used in some schools.</li> <li>• The method of distribution is important to the success of the programme in schools, free distribution in baskets as opposed to vending machines resulted in more uptake.</li> <li>• The cost of condoms could be a barrier to condom use as one study showed a reduction in uptake when a charge was added to each condom (after is had been freely available). It also resulted in a decrease in the number of sites participating, and a decrease in reported condom use among individuals with two or more partners.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	None specified
<b>Research recommendations:</b>	<p>Recommend that barriers to condom use be eliminated and that condoms should be free of charge (Cohen et al, 1999).</p> <p>Schmiedl concludes that, "With the appropriate resources, support, and consideration of the factors reviewed, however, school nurses can develop successful school-based condom disbursement programs that effectively reduce teen's exposure to STDs and HIV and that decrease teen pregnancy".</p>

**Shrier L.A. (2004) Sexually transmitted diseases in adolescents: biologic, cognitive, psychologic, behavioural, and social issues.**

<b>Data pool:</b>	
Population	Adolescents
Setting(s)	Any (US)
Interventions	Parental monitoring
Searches	Not specified
Selection/inclusion criteria	Not specified
Quality assessment	Not specified
Types of studies	Uncertain
Number of studies	Unclear
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Condom use; number of sexual partners; risky sexual behaviour
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Parental monitoring, Parent-adolescent communication and perceived family support have been associated with safer sex cognitions and behaviour.</li> <li>• One study found that virginal adolescents who perceived maternal approval of birth control are more likely to initiate sexual activity over the following year. Those who perceive maternal disapproval are more likely to remain virgins, delay initiation, have less intercourse, use contraception, and not become pregnant.</li> <li>• Peer norms affect the sexual behaviour of young people.</li> <li>• Abstinence only programmes are not effective in delaying the onset of intercourse.</li> <li>• School-based condom availability may or may not increase condom use.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	None stated
<b>Research recommendations:</b>	Programmes designed to reduce sexually transmitted infections in adolescents should take a focused integrated approach that addresses the modifiable biological, cognitive, psychologic, behavioural, and social issues affecting adolescent sexual risk.

## Appendix E. Details of the primary studies included in each review.

**Table 2. Category 1 review. DiClemente et al, 2004.**

Author		Title					
DiClemente R.J. et al., 2004		A programmatic and methodologic review and synthesis of clinic-based risk-reduction interventions for sexually transmitted infections: research and practice implications					
	Type of intervention	Author	Study Design	Outcome	Theory	Duration	Target group
Individual level	Observational learning: audiotape risk-assessment and education with Dr follow-up	Boekeloo et al., (1999)	RCT	Condom use at last intercourse	SCT, TRA	One-time	Adolescents/mostly African American. Physician's office.
	Observational learning, direct feedback: culturally specific STD education, condom attitudes and skills	DeLameter et al., (2000)	RCT	Condom use knowledge/Self-efficacy and intent to use condoms with regular partner	SRMIB, SET	One-time	Adolescents/African American. STD clinic.
	Observational learning, direct feedback: STD education, condom efficacy, information on drug and needle use	Mansfield et al., (1993)	RCT	condom use; number of sexual partners; sexually active	None stated	One-time	multi-ethnic adolescents. Physician's visit.
	Tailored material	Scholes et al., (2003)	RCT	Condom use	SST	Twice	multi-ethnic adolescents. Postal.
	Observational learning, direct feedback:	Schrier et al., (2001)	RCT	Condom use; new partner	SCT, TTM	One-time	multi-ethnic adolescents. Clinic.
Group level	Observational learning, role play, direct feedback: Interactive group sessions focused on gender and ethnic pride, HIV, safe sex, healthy relationships	DiClemente et al., (2004)	RCT	Consistent condom use, new vaginal partner in last 30 days, self-reported pregnancy	SCT, TGP	Four consecutive Saturdays	Adolescents/African American. Community health agency.
	Observational learning, role play, direct feedback: STD/HIV education, favourable attitudes towards condoms and partner communication	Gillmore et al., (1997)	RCT	Safe sex behaviour; condom use; number of sexual partners	SCT, TRA	Two sessions	Adolescents/African American and Caucasian. STD clinic & juvenile detention centre.
	Observational learning, role play, direct feedback: decision-making skills, goal and social skills, acceptance of negative thoughts	Metzler et al., (2000)	RCT	Condom use; number of sexual partners	SCT, IMBST	Five sessions	Adolescents/ white. STD clinic.
	Observational learning, role play, direct feedback: STD education, condom negotiation and skills training, positive attitude towards condoms	Orr et al., (1996)	RCT	Condom use	HBM	One-time	Multi-ethnic adolescents. Family planning and STI clinic.
	Observational learning, role play, direct feedback: education and behaviour skills training, including condom use, assertion, refusal etc.	St. Lawrence et al., (1995)	RCT	Condom protected intercourse	SCT, IMBST	8 weekly meetings	Adolescents/African American. Health service.

**Table 3. Category 1 review. Manhart and Holmes, 2005.**

Author		Title					
Manhart L.E. and Holmes K.K., 2005		Randomised controlled trials of individual-level population-level, and multi-level interventions for preventing sexually transmitted infections: what has worked?					
	Type of intervention	Author	Study Design	Outcome	Theory	Duration	Target group
Individual level	Experimental, cognitive-behavioural intervention	Boyer et al. (1997)	RCT	STI acquisition	ARRM	Four sessions	Heterosexual men and women attending STI clinic
	Individual risk reduction counselling	Kamb et al. (1998)	RCT	Reduction in STI incident	TRA, SCT	Four sessions	Heterosexual HIV-negative men and women attending clinic
	Individual risk reduction counselling	Peterman et al. (2000)	RCT	Reduction in STI incident	TRA, SCT	Four sessions	Heterosexual HIV-negative men and women attending clinic
	Voluntary counselling and testing (VCT)	VCT Efficacy study group (2000)	RCT	Reduction in STI incident	Client-centred HIV counselling model	Not specified	Individuals and couples from Tanzania, Kenya and Trinidad
	Voluntary counselling and testing (VCT)	EXPLORE Study Group (2004)	RCT	HIV acquisition	None stated	10 sessions	MSM in the US
	Unclear	El-Bassel et al. (2003)	RCT	Behavioural	None stated	Not stated	Clinic based
	Unclear	James et al. (1998)	RCT	Behavioural	None stated	Not stated	Clinic based
	Observational learning, direct feedback:	Schrier et al. (2001)	RCT	Condom use; new partner	SCT, TTM	One-time	multi-ethnic adolescents. Clinic.
	Partner notification	Peterman et al. (1997)	RCT	Locating partners within 2 days	None stated	Not stated	People with syphilis
Group level	Small-group counselling	Branson et al. (1998)	RCT	Incident of gonorrhoea, chlamydia, HIV, syphilis infection	IMBSM	Five sessions (1 booster)	Men and women attending STI clinics
	Small-group risk reduction sessions focusing on attitudes, skills and strategies for behaviour change	NIMH multisite intervention group trial (1998)	RCT	STI incidence, condom use	None stated	Seven sessions	Men and women attending STI clinics
	Small-group risk reduction	Shain et al. (1999)	RCT	Infection rates, unsafe sex, number of partners	ARRM	Three session	Latina and AA women attending STI clinics
	Small-group risk reduction	Shain et al. (2002)	RCT	Infection rates, unsafe sex, number of partners	ARRM	Three session	Latina and AA women attending STI clinics
	Small-group sessions including communal mastery and negotiation skills as well as HIV and safe sex information	Hobfall et al. (2002)	RCT	Risky sexual behaviour	None stated	Six session	Women attending clinics

	Small-group skills training	Baker et al. (2003)	RCT	Reduction in STI incidence; risky behaviour	RP	16 sessions	Heterosexual women in clinics or organisations
	Group intervention	Boyer et al. (2003)	RCT	STIS and unplanned pregnancy	IMBSM	Not stated	Female military recruits
	Information education and communication and male and female condom distribution	Feldblum et al. (2001)	RCT	STI rates	None stated	Not stated	Women from plantations in Kenya
	Male or female condoms available in brothels	Fontanet et al. (1998)	RCT	Incidence of STIs	None stated	Not stated	Sex workers in Thailand brothels
	Video and discussion	O'Donnell et al. (1998)	RCT	Behavioural	None stated	Not stated	Minority ethnic men. In clinics.
	Instruction on condom use	Cohen et al. (1992a)	RCT	Behavioural	None stated	Not stated	Unclear. In clinics.
	Discussion and role play for condom negotiation	Cohen et al. (1992b)	RCT	Behavioural	None stated	Not stated	Unclear. In clinics
	Counselling in types of barrier method contraception	Gollub et al. (2000)	RCT	Behavioural	None stated	Not stated	Women in clinics
	Cognitive-behavioural intervention	Imrie et al. (2001)	RCT	Behavioural	None stated	Not stated	MSM in clinics
	Multi-component	Celentano et al., 2000	Quasi-experimental	Behavioural	None stated	Not stated	Thai army conscripts
	Clinic based group discussions	Cohen et al. (1991)	Quasi-experimental	Behavioural	None stated	Not stated	Clinics
Community level	4 component intervention; in schools SRE; reproductive services for youths; condom distribution; community activities	Hayes et al. (2003)	RCT	Incidence of STIs, knowledge and behaviour	None stated	Not stated	Individuals from 20 communities of youth in Mwanza, Tanzania
	Information education and communication (IEC); IEC plus management of STI	Kamali et al. (2003)	RCT	Incidence of STIs; condom use	None stated	Not stated	Individuals from 18 communities in Masaka, Uganda
	Condom distribution	Celentano et al. 1998	Non-RCT	Behavioural	None stated	Not stated	Thai army conscripts
	Multi-component intervention with young people	Lonczak et al. (2002)	Non-RCT	Behavioural	None stated	Not stated	Young people in schools
	Health ordinance condom distribution	Egger et al. (2000)	RCT	Behavioural	None stated	Not stated	Motels frequented by CSWs

**Table 4. Category 1 review. Ward et al., 2004.**

Author		Title					
Ward D.J. et al., 2004		Behavioural interventions to reduce the risk of sexually transmitted infections in genitourinary medicine clinic patients: a systematic review					
	Type of intervention	Author	Study Design	Outcome	Theory	Duration	Target group
Individual level	Individual risk reduction counselling	Kamb et al. (1998)	RCT	Cumulative incidence of gonorrhoea, chlamydia or HIV	TRA, SCT	Four sessions	Heterosexual HIV-negative men and women attending clinic
	Experimental, cognitive-behavioural intervention	Boyer et al. (1997)	RCT	STI acquisition	ARRM	Four sessions	Heterosexual men and women attending STI clinic
	Observational learning, direct feedback:	Schrier et al. (2001)	RCT	Condom use; new partner	SCT, TTM	One-time	multi-ethnic adolescents. Clinic
Group level	Small-group risk reduction sessions focusing on attitudes, skills and strategies for behaviour change	NIMH multisite intervention group trial (1998)	RCT	STI incidence, condom use	None stated	Seven sessions	Men and women attending STI clinics
	Group discussions and motivation; impediments to condom use	Balmer et al. (1998)	RCT	Number of new sexual partners and condom use with high-risk sexual contact	Unified theory	26 wkly 1 hr sessions	Men from STI clinic in Nairobi, Kenya
	Observational learning, role play, direct feedback: decision-making skills, goal and social skills, acceptance of negative thoughts	Metzler et al. (2000)	RCT	Condom use; number of sexual partners	SCT, IMBST	Five sessions	Male and female adolescents/ white. US STI clinics.
	Observational learning, role play, direct feedback: STD education, condom negotiation and skills training, positive attitude towards condoms	Orr et al. (1996)	RCT	Condom use	HBM	One-time	Female multi-ethnic adolescents. STI and FP clinics
	Small-group risk reduction	Shain et al. (2002)	RCT	Infection rates, unsafe sex, number of partners	ARRM	Three session	Latina and AA women attending STI clinics
	Enhanced group prevention programme. Mixed gender groups including video session with discussion.	Branson et al. (1998)	RCT	More than one sexual partner, condom use	IMBST	Four sessions and booster session	Men and women attending STI clinics
	Group workshop - including goal setting personal motivation, dealing with high-risk situations etc.	Imrie et al. (2001)	RCT	Proportion not engaging in unprotected anal intercourse; of those who are, number with partner of different or unknown serostatus	TTM (RP, SLT, MI)	Single one day session	MSM from a UK GUM clinic
	Culturally specific observational learning through video featuring information on living with HIV, rap music and comedy, condom use.	Kalichman et al. (1999)	RCT	Proportion always using condoms; refusing unsafe sex; number of unprotected acts of intercourse; proportion of sex acts with condom; number of sexual partner	IMBST	Two sessions	African American men from STI clinic

Behavioural training including assertion training, self-management, active listening skills, condom use. Social skills training including modelling behaviour or rehearsing behaviour.	O'Leary et al. (1998)	RCT	Condom use; number of sexual partners; number of risky acts	SCT	Seven sessions	Men and women from 7 STI clinics
Culturally specific observational learning through video featuring black Americans and coupons for condoms.	Solomon et al. (1989)	RCT	Mean number of condom coupons redeemed	Not theory based	Not stated	Men and women from a STI clinic

**Table 5. Category 1 review. Ward et al., 2005.**

Author		Title					
Ward D.J. et al., 2005		Reducing the risk of sexually transmitted infections in genitourinary medicine clinic patients: a systematic review and meta-analysis of behavioural interventions.					
	Type of intervention	Author	Study Design	Outcome	Theory	Duration	Target group
Individual level	Experimental, cognitive-behavioural intervention	Boyer et al. (1997)	RCT	STI acquisition	ARRM	Four sessions	Heterosexual men and women attending STI clinic
	Observational learning, direct feedback:	Schrier et al.(2001)	RCT	Condom use; new partner; number of unprotected episodes	SCT, TTM	One-time	Young women with cervicitis or PID from a children's hospital or inpatient unit . Clinic
	Negotiation	Maher et al. (2003)	RCT	Unclear	None stated	Three sessions	Black men attending clinics with definite or probable STIs
Group level	Small-group risk reduction sessions focusing on attitudes, skills and strategies for behaviour change	NIMH multisite intervention group trial (1998)	RCT	STI incidence, condom use	None stated	Seven sessions	Men and women attending STI clinics
	Group discussions and motivation; impediments to condom use	Balmer et al. (1998)	RCT	Number of new sexual partners and condom use with high-risk sexual contact	Unified theory	26 weekly sessions	Men from a STI clinic in Kenya
	Enhanced group prevention programme. Mixed gender groups including video session with discussion.	Branson et al. (1998)	RCT	More than one sexual partner, condom use	IMBST	Four sessions and booster session	Men and women attending STI clinics
	Group workshop - including goal setting personal motivation, dealing with high-risk situations etc.	Imrie et al. (2001)	RCT	Proportion not engaging in unprotected anal intercourse; of those who are, number with partner of different or unknown serostatus	TTM (RP, SLT, MI)	Single one day session	MSM from a UK GUM clinic
	Culturally specific observational learning through video featuring information on living with HIV, rap music and comedy, condom use.	Kalichman et al. (1999)	RCT	Proportion always using condoms; refusing unsafe sex; number of unprotected acts of intercourse; proportion of sex acts with condom; number of sexual partner	IMBST	Two sessions	African American men from STI clinic
	Observational learning, role play, direct feedback: decision-making skills, goal and social skills, acceptance of negative thoughts	Metzler et al. (2000)	RCT	Condom use; number of sexual partners	SCT, IMBST	Five sessions	Male and female adolescents/ white. STI clinic.

Behavioural training including assertion training, self-management, active listening skills, condom use. Social skills training including modelling behaviour or rehearsing behaviour.	O'Leary et al. (1998)	RCT	Condom use; number of sexual partners; number of risky acts	SCT	Seven sessions	Men and women from 7 STI clinics
Observational learning, role play, direct feedback: STD education, condom negotiation and skills training, positive attitude towards condoms	Orr et al. (1996)	RCT	Condom use	HBM	One-time	Multi-ethnic adolescents
Small-group risk reduction	Shain et al. (2002)	RCT	Infection rates, unsafe sex, number of partners	ARRM	Three sessions	Latina and AA women attending STI clinics
Culturally specific observational learning through video featuring black Americans and coupons for condoms.	Solomon et al. (1989)	RCT	Mean number of condom coupons redeemed	Not theory based	Not stated	Men and women from a STI clinic

**Table 6. Category 2 review. Robin et al., 2004.**

Author		Title					
Robin L. et al., 2004		Behavioral interventions to reduce incidence of HIV, STD, and pregnancy among adolescents: a decade in review					
	Type of intervention	Author	Study Design	Outcome	Theory	Duration	Target group
Individual level	Experimental, cognitive-behavioural intervention	Boyer et al. (1997)	RCT	STI acquisition	ARRM	Four sessions	Heterosexual men and women attending STI clinic
	Videos, printed materials providing supplementary information and additional suggestions for discussions and activities	Miller et al. (1993)	RCT	Teen sexual behaviour, intentions	None stated	Six video-tapes	Young people predominantly white. With their families.
	Individualised risk assessment for HIV, counselling on condom use, and HIV pamphlet, an offer of free condoms, a 20 minute counselling session with physician to discuss HIV prevention	Mansfield et al. (1993)	RCT	Ever had sex; condom use; number of partners	None stated	One-time	Clinic based sample of young people
Group level	Video games, interactive exercises, and role-play	Jemmott et al. (1992)	RCT	Sexual intent of risky behaviour; ever had sex; multiple partners; condom use; anal intercourse	PM	One-time	Adolescent convenience sample from school, YMCA and clinic
	Small-group discussion, videos, games, brainstorming, experimental analysis, role-play, skills building activities	Jemmott et al. (1998)	RCT	Condom use; unprotected sex; always use a condom	SCT	8 sessions	Community based, young female African Americans. Mean age 11.8 yrs.
	Small-group discussion, lectures, videos, games, role-play, acting storytelling, arts, crafts, community projects, "family tree" depicting relationships and situations, "graduation" ceremony	Stanton et al. (1996)	RCT	Intentions, behaviour (did vs. did not have sex) condom use	PM	7 sessions	Community based sample of young African Americans. Mean age 11.4 yrs.
	Small-group discussion, lectures, videos, games, role-play, acting storytelling, arts, crafts, community projects, "family tree" depicting relationships and situations, "graduation" ceremony	Stanton et al. (1997)	RCT	Intentions, behaviour (did vs. did not have sex) condom use	PM	7 sessions	Community based sample of young African Americans. Mean age 11.4 yrs.
	Small group discussions, role-plays, skills practice, brainstorming	Magura et al. (1994)	Quasi-experimental	Multiple partners; risk partners; anal sex; condom use for vaginal, oral, and anal sex.	PST	4 sessions	Sample from detention facility for young people mixed ethnicity and all male

Tasks in preventing drug/alcohol use, violence, and risky sexual behaviours	O'Donnell et al. (1999)	Quasi-experimental	Lifetime sexual experience; frequency of sex in past three months; recent condom use; recent contraceptive use' composite index of sexual risk	HBM	80 sessions	School based sample of young mixed ethnicity people.
Sexual decision-making, communication skills, emphasis on norms to avoid risky sex through abstinence or condom use, parent-adolescent communication	Kirby et al. (1991)	Quasi-experimental	Ever had sex; frequency of sex; birth control use at first and most recent intercourse; birth control use all or most of the time; unprotected sex; pregnant or caused pregnancy	SLT, SI, SBT	15 sessions	School based sample of young mixed ethnicity people. Mean age 15.3 yrs.
Knowledge and skills based curriculum plus peer resources, parent education school-community linkages to health services and other planned safer-sex promotion activities	Coyle et al. (1999)	RCT	Sexual initiation, frequency of unprotected intercourse, number of sexual partners, condom use at first and last intercourse	SCT, SI	20 sessions	School based sample of young mixed ethnicity people.
Family planning services, small group discussions, role-plays, writing, and videotaped skits, a healthcare and monitoring component	Bayne Smith et al. (1994)	RCT	Frequency of sex; frequency of contraceptive use	None stated	8 sessions	School based sample of young mixed ethnicity people.
Structured discussions, group exercises, role-play, guest speakers, informational presentations	Allen et al. (1997)	Quasi-experimental	Ever been pregnant or caused pregnancy (or since baseline)	None stated	1-3 times per week during academic year	School based sample of young mixed ethnicity people.
Lectures, small group discussions, role-play.	Walter et al. (1993)	RCT	AIDS risk behaviour index; sexual involvement; condom use; high risk partner; STD diagnosis	HBM, SCT, SI	6 sessions	School based sample of young mixed ethnicity people.
Skills-building, modeled skills, class discussion, small group discussion, role-plays, games and anonymous question box, homework including parents	Weeks et al. (1995)	RCT	Behavioural intentions to use condoms and to use condoms with foam, ever had sex, recent sex, age of debut, condom use at first and last sex, condom use with foam in last 12 mts, 30 days	SCT, TPB, SI	10 sessions	School based sample of young mixed ethnicity people.
Skills-building, modeled skills, class discussion, small group discussion, role-plays, games and anonymous question box, homework including parents	Levy et al. (1995)	RCT	Behavioural intentions to use condoms and to use condoms with foam, ever had sex, recent sex, age of debut, condom use at first and last sex, condom use with foam in last 12 mts, 30 days	SCT, TPB, SI	10 sessions	School based sample of young mixed ethnicity people.

Skills-building, modeled skills, class discussion, small group discussion, role-plays, games and anonymous question box, homework including parents	Weeks et al. (1997)	RCT	Behavioural intentions to use condoms and to use condoms with foam, ever had sex, recent sex, age of debut, condom use at first and last sex, condom use with foam in last 12 mts, 30 days	SCT, TPB, SI	10 sessions	School based sample of young mixed ethnicity people.
Small group discussion, videos, modelling skills, skills practice, role play, HIV+ speakers	St Lawrence et al. (1995)	RCT	Frequency of sex; frequency of contraceptive use; number of sexual partners	IMBS	est. 8 sessions	Health centre based sample of young African American people. Mean age 15.3 yrs.
Small group discussion, modeled skills, skills practice, videos, role plays	St Lawrence et al. (1999)	RCT	Frequency of sex; frequency of contraceptive use; number of sexual partners in last 3 months	IMBS	6 sessions	State Reformatory based sample young males mixed ethnic group.
Games, role play, large and small group activities, discussion, question and answer sessions, modeling of skills and skills practice	Kirby et al. (1997)	RCT	Delay of sexual onset, frequency of intercourse, condom use, birth control use, STD and pregnancy rate	SLT, HBM	8 sessions	School based young mixed ethnicity group.
Decision-making, human sexuality including family planning, videos, slide presentations, class discussion	Howard et al. (1992)	Quasi-experimental	Had sex; frequency of intercourse; contraceptive use; occurrence of pregnancy	SI	4 sessions	School/clinic young predominantly black people.
Decision-making, human sexuality including family planning, videos, slide presentations, class discussion	Howard et al. (1990)	Quasi-experimental	Had sex; frequency of intercourse; contraceptive use; occurrence of pregnancy	SI	4 sessions	School/clinic young predominantly black people.
Class discussions, group activities, videos, slide presentations, and role play	Kirby et al. (1997)	Quasi-experimental	Initiation of sex; frequency of sex; number of sexual partners; use of contraceptives; pregnancy rates; rates of reported sexually transmitted infections	None stated	4 sessions	Sample from schools, clinics and community based organisations.
Lectures, simulations, leader-guided discussions, role play, games and videos	Eisen et al. (1990)	Quasi-experimental	Ever had sex; contraceptive use at first and most recent sex; consistency of contraceptive use; index of contraceptive efficiency; occurrence of pregnancy	HBM, SLT	4 sessions	Sample from schools and family planning clinics. Young people mixed sex and ethnicity.

Shaded areas denote the same study design.

**Table 7. Category 2 review. Pedlow and Carey, 2004.**

Author		Title					
Pedlow C.T. and Carey M.P., 2004		Developmentally appropriate sexual risk reduction interventions for adolescents: rationale, review of interventions, and recommendations for research and practice.					
	Type of intervention	Author	Study Design	Outcome	Theory	Duration	Target group
Individual level	Individualised intervention	Shrier et al. (2001)	Not stated	Psychological; social	Not stated	Not stated	Female adolescents with an STI, median age 17.2 years. Clinic.
	Video games, interactive exercises, and role-play	Jemmott et al. (1992)	RCT	Sexual intent of risky behaviour; ever had sex; multiple partners; condom use; anal intercourse	PM	one-time	Convenience sample from school, YMCA and clinic
Group level	Small-group discussion, videos, games, brainstorming, experimental analysis, role-play, skills building activities	Jemmott et al. (1998)	RCT	Condom use; unprotected sex; always use a condom	SCT	8 sessions	Community based, young female African Americans. In schools.
	HIV intervention	Jemmott et al. (1999)	Not stated	Psychological; social	Not stated	Not stated	African American teens, mean age 13.2 years. In schools.
	Postponing sexual intercourse	Aarons et al. (2000)	Not stated	Biological; social	Not stated	Not stated	Males and females in school, mean age 12.8 years. From schools.
	Assess HIV/STD prevention	Boekeloo et al. (1999)	Not stated	Psychological; social	Not stated	Not stated	Males and females in school, 12-15 years
	Safer choices curriculum	Coyle et al. (2001)	Not stated	Biological; psychological; social	Not stated	Not stated	High school youth, 14-18 years
	Health educator intervention; videotape intervention	DeLamater et al. (2000)	Not stated	Psychological; social	Not stated	Not stated	African American teens, aged 15-19 years. In clinics.
	Intervention 1. Video and comic book. Intervention 2. Group skills training, video and comic book	Gilmore et al. (1997)	Not stated	Psychological; social	Not stated	Not stated	Sexually active teens, 1. 14-19 years, 2. 13-19 years. In detention centre.
	AIDS risk reduction and skills training intervention	Kipke et al. (1993)	Not stated	Psychological; social	ARRM	Not stated	Minority youth aged 12-16 years. In schools.
	Class discussions, group activities, videos, slide presentations, and role play	Kirby et al. (1997)	Quasi-experimental	Initiation of sex; frequency of sex; number of sexual partners; use of contraceptives; pregnancy rates; rates of reported sexually transmitted infections	Not stated	4 sessions	Sample from schools, clinics and community based organisations
	Youth AIDS prevention	Levy et al. (1995)	Not stated	Biological; psychological; social	Not stated	Not stated	African American youth. In schools.
	AIDS education and counselling	Mansfield et al. (1993)	Not stated	Psychological	Not stated	Not stated	Adolescents with STD. In clinics.

Monogamy, abstinence, condom choice	Metzler et al. (2000)	Not stated	Psychological; social	Not stated	Not stated	Sexually active teens. From clinics.
Tasks in preventing drug/alcohol use, violence, and risky sexual behaviours	O'Donnell et al. (1999)	Quasi-experimental	Lifetime sexual experience; frequency of sex in past three months; recent condom use; recent contraceptive use' composite index of sexual risk	HBM	80 sessions	School based sample of young mixed ethnicity people
Behavioural intervention	Orr et al. (1996)	Not stated	Psychological; social	Not stated	Not stated	Female adolescents with Chlamydia in clinics.
7 and 3 session HIV intervention	Rotheram-Borus et al. (1998)	Not stated	Psychological; social	Not stated	7/3 sessions	High risk minority youth. From social services.
Skills training intervention	Slonim-Nevo et al. (1996)	Not stated	Psychological; social	Not stated	Not stated	Delinquent and abused youth, mean age 14.7 years. From welfare centre.
Decision-making AIDS intervention	Stanton et al. (1996)	Not stated	Psychological; social	Not stated	Not stated	African American early youth aged 9-15 years. Housing development.
Lectures, small group discussions, role play.	Walter et al. (1993)	RCT	AIDS risk behaviour index; sexual involvement; condom use; high risk partner; STD diagnosis	HBM, SCT, SI	6 sessions	School based sample of young mixed ethnicity people.
Becoming a responsible teen	St. Lawrence et al. (1999)	Not stated	Psychological; social	Not stated	Not stated	Incarcerated male youth, mean age 15.8 years
Observational learning, role play, direct feedback: education and behaviour skills training, including condom use, assertion, refusal etc.	St. Lawrence et al. (1995a)	RCT	Condom protected intercourse	SCT, IMBST	8 weekly meetings	Adolescents/African American
Behavioural skills training	St. Lawrence et al. (1995b)	Not stated	Psychological; social	Not stated	Not stated	Youth in treatment for substance abuse. Age range 13-17 years
AIDS prevention curriculum	Walter and Vaughan (1993)	Not stated	Psychological; social	Not stated	Not stated	Urban minority youth. Aged 12-20 years. In schools.
HIV prevention	Workman et al. (1996)	Not stated	Psychological; social	Not stated	Not stated	Inner city minority female adolescents. In schools.

### Theory definitions

**SLT** – Social Learning Theory; **CLT** – Cognitive Learning Theory; **SRMIB** – Self-Regulation Model of Illness Behaviour; **CBT** - Cognitive Behavioural Therapy; **ARRM** - AIDS risk-reduction Method; **RP** - Relapse Prevention; **HBM** - Health Belief Model; **ME/I** - Motivational Enhancement/Interviewing; **IMBSM** – Information Motivation Behavioural Skills Model; **PST** - Problem Solving Therapy; **TRA** - Theory of Reasoned Action; **PM** - Protection Motivation; **SI** - Social Influence; **SET** – Self-efficacy Theory; **TTM** – Transtheoretical Model; **TPB** – Theory of Planned Behaviour. **SCT** –Social Cognitive Theory.

### Study design definitions

**RCT** – Randomised Controlled Trial; **RSC-NC** – Repeat cross-sectional study without a comparison group; **PS-NC** – Panel study without a comparison.

**Table 8. Cross over of primary studies for Category 1 and 2 reviews.**

Primary study	Category 1 and 2 reviews					
	DiClemente et al., 2004	Manhart L.E. & Holmes K. K., 2005	Ward D.J. et al., 2004	Ward D.J. et al., 2005	Robin L. et al., 2004	Pedlow C.T. & Carey M.P., 2004
<b>Individual level</b>						
Boekeloo et al., (1999)	✓					
Boyer et al. (1997)		✓	✓	✓	✓	
DeLameter et al., (2000)	✓					
El-Bassel et al. (2003)		✓				
EXPLORE Study Group (2004)		✓				
James et al. (1998)		✓				
Kamb et al. (1998)		✓	✓			
Maher et al. (2003)				✓		
Mansfield et al. (1993)	✓				✓	
Miller et al. (1993)					✓	
Peterman et al. (1997)		✓				
Peterman et al. (2000)		✓				
Scholes et al., (2003)	✓					
Schrier et al. (2001)	✓	✓	✓	✓		✓
VCT Efficacy study group (2000)		✓				
<b>Group level</b>						
Aarons et al. (2000)						✓
Allen et al. (1997)					✓	
Baker et al. (2003)		✓				
Balmer et al. (1998)			✓	✓		
Bayne Smith et al. (1994)					✓	
Boekeloo et al. (1999)*						✓
Boyer et al. (2003)		✓				
Branson et al. (1998)		✓	✓	✓		
Celentano et al., 2000		✓				
Cohen et al. (1991)		✓				
Cohen et al. (1992a)		✓				
Cohen et al. (1992b)		✓				
Coyle et al.					✓	

\* Boekeloo et al. (1999) was categorised as group level for Pedlow and Carey (2004) and individual level for DiClemente et al. (2004). The intervention used both group education and one-to-one doctor follow-up. Pedlow and Carey classed it as a school based intervention and DiClemente et al. (2004) focused upon the one-to-one intervention.

(1999)						
Coyle et al. (2001)						✓
DeLamater et al. (2000)						✓
DiClemente et al., (2004)	✓					
Eisen et al. (1990)					✓	
Feldblum et al. (2001)		✓				
Fontanet et al. (1998)		✓				
Gillmore et al., (1997)	✓					✓
Gollub et al. (2000)		✓				
Hobfall et al. (2002)		✓				
Howard et al. (1990)					✓	
Howard et al. (1992)					✓	
Imrie et al. (2001)		✓	✓	✓		
Jemmott et al. (1992)					✓	✓
Jemmott et al. (1998)					✓	✓
Jemmott et al. (1999)						✓
Kalichman et al. (1999)			✓	✓		
Kipke et al. (1993)						✓
Kirby et al. (1991)					✓	
Kirby et al. (1997a)					✓	
Kirby et al. (1997b)					✓	✓
Levy et al. (1995)					✓	✓
Magura et al. (1994)					✓	
Mansfield et al. (1993)						✓
Metzler et al. (2000)	✓		✓	✓		✓
NIMH multisite intervention group trial (1998)		✓	✓	✓		
O'Donnell et al. (1998)		✓				
O'Donnell et al. (1999)					✓	✓
O'Leary et al. (1998)			✓	✓		
Orr et al. (1996)	✓		✓	✓		✓
Rotheram-Borus et al. (1998)						✓
Shain et al. (1999)		✓				
Shain et al. (2002)		✓	✓	✓		
Slonim-Nevo et al. (1996)						✓
Solomon et al. (1989)			✓	✓		
St Lawrence et al. (1999)					✓	✓

St. Lawrence et al. (1995a)	✓				✓	✓
St. Lawrence et al. (1995b)						✓
Stanton et al. (1996)					✓	✓
Stanton et al. (1997)					✓	
Walter et al. (1993)					✓	✓
Walter & Vaughan (1993)						✓
Weeks et al. (1995)					✓	
Weeks et al. (1997)					✓	
Workman et al. (1996)						✓
<b>Community level</b>						
Celentano et al. 1998		✓				
Egger et al. (2000)		✓				
Hayes et al. (2003)		✓				
Kamali et al. (2003)		✓				
Lonczak et al. (2002)		✓				

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## **Supplement E**



# **HIV prevention: a review of reviews assessing the effectiveness of interventions to reduce the risk of sexual transmission**

## **Evidence Briefing Update**

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# 1 Executive summary

## Introduction

This updated Evidence Briefing reports on a review of reviews assessing the effectiveness of interventions to impact on the factors – both personal and structural - which influence the sexual risk behaviours for HIV transmission. As in the original review of reviews, the aims were to:

- Identify and appraise all relevant reviews, including systematic reviews, literature reviews, syntheses and meta-analyses
- Analyse and synthesise these papers to highlight ‘what works’ to prevent or reduce the sexual risk of HIV transmission for the UK’s priority populations
- Highlight conflicting evidence, and gaps in the evidence, and provide recommendations for research (as well as some initial implications for policy and practice).

This updated Evidence Briefing focuses on the priority populations for HIV transmission in the UK, which are: men who have sex with men (MSM), commercial sex workers (CSWs), African communities living in the UK, and people with HIV (PWHIV). We also consider the role of HIV voluntary counselling and testing (VCT) and examine the evidence relating to inequalities in health, the cost-effectiveness of interventions and the role of theory in intervention effectiveness.

The findings from this update will be the most useful to those commissioning and undertaking research, including practitioners and agencies outside academia. Although it can also inform policy and practice, the evidence presented here from reviews has a number of limitations and should be considered alongside the original review of reviews (Ellis et al., 2003), best available non-review evidence and information from other relevant sources.

## Epidemiology

At the end of 2005 there were an estimated 63,500 (range: 59,500-68,800) people living with HIV in the UK, one third of whom were unaware of their infection (UK Collaborative Group for HIV and STI Surveillance, 2006). In the same year there were 785 (HPA, 2007) diagnoses of AIDS, contributing to a cumulative total of 22,199 by the end of 2005. Where country of infection was reported, the majority (75%, 2,760) of heterosexual infections in the UK in 2005 were reported to have occurred in African countries. There are a small but growing number of infections acquired within the UK from sex between men and women, from 245 in 2000 to 553 in 2005 (HPA, 2007). However, the actual level of transmission in the UK may be higher because of the tendency for doctors to classify patients as having been exposed in Africa if they had sex in both the UK and Africa (Brown, 2000). Unlinked anonymous testing carried out as part of a survey of African communities in London, Luton and West Midlands (the MAYISHA II project), revealed an overall HIV prevalence of 14% of those tested. The prevalence in each subgroup was indicative of the prevalence in the country of birth, with 26% (12/46)

of those born in southern Africa and 24% (102/434) of those born in south eastern and eastern Africa being HIV positive to 3.5% (8/230) of those born in the Horn of Africa. Although CSWs are at increased risk of HIV transmission (among other STIs) compared to the general population, they are not included in surveillance systems as separate from those infected via sex between men, sex between men and women, or injecting drug users (IDUs). As such, their contribution to the HIV epidemic in the UK is unknown even though it has been reported that they do not play a significant role in the spread of HIV (Evans et al., 2001).

### **Behaviour**

The 2000 National Survey of Sexual Attitudes and Lifestyles (NATSAL) (Johnson et al., 2001; Wellings et al., 2001), found that there have been notable increases in risky sexual behaviour since the 1990 survey and although a greater proportion of individuals used condoms at first intercourse, this increase in condom use was offset by increases in risk in other areas. The NATSAL survey samples of minority ethnic groups were not large enough to enable conclusions to be drawn on the sexual behaviour of any particular minority ethnic group (8.8%) (Johnson et al., 2001). However, the MAYISHA studies (Fenton et al., 2002, MAYISHA II Collaborative group, 2005) present data on Africans in the UK. The MAYISHA II study states that: 17% women and 13% of men had been diagnosed with an STI in the previous five years; more men than women reported two or more sexual partners in the previous year (33% vs 18%); and 57% of the men compared to 49% of women reported condom use during their last sexual episode. Eight percent of men and women reported ever having had same sex partners, compared to 5% of NATSAL 2000 (general population) respondents.

Data from the 2004 Sigma Research, (Weatherburn et al, 2005) which reports on MSM, showed that 39% of participating men had not had an STI test in the last year. The survey also revealed that 10% had paid or been paid for sex in the last year, with over 40% of men involved with commercial sex work citing gay websites as their most likely method of finding partners. The 2005 Sigma research (Hickson et al., 2006) also showed that 19% of men whose last HIV test was negative or who had never been tested for HIV had participated in receptive unprotected anal intercourse with a partner of unknown status in the last year. This figure rose to 32% of untested men with thirty or more partners.

### **Policy**

Following the *National strategy for sexual health and HIV* (DH, 2001b) and its subsequent *Implementation action plan* (DH, 2002) the Department of Health have published two HIV toolkits; one aimed at commissioning (DH, 2003a) and one aimed at health promotion (DH, 2003b). General HIV prevention guidance, which has been developed by MedFASH (2003) and endorsed by the *Delivering choosing health action plan* (DH, 2005a), states that NHS and partner agencies, through a multi-agency planning group, should develop, implement and evaluate a local HIV prevention programme. This programme, among other things, should be informed by an up-to-date assessment of local HIV prevention need; should be multi-agency and multi-disciplinary, linking clinic-based, community and education-based initiatives and should be audited for impact. For prevention with African communities

the Department of Health has published *HIV and AIDS in African communities: A framework for better prevention and care* (DH, 2005b), which urges the involvement of communities in prevention initiatives as well as the thorough documentation of the prevention work being carried out.

### **Conceptual framework**

This review draws on the same conceptual framework as the original Evidence Briefing. For full details of the framework see Ellis et al., 2003.

### **Methodology**

Searches were carried out across 18 databases and websites. Two reviewers independently appraised all the titles and abstracts of the identified references to determine whether to retrieve the full paper on the basis of the following criteria:

- English language only
- Published since 2001
- Systematic review, synthesis, meta-analysis or literature review
- Relevance to HIV prevention in the UK and the priority populations identified
- Presents (and syntheses) data from primary evaluation studies of intervention effectiveness.

Two reviewers appraised the identified papers (including journal articles, book chapters and reports) independently using a critical appraisal tool. The appraisal process sought to identify the extent to which papers were systematic, transparent, analytically sound and relevant. A joint decision was made regarding whether the paper was to be classified as Category 1, 2, 3, 4 or 5 based on how well the paper satisfied the criteria of the appraisal tool. See Appendix C for further details.

In total, 32 papers were judged to be Category 1, 2 or 3 and went on to analysis and synthesis (Tables 1-5). Category 1 and 2 papers provided information on which to base evidence statements of sufficient, tentative, insufficient or no evidence, regarding the effectiveness of HIV prevention interventions.

### **Findings and discussion**

The Evidence section (4) considers the evidence for each of the priority populations and makes 'evidence statements' by level of intervention. The voluntary counselling and testing (VCT) section (5), cost-effectiveness section (6) and theory-based evidence section (7) consider the evidence by priority and other specific populations (e.g. women) and evidence statements of effectiveness are made.

The Discussion section (8) addresses the key questions posed by the review of reviews, namely:

## **What works to reduce the sexual risk of HIV transmission among the priority populations in the UK? What works to change the modifying factors that influence sexual risk behaviours for HIV transmission?**

We found that most reviews analysed only behavioural outcomes rather than health promotion outcomes. Although a limited number of studies included the effects of interventions on changes in modifying factors (e.g. knowledge or skills), there was insufficient evidence available with which to make conclusions.

### **Are theory-based interventions more likely to be effective?**

We found that interventions using behavioural theories were more effective than interventions without a theoretical framework at reducing risky sexual behaviour. It was often the case that studies used more than one theory to inform their intervention. However, occasionally reviews failed to clearly report the theory used in their study.

### **Are multi-component interventions more likely to be effective?**

The evidence suggests that multi-component group-work with MSM results in greater effectiveness. Evidence also suggests that voluntary counselling and testing (VCT) in combination with another component is more effective than VCT alone. We found no other evidence of effective multi-component interventions for MSM, CSWs, Africans or people with HIV.

### **What works to reduce inequalities in sexual risk for HIV transmission?**

We found no evidence of interventions that addressed the issue of inequality. In particular we found no evidence relating to the effectiveness of HIV prevention interventions that depended upon socio-economic status or vulnerable groups.

### **What interventions are cost-effective?**

We found review-level evidence to suggest HIV prevention interventions can be cost-effective and cost-saving when aimed at MSM. However, we found insufficient evidence to make any conclusions regarding the cost-effectiveness of interventions for CSWs, Africans, and people with HIV.

## **Implications for policy and practice**

The policy and practice implications reported below are based solely on the evidence statements of sufficient or tentative review-level evidence of effectiveness. As such, they consider only the evidence provided and retain the gaps and limitations that have been previously discussed. They ought not to

be considered alone but in conjunction with the policy and practice recommendations from the original review of reviews (Ellis et al., 2003), other non-review evidence and other relevant source information.

#### *Implications for policy and practice with men who have sex with men (MSM)*

The evidence presented for MSM populations in this update support cognitive-behavioural individual-level intervention; cognitive-behavioural group work focusing upon risk-reduction, sexual negotiation and communication skills; peer-related group level interventions; and community-level interventions involving peer and popular opinion leaders. Very few of the interventions reported were carried out within the UK therefore some findings may not be transferable to the UK's MSM population. We recommend that future research should:

- Place interventions in relevant theoretical frameworks
- Undertake individual-level cognitive-behavioural interventions, including self-justification, risk-reduction, education, and counselling
- Undertake group-level peer-led interventions, that address, for example, issues of intimacy, relationships, communication skills, coping skills, interpersonal skills, risk-reduction and relapse prevention.

#### *Implications for policy and practice with commercial sex workers (CSWs)*

Our findings show that although there was evidence supporting the effectiveness of peer-led community level interventions with female CSWs in the previous evidence briefing (Ellis et al., 2003), these same methods were not effective when used with male sex workers.

Two Category 3 studies demonstrated effectiveness for peer-led interventions and condom distribution schemes. However, these interventions were not carried out in the UK and may represent different CSW and patron populations to those in the UK. Also, several studies were mentioned (by Albarracin et al., 2005) but no details were provided, and therefore we are unable to make any practice recommendations.

#### *Implications for policy and practice with people with HIV (PWHIV)*

In the review we made tentative evidence statements regarding the effectiveness of partner notification and small-group level interventions for people with HIV. Very few of the interventions reported were carried out within the UK and therefore not all findings may be transferable to the UK's PWHIV population. We recommend that future research should:

- Place interventions in relevant theoretical frameworks
- Undertake partner notification, including the choice between patient or provider referral
- Undertake small-group work, including stress management, HIV coping, and counselling.

#### *Implications for policy and practice with African communities in the UK*

The reviews identified for this update have revealed tentative evidence to conclude that group-level interventions may have a modest effect on the sexual risk behaviours of black and minority ethnic (BME) heterosexual adults. Tentative review-level evidence was also available to conclude that community-level interventions may be effective for females, adolescents and heterosexual males. However, interventions reported in this update took place outside the UK, primarily in the US with African American, Hispanic and multi-ethnic populations. Given the cultural differences to the UK's African populations (see African section in the Discussion, 8.11) we suggest that these findings are not transferable to the UK's African population, therefore we are unable to make any specific practice recommendations.

#### *Implications for policy and practice with voluntary counselling and testing (VCT)*

Based on the evidence identified for this update no further conclusions can be made regarding the effectiveness of VCT interventions, other than those stated in the original review of reviews (Ellis et al., 2003). However, we did conclude that there is tentative review level evidence to support the effectiveness of mass media interventions in influencing the uptake of HIV VCT in MSM, women, heterosexual men, and the general public. As there is insufficient evidence regarding the harms of HIV VCT we suggest that VCT interventions and promotion are aimed only at high-risk populations.

- Undertake mass media promotion for VCT aimed at MSM and African populations.

#### **Recommendations for research**

The research recommendations below build on those previously stated in the original review of reviews and aim to address the gaps that exist in the current intervention evidence.

#### *General recommendations for secondary research/reviews*

Although we have found evidence of high quality, well-reported reviews, almost all of them originate from outside of the UK. As such, all original recommendations remain applicable. To the secondary research recommendations we would add that there is a need to:

- Conduct a review of UK-based primary studies with respect to cost-effectiveness of HIV prevention interventions
- Conduct a review of good quality UK-based qualitative research of HIV prevention interventions
- Ensure that future studies report on the details of the population included in the intervention, and state the proportion of HIV positive people included
- Ensure that future studies report the details of the intervention level (individual, group, community).

#### *General recommendations for primary research*

To the primary research recommendations we would add that there is a need to:

- Underpin primary research with relevant theory
- Include full details of the theory/theories used to be reported
- Standardise the reporting of primary research
- Design research studies that analyse findings in order to identify the component characteristics that result in sexual risk reduction
- Explore further research on migrant populations resident in the UK who come from countries with high HIV prevalence
- Include more rigorous qualitative research of HIV prevention at all levels and with all target groups (including migrant populations living in the UK)
- Explore more research at the socio-political level for HIV prevention with all priority populations
- Explore more research that considers the potential effects of criminal prosecutions for the sexual transmission of HIV on onward transmission of the virus.

#### *Recommendations for research with men who have sex with men (MSM)*

In addition to the recommendations above and those in the original review of reviews, those below apply to MSM. There is a need for research to:

- Investigate HIV treatment optimism and its impact upon sexual risk-taking behaviour
- Consider interventions of sexual risk-taking, including social norms regarding intentional unsafe sexual practices, and use of the internet to solicit sexual partners
- Explore interventions using the primary outcome of serodiscordant or unknown status unprotected anal intercourse
- Look at disabled MSM and equality
- Examine African MSM and explore issues such as cultural impediments to sexual health promotion interventions
- Look at the intervention effectiveness and cost-effectiveness of individual versus group level interventions underpinned by cognitive-behavioural techniques
- Examine the effectiveness of interventions that include, for example, condom distribution, skills training, sexual communication, sexual health knowledge and HIV disclosure.

#### *Recommendations for research with commercial sex workers (CSWs)*

There is a need for research with CSWs to:

- Be carried out within a relevant theoretical framework
- Include an understanding of coping styles, social support needs, problem-solving skills and health promotion practices
- Explore the effectiveness of condom distribution schemes for both male and female CSWs
- Consider workplace interventions focusing on men who potentially use CSWs such as truck drivers

- Investigate interventions with male CSWs in the UK, including community-based out-reach interventions.

*Recommendations for research with African communities in the UK*

- There is an urgent need for UK-based culturally sensitive research with African women, men and adolescents to be carried out at all intervention levels
- There is also a need for specific research to be conducted with African migrant populations living in the UK.

*Recommendations for research with people with HIV*

There is a need for research with people with HIV to:

- Investigate HIV treatment optimism and its impact upon sexual risk-taking behaviour
- Explore the potential harms of partner notification
- Include community-based peer-led condom and contraceptive promotion
- Be aimed at serodiscordant couples
- Address the issue of access to services for people with HIV
- Explore the effects of interventions including coping skills and disclosure on people with HIV
- Examine the effectiveness of community-based organisation interventions compared to clinic-based interventions.

*Recommendations for research in relation to voluntary testing and counselling (VCT)*

- There is a need for UK-based research on the effects of an HIV test resulting in a positive test on the sexual risk behaviour of serodiscordant couples.

## 2 Introduction

### 2.1 Background

In 2003, the Health Development Agency (HDA) published *HIV prevention: a review of reviews assessing the effectiveness of interventions to reduce the risk of sexual transmission* (Ellis et al., 2003). Since then, sexual health and HIV has continued to be at the forefront of policies, guidelines and initiatives, and these have identified the HDA review of reviews as a primary resource for ascertaining what works in the field of HIV prevention. The Medical Foundation for Sexual Health and HIV has published *Recommended Standards for NHS HIV Services* (including a section on prevention services) (MedFASH, 2003) and the Department of Health (DH) published its plan to improve the health of the population *Choosing Health: making healthy choices easier* (DH, 2004). In this key national policy document, sexual health was named as one of six key priorities, and the HDA evidence briefings were identified as the source of information on effective interventions. In 2005 DH published the action plan *Delivering Choosing Health*, which illustrates the economic benefit of reducing HIV transmission and endorses the MedFASH standards for HIV services. In 2005 the HDA joined with the National Institute for Clinical Excellence (NICE) to form the new National Institute of Health and Clinical Excellence (and retained the acronym NICE). The new organisation is committed to continue to build on the evidence base in public health. In light of the Government's continued commitment to sexual health and HIV and the necessity to ground HIV prevention in good evidence, it was deemed necessary to update the 2003 review of reviews to ensure that the most recent review-level evidence is available for planning services and improving the sexual health of the population.

NICE evidence briefings report on **reviews of reviews**, sometimes referred to as tertiary level research. They consist of detailed expositions of the strengths and weaknesses of the evidence from reviews, identification of gaps in the evidence, an analysis of future primary and secondary research needs, and a discussion of the implications of the evidence for policy and practice. The full rationale for carrying out reviews of reviews is given in the 2003 Evidence Briefing on HIV prevention (Ellis et al., 2003). Each document has a freestanding summary that is published separately. The documents are also published on and supported by the NICE website at [www.publichealth.nice.org.uk](http://www.publichealth.nice.org.uk). This website also contains electronic copies of, or means of access to, the original reviews upon which the evidence briefings draw (if they are in the public domain).

The evidence from the previous 2003 briefing (Ellis et al., 2003) suggested that interventions with men who have sex with men are more likely to be effective if they are:

- Placed within the broader context of men's lives, addressing the range of factors which influence risk at both the personal level (e.g. knowledge, skills) and the structural level (e.g. discrimination towards gay men, gay community norms towards condoms).

- Tailored and targeted to specific sub-populations of men who have sex with men, for instance black gay men and working-class gay men.
- Multi-component (using small group work), focusing on risk reduction, sexual negotiation and communication skills training and rehearsal (e.g. through role-play or identifying 'triggers').
- There is some evidence that interventions delivered at the community level (particularly peer-led) can be effective in influencing the sexual risk behaviours for commercial sex workers.
- There is also evidence to conclude that HIV counselling and testing can influence sexual risk behaviours among individuals other than CSWs and MSM. However, there is not enough evidence to make conclusions about the harms of VCT.

The previous review of reviews was unable to identify any review-level evidence from which to make policy and practice recommendations for HIV prevention with African communities and with people with HIV.

As with the 2003 review of reviews, the current briefing tells us more about the gaps in research than it does about effective interventions. Therefore, it will be of greatest interest to policy makers, planners and commissioners of research operating at strategic levels, including those within the Department of Health. A secondary audience are those undertaking research, including practitioners and agencies outside of academia. In addition, this evidence briefing can be used to inform some areas of policy and practice. This evidence briefing will be published on the NICE website at [www.publichealth.nice.org.uk](http://www.publichealth.nice.org.uk).

## **2.2 Scope of the Evidence Briefing on HIV prevention**

This updated evidence briefing reports on a review of reviews assessing the effectiveness of interventions to impact on the factors which influence the sexual risk behaviours for HIV transmission. As in the original Evidence Briefing, the aims were to:

- Identify and appraise all relevant reviews, including systematic reviews, literature reviews, syntheses and meta-analyses
- Analyse and synthesise these papers to highlight 'what works' to prevent or reduce the sexual risk of HIV transmission for the UK's priority populations
- Highlight conflicting evidence, and gaps in the evidence, and provide recommendations for research (as well as some initial recommendations for policy and practice).

The Evidence Briefing focused on:

- Interventions whose ultimate goal is to influence the sexual behaviour that puts individuals at risk of HIV infection – i.e. the sexual transmission of HIV
- Interventions that aim to impact on the structural determinants of HIV risk, including national and local policy, planning, organisational and community issues
- HIV voluntary counselling and testing (HIV VCT)
- Interventions that aim to address inequalities
- The cost effectiveness of interventions.

In relation to the above, the Evidence Briefing concentrated on the priority populations for HIV transmission in the UK, namely:

- Men who have sex with men (MSM)
- African communities in the UK
- Commercial sex workers (CSWs)
- People with HIV.

The Evidence Briefing excluded:

- The role of condom effectiveness, post-exposure prophylaxis (PEP), microbicides, treatment of sexually transmitted infections (STIs), or circumcision in reducing HIV transmission
- Interventions to prevent occupational, injecting drug use and mother-to-child transmission.

Separate evidence briefings address interventions to prevent both STIs (Ellis and Grey 2004, updated in 2006 by Downing et al.) and teenage pregnancy (Swann et al., 2003) have also been published.

## **2.3 Context**

### **2.3.1 Policy context**

In 2001, the Department of Health published the first *National Strategy for Sexual Health and HIV* (DH, 2001). This set out five main aims, including; to reduce transmission of HIV (with a national goal of a 25% reduction in newly acquired HIV by 2007); to reduce the prevalence of undiagnosed HIV; improve health and social care for people with HIV; and reduce stigma associated with HIV. The subsequent *Implementation Action Plan* (DH, 2002) made it clear that the DH would continue to support targeted work with MSM through the Community HIV and AIDS Prevention Strategy (CHAPS), coordinated by the Terrence Higgins Trust; and the DH encouraged commissioners and providers to adopt the associated *Making It Count* strategy (Hickson et al., 2000) for local prevention activity.

As part of its commitments in the *Action Plan*, in 2003 the DH published two sexual health and HIV commissioning toolkits, one on commissioning (DH, 2003a) and one on health promotion (DH, 2003b). The sexual health promotion toolkit gives practical advice on making inter-agency work effective, running health promotion projects, managing group work, developing resources and managing outreach work. The document also emphasises the need for more research, and the need for health professionals to evaluate and document their health promotion interventions, in terms of intermediate outcomes (e.g. knowledge, attitude) as well as behavioural outcomes (DH, 2003b).

The white paper *Choosing Health: making healthy choices easier* (DH, 2004) identified six key priorities:

- (1) tackling health inequalities
- (2) reducing the numbers of people who smoke
- (3) tackling obesity
- (4) improving sexual health**
- (5) improving mental health and wellbeing, and
- (6) reducing harm and encouraging sensible drinking.

The spotlight on sexual health has renewed determination to tackle sexual ill-health in the population, and provides additional resources in order to do so. In the action plan the Government outlined its plans to improve sexual health services in a new £300m programme over the next three years. The main aims are to:

- Use £50m to implement a national and regional sexual health campaign aimed at young men and women to promote condom use and explain the risks of unprotected sex
- Make a commitment to sexual health in England through additional funding to deliver multidisciplinary sexual health services in a range of settings
- Expand the national Chlamydia screening programme to cover the whole of England by March 2007 (with an additional £80m to help achieve this goal)
- Carry out an audit of contraceptive services in 2005 in order to improve service provision
- Focus on modernising Genito-Urinary Medicine clinics, with an investment of £130m over three years including upgraded prevention services with an additional £40m provided for this purpose
- Ensure that every individual referred to a GUM clinic has an appointment within 48 hours by 2008.

*Delivering Choosing Health* (DH, 2005a) points out the economic benefit of reducing HIV transmission. While none of the aims directly addresses HIV prevention among the key groups identified here (MSM, African communities, CSWs, people with HIV), the action plan does endorse the MedFASH HIV standards for services (2003), which, in turn, devotes a section to HIV prevention services.

The MedFASH standards state that NHS and partner agencies, through a multi-agency planning group, should develop, implement and evaluate a local HIV prevention programme which:

- Is part of a broader sexual health promotion programme
- Is informed by an up-to-date assessment of local HIV prevention need
- Is adequately resourced in a way which reflects priorities identified through needs assessment
- Is developed and delivered with the involvement of target populations
- Is coordinated across primary and secondary healthcare, and community settings
- Is multi-agency and multidisciplinary, linking clinically based, community and education-based initiatives
- Includes work with specific population groups as well as with the general population
- Complements nationally funded and delivered HIV prevention campaigns
- Has protocols governing work undertaken with each population group
- Includes interventions at individual, small group and population level
- Is provided by appropriately skilled practitioners with knowledge of the issues and confidence in raising them sensitively with their clients and service users
- Is audited for impact.

The NHS and partner agencies should facilitate ongoing professional training and development for healthcare and other workers with a role in HIV prevention. This includes the development of understanding and skills to provide culturally competent prevention activities with different population groups, including black and minority ethnic communities.

The recently published *HIV and AIDS in African communities: A framework for better prevention and care* (DH, 2005b) describes some of the differences between African communities compared to the population as a whole in terms of their population structure (they are younger on average), education (a higher than average proportion with qualifications), and employment (lower than average). It goes on to summarise the issues, some of which include: the diversity of cultures; barriers caused by language; lack of awareness of services available; the double discrimination faced by African men who have sex with men (from the predominantly white gay population and from heterosexual Africans); and uncertainty within migrant and asylum seeking communities. The document also summarises the many research needs, including: in epidemiology and monitoring; sexual behaviour; gender issues; and effectiveness of health promotion. It urges the involvement of communities if interventions are to be appropriate and effective, and argues for the need to document prevention work that is being done. It recommends that specialist advice on welfare entitlement, housing, and legal status and immigration should be provided.

### **2.3.2 Epidemiology – prevalence of HIV in the UK**

At the end of 2005 there were an estimated 63,500 (range: 59,500-68,800) people living with HIV in the UK, almost one third of whom were unaware of their infection (UK Collaborative Group for HIV

and STI Surveillance, 2006). During 2005 there were 7,645 new diagnoses of HIV, contributing to a total of 79,442 up to the end of 2005 (HPA, 2007). In the same year there were 785 diagnoses of AIDS, contributing to a cumulative total of 22,199 at the end of 2005. Not only has the number of HIV diagnoses been rising year on year (from 2,552 in 1990), the shape of the epidemic in the UK has changed over the years: during 2005, 32% (2,477) of HIV reports related to men who have sex with men, whereas this was the source of 67% of all reports in 1990. Diagnoses of HIV infections passed on during sex between men and women increased from 21% of all reports in 1990 to 57% in 2005 (4,324) (HPA, 2007).

Where country of infection was reported, the majority (75%, 3,000) of heterosexual infections in the UK in 2005 were reported to have occurred in African countries. There are a small but growing number of infections acquired within the UK from sex between men and women, from 245 in 2000 to 583 in 2005 (HPA, 2007). However, the actual level of transmission in the UK may be higher because of the tendency for doctors to classify patients as having been exposed in Africa if they had sex in both the UK and Africa (Brown, 2000). Unlinked anonymous testing carried out as part of a survey of African communities in London, Luton and West Midlands (the MAYISHA II project), revealed an overall HIV prevalence of 14% of those tested. The prevalence in each subgroup was indicative of the prevalence in the country of birth, with 26% (12/46) of those born in southern Africa and 24% (102/434) of those born in south eastern and eastern Africa being HIV positive to 3.5% (8/230) of those born in the Horn of Africa. Of those anonymously testing positive, 66% (93/141) were undiagnosed based on their recall of previous voluntary testing (51 had never tested, 28 reported testing negative and 14 did not know/could not remember).

HIV therefore continues to impact unequally on particular communities, namely MSM and certain African communities. Non-sexual transmission routes of HIV accounted for relatively few diagnoses in 2005, with injecting drug use at 2% (162), mother to child transmission at 2% (117) and blood transfusion (generally from countries where blood is not routinely screened) representing well under 1% (20) of cases (HPA, 2007). It is generally accepted that the low proportion of cases attributed to injecting drug use is due to the prompt introduction of harm reduction such as syringe exchange schemes (EMCDDA, 2002).

Epidemiological information can also be used to measure the uptake of voluntary counselling and testing (VCT), and the proportion of those diagnosed as a result of VCT is one way to measure the effectiveness of this prevention activity. Estimates from the unlinked anonymous survey suggest that in 2005, 80% of MSM and 82% of heterosexuals attending GUM clinics had VCT. The proportion of HIV positive individuals remaining undiagnosed whose infection could have been diagnosed during that clinic visit were they to have been offered and accepted VCT fell from 63% in 2000 to 35% in 2005. Of those who did not have a test, at least 36% of MSM and 45% of heterosexuals had been offered a test. Of those who refused testing, 8% of MSM and under 1% of heterosexuals were HIV-infected (UK Collaborative Group for HIV and STI Surveillance, 2006).

### **2.3.3 Sexual behaviour**

Sexual behaviour is a major factor determining the incidence of HIV. The 2000 National Survey of Sexual Attitudes and Lifestyles (NATSAL, 2000) provided the most recent data on sexual behaviour among the general population in Britain (Johnson et al., 2001; Wellings et al., 2001). The survey found that a greater proportion of individuals used condoms at first intercourse: 80% of 16-19 year olds in NATSAL 2000, compared with 60% of 25-29 year olds in NATSAL 2000 (the latter group were 15-19 years old at the time of the first survey in 1990). However, this increase in condom use was offset by increases in risk in other areas. Since the first NATSAL in 1990, the 2000 survey found:

- A greater number of lifetime partners – from 8.6 to 12.7 for men; and from 3.7 to 6.5 for women
- A lower age at first intercourse – from 17 years to 16 years for men; and from 21 years to 16 years for women
- A greater proportion with concurrent partnerships (two or more partners at the same time) – 14.6% for men (20% for 15-24 year olds); and 9% for women (15% for 15-24 year olds)
- A greater proportion with two or more partners in the past year and who did not use condoms consistently – from 13.6% to 15.4% in men; and from 7.1% to 10.1% in women
- A greater proportion of men who reported ever having a partner of the same sex – from 3.6% to 5.4%.

Although the NATSAL survey covered the entire UK population, the sample size was not adequate to make inferences about any particular minority ethnic group (8.8% of total sample) (Johnson et al., 2001). Specific studies on sexual behaviour in UK African communities of a large enough scale were not available until the publication of the MAYISHA studies (the first of which was a large pilot in London in 1999 (n=748 individuals) (Fenton et al., 2002), and the second had three sites, London, Luton and West Midlands in 2004 (n=1359 individuals) (MAYISHA II Collaborative Group, 2005). In the MAYISHA II study, 17% of women and 13% of men had been diagnosed with an STI in the previous five years, similar to the previous (London only) study figure of 16% for both sexes. More men than women reported two or more sexual partners in the previous year (33% vs 18%). Fifty seven percent of men compared to 49% of women reported condom use during the last sexual episode (this was higher than the previous, London only, survey figures of 46% and 43% respectively). Eight percent of men and women reported ever having had same sex partners, compared to 5% of NATSAL 2000 (general population) respondents.

Data on sexual behaviour needs to be interpreted with caution, acknowledging that unprotected sex is not the same as unsafe sex. Similarly, data on the number of partners can provide an indication of potential STI risk, even where intercourse is protected.

The main UK wide source of information about gay men's behaviour is the annual Sigma Research surveys. Periodically, the survey asks whether respondents have had unprotected anal intercourse:

the last three surveys to include this were 1995 and 2000 (Hickson et al., 2001) and 2004 (Weatherburn et al., 2005). MSM in 2000 reported increases in unprotected anal intercourse (UAI) with both regular and casual partners compared with 1995:

- A greater proportion have UAI with a regular partner – from 42.3% in 1995 to 54.9% in 2000
- Fewer men having anal intercourse with a regular partner in 2000 always used a condom compared with men in 1995
- A greater proportion of men have casual UAI – from 9.8% of all men in 1995 to 14.4% in 2000.

The 2004 survey (Weatherburn et al., 2005) did not repeat these questions. The 2004 findings on self-reported behaviour showed that the more sexual partners a man reported the more likely he was to have had an HIV or STI test within the last year (22% of men who had only one partner had an HIV test, and 24% an STI test, compared to 43% of men who had 15-29 partners having an HIV test and 54% were tested for STIs). Men who reported more sexual partners expressed a wish for more sexual education than men who had fewer sexual partners. However, a worryingly high number of men who had many different sexual partners were not tested; 55% of men who had sex with 30 or more partners in the last 12 months had not had an HIV test and 39% not had an STI test in the last year. The survey also revealed that 10% had paid or been paid for sex in the last year, with over 40% of men involved with commercial sex work citing gay websites as their most likely method of finding partners.

The 2005 survey (Hickson et al., 2006) also revealed that in the past year three quarters of all men questioned had engaged in sex with a man of unknown serostatus. If these findings are representative of the whole MSM population they indicate a widespread lack of communication around HIV status among MSM. The survey also revealed that 11% of men who had anal intercourse in the last year never used a condom and inconsistent condom use was as common as consistent condom use. Furthermore, 19% of men whose last HIV test was negative or who had never been tested for HIV, had participated in receptive unprotected anal intercourse with a partner of unknown status in the last year. This figure rose to 32% of untested men with thirty or more partners.

### **2.3.4 Inequalities**

The statistics on incidence clearly show how HIV disproportionately affects communities already suffering from considerable inequalities relating to their sexual orientation, ethnicity and gender. This can be further mitigated by socio-economic factors, for example MSM with lower educational achievement are at greater risk of acquiring HIV (Weatherburn et al., 1999).

Inequalities may persist after diagnosis. For example, the death rate of those with HIV in the north of England is higher than that in the south (Cosgrove et al., 2001a). Also, in a North West study, those from poorer areas were more likely to require hospital treatment after controlling for sex, age, stage of

disease and route of infection (Cook et al., 2004). In the context of prevention, if these findings are applicable to other areas of the UK, the increased burden on HIV services in areas with already higher prevalence may decrease resources for preventing onwards transmission.

The group suffering from the highest levels of absolute material deprivation, marginalisation and stigmatisation are asylum seekers. The prevalence of HIV among this group is likely to reflect that of their country of origin. Based on this assumption, the recent findings of an expert medical panel reporting to the All Party Parliamentary Group on AIDS (Gazzard et al., 2005), estimated there were approximately 900 asylum seekers with HIV entering the country in 2003/2004. Currently asylum seekers have the right to HIV treatment whilst seeking asylum. However, due to the policy of dispersal without reference to medical needs, asylum seekers may find themselves in areas where the medical services are unaware and unprepared for their health status and may not have sufficient expertise. Should their asylum application fail, individuals lose the right to free treatment for HIV. The independent expert medical panel argued that on public health grounds treatment should not be withdrawn, since HIV positive failed asylum seekers may not necessarily be deported within the target time period and could transmit HIV to others. They identified inconsistencies in policies between HIV and other infectious diseases such as TB (where treatment is available to all regardless of immigration status) and other STIs (free treatment to all), and recommended that HIV be reclassified as an STI. UNAIDS and WHO (2005) argue that it is essential to the fight against HIV/AIDS that universal access to treatment and care is achieved. However, they state that this is part of the wider fight against barriers to access that include stigma, discrimination, gender inequalities and other human rights violations. As such it is imperative that treatment be freely available to all those who are aware of their positive status as part of the global effort to combat the infection and to help to create a more effective environment for HIV prevention (Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organisation (WHO), 2005, p7).

### **2.3.5 Economic costs**

Aside from the public health and humanitarian reasons for averting HIV infections (see section 2.3.4), the economic arguments are substantial. The monetary value of preventing a single onward transmission is estimated to be somewhere between £0.5 and £1 million in terms of individual health benefits and treatment costs (DH, 2001, p11). This economic benefit is highlighted again in *Choosing Health*, which stated that a 25% reduction in HIV incidence would save the NHS £500 million a year (DH, 2004).

The average lifetime treatment costs for an HIV positive individual is between £135,000 and £181,000, with the average annual cost per person for service provision for those on Highly Active Anti-Retroviral Therapy (HAART) put at approximately £15,000 (MedFASH, 2003). However, historical funding inequalities in England mean that treatment services in the north have received less funding per HIV positive patient than those in the south (Cosgrove et al., 2001a). The Government also give £16.5 million a year to local authorities for social care services for HIV care (DH, 2005a). The

voluntary HIV sector has a long history of involvement in health and social care of HIV. Analysis of the economics of the voluntary HIV sector (for the North West of England) estimated that for every £1 spent by the statutory sector on voluntary sector care, the statutory sector received £2 worth of services (after accounting for the combined effects of volunteering and non-statutory income), and therefore represent good value for money (Cosgrove et al., 2001b).

The previous Evidence Briefing of HIV prevention (Ellis et al., 2003) found no review-level evidence on cost effectiveness in HIV prevention relevant to the key priority populations. The STI Evidence Briefing (Ellis and Grey 2004) did identify tentative review level evidence in the reviews by Mackay (2000) and Pinkerton et al. (1998). Despite the evidence base for cost effectiveness being small, Mackay (2000) cited two studies of behaviourally effective interventions that have been shown to be cost-effective. One focused on HIV prevention, the other on HIV/STI and pregnancy prevention. He indicated that the high cost of treating HIV and STIs meant that appropriate interventions were likely to be cost saving and cost-effective. Pinkerton et al. (1998) concluded that due to the high costs of treating HIV/STIs and their consequences, most risk reduction interventions would be cost saving. These authors also stressed the greater societal savings from initiatives targeted at adolescents rather than adults, due to the reductions in life expectancy (for HIV), the reproductive health consequences for women (e.g. pelvic inflammatory disease (PID), ectopic pregnancy) and more opportunity for ongoing transmission. This updated Evidence Briefing presents new review-level evidence on cost effectiveness in section 6.

*Treat with Respect*, the expert medical panel's report on asylum seekers, included reference to the economics of denying treatment to those who have been refused asylum (Gazzard et al., 2005). This report suggests that in 2003/04 there were approximately 900 members of this population with HIV, and £13.5m per annum would be needed to treat them. However, this was considerably less than the lifetime costs of treating all those who may become infected if onwards transmission was not prevented. The expert group concluded that it made economic and public health sense to treat any one in the UK for HIV. It recommended that PCTs should be reimbursed for treatment, since small PCTs with a low prevalence of HIV find it difficult to fund treatment for dispersed asylum seekers.

## **2.4 Conceptual Framework**

This review draws on the same conceptual framework as the original Evidence Briefing. For full details of the framework see Ellis et al. (2003). Here we provide a brief outline of the modifying factors and intervention levels.

Factors that influence sexual behaviour are personal modifying factors and structural modifying factors.

**Personal modifying factors** include:

- Knowledge and awareness – such as awareness of HIV risk and protective measures available (e.g. condoms) and knowledge of serostatus
- Attitudes, motivations and intentions – e.g. towards condom use and serostatus
- Beliefs and perceptions – e.g. self-efficacy and self-esteem
- Skills – e.g. in safe sex negotiation, sexual communication and condom use.

**Structural modifying factors** include:

- Economic factors – e.g. funding
- Policy factors – e.g. sexual law and regulations
- Societal factors – e.g. community or peer norms regarding sexual behaviour such as condom use or abstinence and social attitudes towards, for example, discrimination towards MSM and access to services
- Organisational factors – e.g. service organisation and the sustainability of available services.

### **Levels of HIV prevention interventions**

**Individual level** interventions are one-to-one interactive interventions, including:

- Counselling (voluntary counselling and testing (VCT – see below), one-to-one counselling and couples counselling)
- Individual cognitive-behavioural therapy (CBT)
- Telephone helplines
- Face-to-face detached or outreach work
- Some internet-based work

#### *Voluntary counselling and testing (VCT)*

VCT includes a range of interventions and is defined by UNAIDS (2004) as client-initiated testing to learn serostatus with pre-testing, provided either individually or in groups, and can be followed up by post-test counselling.

**Group level** interventions include:

- School-based sex education
- Small group work, including cognitive-behavioural therapy (CBT)

**Community level** interventions include:

- Media (mass media/small media)
- Condoms and lubrication provision
- Peer education and social diffusion
- Community empowerment and development
- Some internet interventions (chat rooms)
- Some organisational/institutional interventions

***Socio-political level*** interventions include:

- Legislation (including sexual legislation and anti-discrimination laws)
- Equality work that reduces discrimination and social exclusion
- Facilitating interventions (e.g. research and development and multi-agency working)
- Resource allocation
- Regulation (e.g. labelling of condoms).

## 3 Methodology

A standardised methodology was developed by the HDA (now the National Institute for Health and Clinical Excellence) for the analysis and synthesis of review-level evidence (Kelly et al., 2002). The specific methodology used in this Evidence Briefing is outlined below.

### 3.1 Identification of the literature

#### 3.1.1 *Electronic searches*

A wide-ranging set of search strategies was developed for the original Evidence Briefing by Ellis et al. (2003) in an attempt to identify as many types of 'review' relevant to the subject.

Briefly, the topic strategy was developed to identify papers with a focus on any intervention with the goal of reducing the sexual risk of transmitting or acquiring HIV. The topic search was developed using a combination of: specific HIV prevention terms; terms for interventions specific to the topic area; and general health promotion/health education/public health terms combined with topic terms such as HIV or sexual behaviour. For each database, strategies were developed with a combination of Medical Subject Headings ('MESH') (using various 'operators' such as 'and', 'or', 'adjacent' and 'near') and text words (appropriately truncated, e.g. 'HIV prevent\$') in order to achieve as many relevant reviews as possible.

The following exclusions were built into the searches in an attempt to limit the results to the scope of the Evidence Briefing:

- Developing countries
- AIDS treatment
- Vertical transmission (mother-to-child)
- Transmission related to injecting drug use
- Post-exposure prophylaxis.

The strategies used in this evidence briefing were based on an updated 2003 HDA search strategy. An example of a search strategy is provided in Appendix B.

The following databases and websites were searched:

- The Cochrane Library (including HTA database, DARE [Database of Abstracts of Reviews of Effects] and NHS EED [Economic Evaluation Database])
- The 'Wider Public Health' report
- MEDLINE
- TRIP (database with access to largest collection of 'evidence-based' material on the web)
- SIGN (Scottish Intercollegiate Guidelines Network)

- Health Evidence Bulletins Wales
- National Guidelines Clearing House
- NCCHTA (National Co-ordinating Centre for Health Technology Assessment) website
- NICE (National Institute for Health and Clinical Excellence) website
- REFER (Research Findings Electronic Register)
- National Research Register
- Clinical Evidence
- EMBASE
- Sociological Abstracts
- PsycINFO
- Cinahl (Cumulative Index to Nursing and Allied Health Literature)
- Sociofile
- EPPI-Centre's\*\* Register of Reviews of Effectiveness (RoRE).\*\*\*

All databases were searched from January 2001 to January 2006 for references published in the English language. Results were downloaded into a Reference Manager database.

### **3.1.2 Selection and filtering**

Two reviewers independently appraised all the titles and abstracts of the identified references to determine whether to retrieve the full paper on the basis of the following criteria:

- English language only.
- Published since 2001.
- Systematic review, synthesis, meta-analysis or literature review.
- Relevance to HIV prevention in the UK and the priority populations identified.
- Presents (and syntheses) data from primary evaluation studies of intervention effectiveness.

A joint decision was made as to whether the full paper would be retrieved for critical appraisal; if the reviewers disagreed, or no clear decision could be made on the basis of the title or abstract, the full paper was obtained for appraisal.

## **3.2 Critical appraisal**

Two reviewers appraised the identified papers (including journal articles, book chapters and reports) independently. The appraisal process sought to identify the extent to which papers were:

- *Systematic* – do the review authors apply a consistent and comprehensive approach? If repeated, would this give the same results?

- *Transparent* – are the review authors clear about the processes involved, the individual study results, the findings and conclusions drawn from these? Is there sufficient detail to repeat?
- *Analytically sound* – do the authors undertake the appropriate methods of analysis and are they undertaken correctly?
- *Relevant* – is the content relevant to the UK and the priority populations under consideration?

### **3.2.1 Assessing the quality of the reviews**

The HDA's standard protocol (Swann et al., 2003; Kelly et al., 2002) and critical appraisal tool (CAT) were used to make judgements about the quality of the identified papers. See Appendix C for further details.

For a further discussion about the assessment of quality please see the previous Evidence Briefing (Ellis et al., 2003).

### **3.2.2 Categorisation of reviews**

The original Evidence Briefing categorised papers as 'Core', 'Supplementary' and 'Discarded'. However, for this update we used the gradient system introduced by Ellis and Grey (2004) in their Evidence Briefing into prevention of sexually transmitted infections. Those reviews that would have previously been categorised as 'Core' would now be categorised as Category 1 or 2 depending upon whether they passed stages one and two or only stage one. Reviews that would have previously been categorised as 'Supplementary' would now belong to Category 3. The categorisation process is only briefly described here, for further information see Ellis and Grey (2004).

A joint decision was made regarding whether the paper was to be classified as category 1, 2, 3, 4 or 5. The 'data pool' for the Evidence Briefing consists of those reviews categorised as 1, 2 or 3. The categories are:

#### **Category 1**

The review satisfied the criteria in both stages one and two of the critical appraisal tool (CAT) (see Tables 4-5). Category 1 reviews are included within the data pool and analysed to derive evidence statements.

#### **Category 2**

The review passed stage one of the CAT, but failed to meet all the criteria within stage two – usually because it was not clear how the review had assessed the quality of the included studies. Category 2 reviews are also included within the data pool and analysed to derive evidence statements.

#### **Category 3**

The research question(s) was judged to be highly pertinent, and the paper is a review of interventions; however it failed to pass stage one of the CAT – it is not clear how the included studies were identified and the review had additional shortcomings. Category 3 reviews are included within the data pool and so may provide some evidence about effectiveness, but these reviews alone are insufficient to inform conclusions about effectiveness.

#### **Category 4**

This paper is either not a review of effectiveness of interventions, or it is not a review in its own right (e.g. it may extract findings from another review). However it is relevant and contains useful policy, background, and epidemiological or interpretive information.

#### **Category 5**

The paper is not directly relevant and is therefore not used.

### **3.3 Analysis and synthesis**

Reviews categorised as 1, 2 or 3 were subject to analysis and synthesis. Detailed structured summaries were completed for each Category 1 and 2 review (see Appendix E), and brief summaries of all Category 1, 2 and 3 reviews (see section 3.2).

The previous document by Ellis et al. (2003) outlined a conceptual framework for how interventions affect the modifying factors influencing sexual behaviour, and thus the approach to evidence of effectiveness taken in the Evidence Briefing. 'Interventions' were defined and discussed with regards to the appropriateness of different outcome measures for determining 'success' in HIV prevention.

Ellis et al. (2003) grouped and analysed the evidence according to each of the UK's priority populations. They then looked at the available data for interventions delivered at the individual, group, community and socio-political level. This update of that review carries on their approach.

#### **3.3.1 Evidence statements**

Category 1, 2 and 3 reviews were used to derive 'evidence statements' about types and features of interventions. Where relevant review evidence has been considered in conjunction with that of the original Evidence Briefing (Ellis et al., 2003) evidence statements were derived based upon the combined evidence. The evidence statements reflect the strength of the conclusions made by the review(s), the outcomes used to judge effectiveness, the category of the review, and any inconsistencies within and between reviews. The reviews are used to derive the following evidence statements:

- **Sufficient review-level evidence** – clear evidence/conclusions from at least one Category 1 review, with no conflicting evidence/conclusions between Category 1 reviews

- **Tentative review-level evidence** – tentative evidence/conclusions from Category 1 review; or conflicting conclusions from Category 1 reviews; or clear conclusions from at least one Category 2 review
- **Insufficient review-level evidence** – no evidence/conclusions from Category 1 reviews and only tentative evidence/conclusions from Category 2 reviews; or clear evidence/conclusions from Category 3 reviews
- **No review-level evidence** – no evidence/conclusions from Category 1, 2 or 3 reviews.

Where there was no change from the evidence statement in the original Evidence Briefing this was stated in the text and followed by the original evidence statement from Ellis et al. (2003). Evidence statements remained the same where there was evidence from the same category or lower than in the original Evidence Briefing and/or where all current evidence agreed with the previous evidence.

Evidence statements were amended from the original Evidence Briefing (Ellis et al., 2003) where current evidence originated from a higher category. Evidence statements also changed where there was evidence from the same category or higher where the authors' conclusions were more definitive than those in the original Evidence Briefing or referred to different target populations than in the original Evidence Briefing (Ellis et al., 2003).

### 3.4 Presentation of data

Complete bibliographic lists of the Category 1-5 papers are presented in the **References (section 11)**.

The **Results (section 4)** contains brief summaries of Category 1-3 reviews and includes a summary table of the assessment of each Category 1-3 review according to the critical appraisal process.

**Appendix E** contains detailed summaries of Category 1 and 2 reviews.

The findings of Category 1, 2 and 3 reviews are analysed and synthesised in **section 5 (The evidence)**. Each priority population section begins with an overview of the relevant review papers. Within each priority population section there are sections on individual-level, group-level, community-level and socio-political level interventions, in addition to sections on inequalities. Within each section, having weighted the evidence, a number of 'evidence statements' were made, based on the findings from the Category 1, 2 and 3 review papers (see section 3.2.1). The findings of the cost-effectiveness review are analysed in **section 6 (Cost-effectiveness)**. There are sections on each of the priority populations and VCT. The findings on theory-based effective interventions are analysed in **section 7 (Theory-based interventions)**. There are sections on each of the priority populations and VCT. The **Discussion (section 8)** considers methodological issues and limitations of the Evidence Briefing. In the **Recommendations (sections 8 and 9)**, gaps and inconsistencies in the evidence are drawn out

from the evidence statements from section 5, 6 and 7, particularly in relation to the UK and in the context of the those reported in the previous Evidence Briefing.

## 4 The Results

### 4.1 Summary of identification of papers

A total of 3,387 titles and abstracts were screened for inclusion. This compares to 800 in the original Evidence Briefing. Of these, 189 papers were ordered as full papers and appraised using the CAT. In total, 32 papers were judged to be Category 1, 2 or 3 and went on to analysis and synthesis. A summary of the process of review identification is shown in Figure 1. Tables 1-5 show a summary of the review-level evidence.

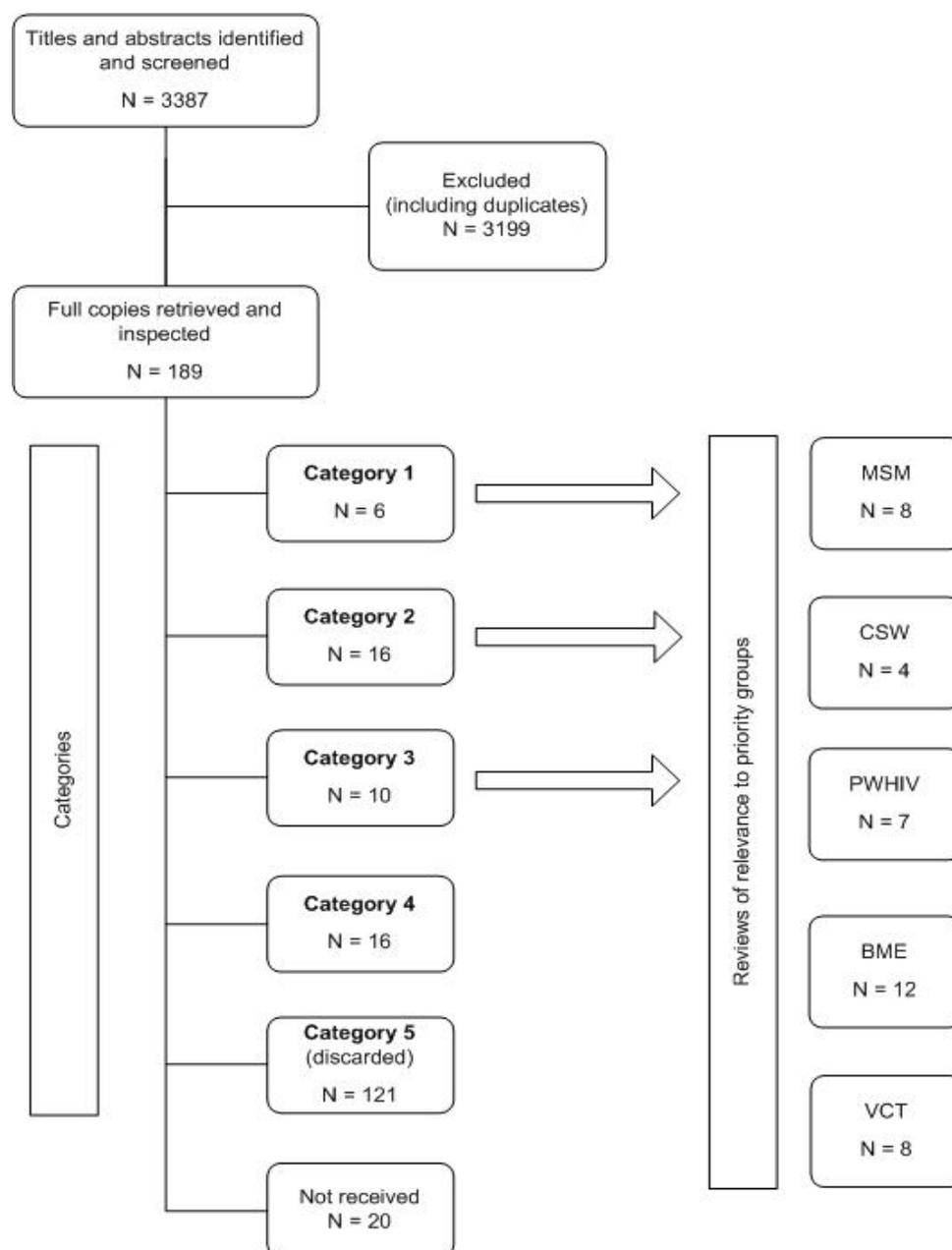


Figure 1. Flowchart showing the process of identification and categorisation of papers

## 4.2 Summary of reviews in Categories 1-3

**Table 1. Summary of Category 1 reviews**

Author and date*	Title	Dates covered	Interventions/scope	Country/countries of research**	No. studies	Relevance to areas covered				
						MSM	BME	CSW	PWHIV	VCT
Elwy A.R. et al. (2002)	Effectiveness of interventions to prevent sexually transmitted infections and human immunodeficiency virus in heterosexual men.	Not specified	Interventions for heterosexual men. Reported separately on IDUs African-American men, minority at-risk clinic attendees (among others e.g. truck drivers, military etc.), interventions described are small group.	United States; Australia; Brazil; Senegal; India; Namibia; Scotland; Mozambique; Thailand.	28 studies					
Herbst J.H. et al. (2005)	A meta-analytical review of HIV behavioural interventions for reducing sexual risk behaviour of men who have sex with men.	up to July 2003	An analysis of international HIV prevention interventions for MSM. Included studies were based upon theoretical models.	United States; New Zealand; Canada; Puerto Rico; Mexico; England; Scotland; Australia; Brazil; Russia; Bulgaria.	33 studies					
Matthews C. et al. (2002)	A systematic review of strategies for partner notification for sexually transmitted diseases including HIV/AIDS.	1991 to 2001	An examination of partner notification. Includes two studies on PWHIV	United States	10 studies (2 PWHIV)					
Pedlow C.T. and Carey M.P. (2003)	HIV sexual risk-reduction interventions for youth: A review and methodological critique of randomized controlled trials.	Up to September 2000	To provide a review and methodological critique of HIV risk reduction interventions for adolescents that employed an RCT design and measured sexual risk behaviour as an outcome measure.	United States	22 studies					
Rees R. et al. (2004)	HIV health promotion and men who have sex with men (MSM): A systematic review of research relevant to the development and implementation of effective and appropriate interventions.	1992 to March 2003	Focuses on vulnerable men.	Scotland; Australia; England; United States.	26 studies					
Vidanapathirana J. et al. (2005)	Mass media interventions for promoting HIV testing.	1980 to April 2004	Mass media interventions in relation to changes in HIV testing	London; Australia; Canada; Israel; Scotland; United States.	14 studies					

\* Complete bibliographic details of level 1, 2 and 3 review papers are provided in the References (section 11).

\*\*Country/countries where available from review of reviews

**Table 2. Summary of Category 2 reviews**

Author and date*	Title	Dates covered	Interventions/scope	Country/countries of research**	No. studies	Relevance to areas covered				
						MSM	BME	CSW	PWHIV	VCT
Albarracin D. et al. (2005)	A test of major assumptions about behaviour change: A comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic.	1985 to September 2003	An analysis of theoretical interventions for behaviour change.	United states; Africa; Ghana; India; Italy; Peru; Zimbabwe; United Kingdom; Thailand; Nigeria; Mexico; Honduras; Hungary; Kenya; South Africa; Uganda; Senegal; Greece; Australia; Brazil; Namibia; Puerto Rico; Mozambique; Malawi; Holland.	191 studies					
Farnham P.G. et al. (2002)	Cost-effectiveness of counselling and testing to prevent sexual transmission of HIV in the United States.	1987 to 1999	Review the cost-effectiveness of HV counselling and testing in various settings and populations in preventing the sexual transmission of HIV.	United states	12 studies					
Johnson B.T. et al. (2003)	Interventions to reduce sexual risk for the Human Immunodeficiency Virus in adolescents, 1985-2000	Up to December 2000	To summarise studies that have tested the efficacy of HIV sexual risk-reduction interventions in adolescents	United States; South Africa; Sweden; Netherlands; Namibia.	44 studies					
Johnson W.D et al. (2005)	HIV intervention research for men who have sex with men: a 7 year update	Up to 2005	Behavioural HIV prevention interventions for MSM	United states; Canada; New Zealand; England; Scotland	40 studies					
Johnson W.D. et al. (2002)	HIV prevention research for men who have sex with men: A systematic review and meta-analysis.	Up to June 1998	HIV prevention interventions for MSM	United States	9 studies					
Johnson W.D. et al. (2003)	Interventions to modify sexual risk behaviours for preventing HIV infection in men who have sex with men.	1988 to 1997	Behavioural interventions to reduce risk for HIV or STI transmission among MSM.	United States	13 studies					
Logan T.K. et al. (2002)	Women, sex and HIV: Social and contextual factors, meta-analysis of published interventions, and implications for practice and research.	1992 to 1999	Examines social and contextual factors related to HIV risk-behaviour in women	United States	30 studies					
Merzel C. & D'Afflitti J. (2003)	Reconsidering community-based health promotion: promise, performance, and potential.	1980 to 2001	Review US-based community health promotion programmes. Covers cardiovascular disease, smoking prevention, cancer prevention, substance abuse, HIV prevention and other health issues.	United States	11 HIV-related projects					

Author and date*	Title	Dates covered	Interventions/scope	Country/countries of research**	No. studies	Relevance to areas covered				
						MSM	BME	CSW	PWHIV	VCT
Mullen P.D. et al. (2002)	Meta-analysis of the effects of behavioural HIV prevention interventions on the sexual risk behaviour of sexually experienced adolescents in controlled studies in the United States.	1988 to 1998	An analysis of the effect of behavioural and social interventions on sexual risk of HIV among sexually active adolescents	United States	16 studies					
Neumann M.S et al. (2002)	Review and meta-analysis of HIV prevention intervention research for heterosexual adult populations in the United States.	1998 to 2002	Examines behavioural and social interventions and their effects on the adoption of safer sex behaviour and incidence of STDs.	United States; Tanzania; Thailand; Greece; Nicaragua; Honduras	24 studies					
Pinkerton S.D. et al. (2002a)	A review of the cost-effectiveness of interventions to prevent sexual transmission of HIV in the United States.	1996 to 2002	Review and summarise the literature on the cost-effectiveness of interventions to prevent sexual transmission of HIV in the US.	United States	16 studies					
Robin L. et al. (2004)	Behavioural interventions to reduce incidence of HIV, STD and pregnancy among adolescents: A decade in review.	1990s	A review of young people's risk reduction interventions and behavioural changes in predominantly ethnic minority groups.	United States	22 studies					
Semaan S. et al (2002a)	A meta-analysis of the effect of HIV prevention interventions on the sex behaviours of drug users in the United States.	Up to June 1998	Examines HIV intervention studies for reducing the sexual risk behaviours of drug users by reducing unprotected sex or increasing the use of male condoms.	United States	33 studies					
Van Empelen et al. (2003)	Effective methods to change sex-risk among drug users: a review of psychosocial interventions	Not clear	Examine the current state of knowledge on the effectiveness of HIV prevention interventions with respect to sexual behaviour among the population of drug users and the relation between effective intervention methods and their underlying theory.	United States; Australia	17 studies					
Weinhardt L.S. (2005)	HIV diagnosis and risk behaviour. In: <i>Positive Prevention: Reducing transmission among people living with AIDS/HIV</i>	1985 to November 2003	An examination of the impact of HIV testing and counselling on sexual risk behaviour. Studies were conducted in North America, Africa and Europe. Studies included individuals and couples. Groups are women, MSM, drug users, sero-discordant couples and mixed.	United States; Africa; England; Holland	21 studies					
Wilson B.D.M. and Miller R.M. (2003)	Examining strategies for culturally grounded HIV prevention: A review.	1985 to 2001	Culturally grounded research. Predominantly USA based studies looking at small group interventions and ethnic minorities (including two MSM studies)	United States; Puerto Rico	17 studies					

\* Complete bibliographic details of level 1, 2 and 3 review papers are provided in the References (section 11).

\*\*Country/countries where available from review of reviews.

**Table 3. Summary of Category 3 reviews**

Author and date	Title	Dates covered	Interventions/scope	Country/countries of research**	No. studies	Relevance to areas covered				
						MSM	BME	CSW	PWHIV	VCT
Elkavich A. et al (2005)	Young people living with HIV. In: <i>Positive Prevention: Reducing transmission among people living with AIDS/HIV</i>	Not clear	An evaluation of the intervention activities and the related theoretical frameworks	United States	4 studies					
Fortenberry J.D. (2002)	Clinic-based service programs for increasing responsible sexual behavior.	Not clear	US clinic-based service programmes for increasing responsible sexual behaviour, including (1) clinic-based educational/counselling, (2) school clinic-based condom distribution programmes, and (3) clinic-based STD/HIV screening programmes.	United States	37 studies					
Johnson-Masotti A.P. et al. (2003)	Efficacy and cost-effectiveness of the first generation of HIV prevention interventions for people with severe and persistent mental illness.	Not clear	Review of the efficacy and cost-effectiveness of RCTs of HIV prevention interventions.	United States	5 studies					
Kelly J.A. and Kalichman S.C. (2002)	Behavioral research in HIV/AIDS primary and secondary prevention: Recent advances and future directions.	Not clear	Review research advances made over the past decade in both HIV primary and secondary prevention, and emerging issues in behavioural research.	United States; Thailand; Kenya; Zimbabwe; Rwanda; Tanzania; Trinidad. Others unclear.	Not clear					
Kirby, D. (2002)	Effective approaches to reducing adolescent unprotected sex, pregnancy and childbearing.	1980 or later	Reviews four groups of programmes which have reasonably strong evidence including (a) sex and HIV education curricula with specified characteristics, (b) one-on-one clinician-patient protocols in health care settings, (c) service learning programmes, and (d) intensive youth development programmes.	United States	73 studies					
Metsch L.R. (2005)	Interventions in Community Settings. In: <i>Positive Prevention: Reducing transmission among people living with AIDS/HIV.</i>	Not clear	Interventions for prevention aimed at people living with HIV	United States	Not clear					
Pinkerton S.D. et al. (2002b)	Cost-effectiveness of community-level approaches to HIV prevention: A review.	Up to 1999	Review the published literature on the cost-effectiveness of community-level HIV prevention interventions.	United States	12 studies					
Pinkerton S.D. & Holtgrave D.R. (2002c)	Assessing the cost-effectiveness of alternative approaches to HIV prevention. In: <i>Beyond condoms: Alternative approaches to HIV prevention.</i>	Not clear	Overview of cost-effectiveness of alternative approaches to HIV prevention.	United States; Tanzania; UK; France; Nairobi; Zaire.	Not clear					
Ross M.W. and Williams M.L. (2002)	Effective targeted and community HIV/STD prevention programs.	Not clear	Overview of community interventions and interventions targeting specific groups at risk of HIV/STD.	France; United States; Uganda; Thailand; Kenya; Zimbabwe; Tanzania.	Not clear					

Author and date	Title	Dates covered	Interventions/scope	Country/countries of research**	No. studies	Relevance to areas covered				
						MSM	BME	CSW	PWHIV	VCT
Wolitski R.J. et al. (2005)	An Overview of Prevention with People Living with HIV. In: <i>Positive Prevention: Reducing transmission among people living with AIDS/HIV.</i>	Not clear	Examines prevention interventions with people living with HIV, including risk reduction interventions	United States	Not clear					

\* Complete bibliographic details of level 1, 2 and 3 review papers are provided in the References (section 11).

\*\*Country/countries where available from review of reviews.

**Table 4. Results of the CAT for Category 1 and 2 papers**

Author and date*	Stage one				Stage two					CATEGORY		
	1	2			2d	3			3d		4	5
	Clear aim/ question inc. Setting population, intervention	Comprehensive search strategy			Inclusion criteria specified	Assessment of quality of included studies			Assessment of the studies' quality		Quality of analysis	
2a Identify approp. range of source databases		2b Additional search strategies **	2c Specifies search terms	3a Definition of quality		3b Tool used to assess quality	3c How assessment s generated	4a Study findings presented clearly & consistently		4b Study findings analysed appropriatel y		
Elwy A.R. et al. (2002)	year not specified											1
Herbst J.H. et al. (2005)	(available from authors)											1
Matthews C. et al. (2002)												1
Pedlow C.T. and Carey M.P. (2003)												1
Rees R. et al. (2004)	(in part)											1
Vidanapathirana J. et al. (2005)												1
Johnson W.D. et al. (2002)	(in part)											2
Johnson W.D. et al. (2003)	(in part)											2
Johnson W.D. et al. (2005)	(in part)											2
Albarracin D. et al. (2005)												2
Farnham P.G. et al. (2002)												2
Johnson B.T. et al. (2003)	(in part)											2
Logan T.K. et al. (2002)	(in part)											2

\* Complete bibliographic details of level 1, 2 and 3 review papers are provided in the References (section 11).

\*\* Additional search strategies involve follow-up of references/journals, consultation with experts in the field and grey literature searches.

**Table 4. Results of the CAT for Category 1 and 2 papers (continued)**

Author and date*	Stage one				Stage two					CATEGORY		
	1	2			2d	3			3d		4	5
	Clear aim/ question inc. Setting population, intervention	Comprehensive search strategy			Inclusion criteria specified	Assessment of quality of included studies			Assessme nt of the studies' quality		Quality of analysis	
2a Identify approp. range of source databases		2b Additional search strategies **	2c Specifies search terms	3a Definition of quality		3b Tool used to assess quality	3c How assessments generated	4a Study findings presented clearly & consistently		4b Study findings analysed appropriately		
Merzel C. and D'Afflitti J. (2003)												2
Mullen P.D. et al. (2002)			(in part)									2
Neumann M.S. et al. (2002)												2
Pinkerton S.D. et al. (2002a)												2
Robin L. et al. (2004)			(in part)									2
Semaan S. et al. (2002)												2
Van Empelen et al. (2003)			(in part)									2
Weinhardt L.S. (2005)			(in part)									2
Wilson B.D.M. and Miller R.M. (2003)			(in part)									2

\* Complete bibliographic details of level 1, 2 and 3 review papers are provided in the References (section 11).

\*\* Additional search strategies involve follow-up of references/journals, consultation with experts in the field and grey literature searches.

**Table 5. Results of the CAT for Category 3 papers**

Author and date*	Stage one				Stage two							CATEGORY	
	1	2			2d	3			3d	4			5
	Clear aim/ question inc. Setting population, intervention	Comprehensive search strategy			Inclusion criteria specified	Assessment of quality of included studies			Assessment of the studies' quality	Quality of analysis			Conclusions related to findings
		2a Identify approp. range of source databases	2b Additional search strategies **	2c Specifies search terms		3a Definition of quality	3b Tool used to assess quality	3c How assessments generated		4a Study findings presented clearly & consistently	4b Study findings analysed appropriately		
Elkavich A. et al (2005)					-	-	-	-	-	-	-	3	
Fortenberry J.D. (2002)					-	-	-	-	-	-	-	3	
Johnson-Masotti A.P. et al. (2003)												3	
Kelly J.A. and Kalichman S.C. (2002)					-	-	-	-	-	-	-	3	
Kirby, D. (2002)					-	-	-	-	-	-	-	3	
Metsch L.R. (2005)					-	-	-	-	-	-	-	3	
Pinkerton S.D. et al. (2002b)												3	
Pinkerton S.D. & Holtgrave D.R. (2002)												3	
Ross M.W. and Williams M.L. (2002)					-	-	-	-	-	-	-	3	
Wolitski R.J. et al. (2005)					-	-	-	-	-	-	-	3	

\* Complete bibliographic details of level 1, 2 and 3 review papers are provided in the References (section 11).

\*\* Additional search strategies involve follow-up of references/journals, consultation with experts in the field and grey literature searches.

## 5 The evidence

We follow each section with evidence statements regarding the effectiveness of interventions. Where there is no change from the evidence statement in the original Evidence Briefing this is stated in the text and followed by the original evidence statement by Ellis et al. (2003). This Evidence Briefing also contains evidence statements on topics not previously included in the original Evidence Briefing (Ellis et al., 2003). Further, evidence statements were amended from the original Evidence Briefing. For further details see section 3.3.1.

We present review-level evidence on each of the following priority populations:

- Men who have sex with men (MSM)
- Commercial sex workers
- People with HIV
- African communities in the UK
- Voluntary counselling and testing (VCT)

### 5.1 Men who have sex with men (MSM)

#### 5.1.1 *The reviews*

Men who have sex with men (MSM) is a broad term and includes gay and bisexual men, and those who have sex with men but do not self-identify as either gay or bisexual.

**Category 1:** Herbst et. al., 2005; Rees, 2004.

**Category 2:** Albarracin et al., 2005; Wilson and Miller, 2003; Johnson et al., 2003; Johnson et al., 2002; Johnson et al., 2005.

**Category 3:** No evidence

The original Evidence Briefing (Ellis et al., 2003) reported on two reviews. Although the current review level evidence incorporates some of the same primary studies it also reports on studies that were not previously included. The primary studies can be found in Table 6 Appendix F. The majority of the studies were based on group interventions, however each level of intervention was well represented in studies involving MSM.

#### **Outcomes**

The most frequently reported outcomes were: condom use, unprotected sex, and number of partners.

## **5.1.2 The findings**

The findings from the evidence have been examined at the following levels: individual, group, community and socio-political. We present evidence identified by intervention level with an overview of the studies and examples of the interventions.

### **5.1.2.1 Individual-level intervention**

Five Category 1 and 2 reviews (Herbst, 2005; Rees, 2004; Johnson, 2003; Johnson et al., 2005; Albarracin, 2005) examined individual-level interventions carried out with MSM populations. Two reviews did not address individual-level interventions (Johnson et al., 2003; Wilson and Miller, 2003). The most frequently used individual-level interventions were counselling, self-justification and diary keeping.

- A prevention intervention study (Dilley et al., 2002) reported in four reviews (Herbst, 2005; Rees et al., 2004; Johnson et al., 2005; Albarracin, 2005) used self-justification methods, and adds weight to Gold and Rosenthan's study (1995) included in the original Evidence Briefing. This study (description from Rees et al., 2004) included a comparison of three intervention groups with a control group. All groups received standard counselling for HIV testing. Intervention groups differed in whether or not they received an additional cognitive-behavioural session examining the self-justification of high-risk sexual behaviour and/or a sex diary.
- A similar study (Imrie et al., 2001; description from Rees et al., 2004), reported in three reviews (Herbst, 2005; Rees et al., 2004; Johnson et al., 2005), compared a one-day cognitive-behavioural workshop to standard counselling. The control group included brief sexual risk-taking counselling; offers of contact tracing, and possibility of referral to clinic or community prevention education or counselling services. The intervention group received everything that the control group received as well as a cognitive-behavioural workshop.
- Rees et al. (2004) stated that both these studies were methodologically 'sound'. Rees et al. (2004) pooled the findings from these studies and showed that interventions based upon cognitive-behavioural techniques were significantly more effective than standard counselling methods in reducing serodiscordant unprotected anal intercourse (UAI) when measured at six months follow-up (odds ratio (OR) 0.49; 95% confidence interval (CI) 0.29 - 0.84).
- Several other individual-level interventions included counselling methods, however mixed results were reported. Picciano et al., (2001; description from Johnson et al., 2005) provided feedback by telephone regarding a baseline risk-assessment to MSM practicing risky sexual behaviour. This intervention effect, and similar intervention effects with minimal or no HIV prevention, showed favourable (PR = 0.93), but not statistically significant, results (CI = 0.78, 1.10). The EXPLORE study team (2004; description from Johnson et al. (2005) included ten one-to-one counselling sessions followed by maintenance sessions every three months. These sessions covered: risk-

assessment; sexual communication; knowledge of HIV serostatus; alcohol and drug use; triggers for unsafe sex; and motivational interviewing. Johnson et al., (2005) state that, “this individual intervention, although reporting a modest reduction in unprotected sex, was accompanied by a substantial reduction in new HIV infections” (p. 584).

- Individual-level interventions also covered a variety of risk-reduction and counselling techniques including: intensive case management (Sorensen et al., 2003 in Johnson et al., 2005); an intervention based on HIV risk education (Rotherham-Borus et al., 2004 in Johnson et al., 2005); one intervention based on HIV prevention counselling and safe sex education (Rosser, 1990 in Herbst, 2005; Johnson, 2003; Johnson et al., 2005); counselling methods (Richardson et al., 2004 in Johnson et al., 2005), cognitive-behavioural interventions (e.g. AIDS risk reduction model, ARRM) (Patterson et al., 2003 in Johnson et al., 2005); and/or relapse prevention interventions (Gold and Rosenthal, 1998 in Herbst, 2005; Rees, 2004; Johnson et al., 2005).
- Johnson et al. (2005) included all eight individual-level interventions mentioned above in a subgroup analysis, which revealed a 5% reduction in unprotected sex (RR = 0.91; CI = 0.62, 1.34). Johnson et al. (2005) concluded that, “the most favourable effects among individual-level interventions were those that addressed losses” (p.580). The limited information available on biological outcomes suggested that higher risk clients may be better served by individual-level interventions rather than other methods that aimed to introduce clients to potential partners who were also high-risk.

This evidence adds to the reviews from the original Evidence Briefing that referred to one-to-one ‘self-justification’ counselling sessions.

**New evidence statement: There is tentative review-level evidence to support the effectiveness of cognitive-behavioural individual-level interventions in influencing the sexual risk behaviours of MSM.**

This is a change from the original Evidence Briefing where it was stated that there was insufficient evidence to either support or discount the effectiveness of any individual-level interventions in influencing the sexual risk behaviours of MSM.

#### **5.1.2.2 Group-level intervention**

Seven Category 1 and 2 reviews (Herbst, et. al., 2005; Johnson et al., 2003; Johnson et al., 2002; Johnson et al., 2005; Rees, 2004; Albarracin et al., 2005; Wilson and Miller, 2003) were identified and these included a total of 20 original group-level interventions to add to the seven reported in the previous Evidence Briefing. The most frequently used interventions were cognitive-behavioural therapy, relapse prevention, and skills training.

- Several studies have incorporated specific cognitive-behavioural and risk-reduction elements into their interventions (Kelly et al., 1993; Shoptaw et al., in press). This builds upon the findings from studies taken from Oakley et al. (1996) and Aggleton (1994) in the original Evidence Briefing.
- Kelly et al. (1993) (description from Herbst et al., 2005) reported on a cognitive-behavioural intervention targeted at depressed, HIV positive MSM. This also included a social support group where individuals could share their feelings about HIV. The intervention was provided over four months, with four sessions totalling six hours. Shoptaw et al. (in press; description from Johnson et al., 2005), reported on a 16 week-long intervention for methamphetamine-dependent MSM. This incorporated group education; cognitive skills development, recognition of triggers and drug-abstinence reward schemes.
- Carballo-Diequez (2004; description from Johnson et al., 2005) carried out an eight-session intervention that incorporated goal-setting and self-efficacy. Kalichman et al. (2001; described in Johnson et al., 2005) reported on a support group intervention that aimed to create sexual health and relationship plans, develop disclosure and communication skills, and to teach hazards of co-infection with other STIs. This intervention was delivered in five 120 minute long sessions. Harding et al., (2004; described in Johnson et al., 2005) provided an introduction to sadomasochistic sex, including risk-taking, emotional aspects, STI infection and HIV transmission, rights and responsibilities, legal issues, the role of fantasy, limits and boundaries. This intervention was delivered in four sessions of seven hours. Johnson et al. (2005) included the results of small group interventions (some of which were mentioned in the original Evidence Briefing) in a subgroup analysis, which revealed a significantly favourable effect on unprotected sex (PR = 0.80; CI = 0.72, 0.89).
- Risk-reduction methods such as relapse prevention interventions have also been reported (Miller, 1995; Roffman et al., 1997; Roffman et al., 1998). Miller (1995; described in Herbst et al., 2005) carried out a single session relapse prevention workshop (five hours) targeted at MSM that aimed to increase self-efficacy, self-worth and confidence. Roffman and colleagues (1997; description in Herbst et al., 2005) undertook an intervention involving telephone counselling to develop relaxation and coping skills, as well as motivational enhancement. This intervention lasted 14 sessions, including five events, over 14 weeks and lasted for a minimum of 21 hours. This intervention was delivered by peer counsellors, social workers, and facilitators. Roffman and co-authors (1998; described in Herbst et al., 2005) reported on an intervention underpinned by several theories, including relapse prevention. The intervention incorporated cognitive-behavioural group counselling on HIV education, motivational enhancement and goal setting. Seventeen sessions were carried out over 18 weeks.
- Peer-delivered prevention interventions have been included in recent review level evidence addressing behaviours in MSM (Amirkhanian et al., 2003; Remafedi, 1994; Toro-Alfonso et al.,

2002; Wolitski et al., 2005; Stall et al., 1999). Amirkhanian et al., (2003; described in Herbst et al., 2005) reported on an intervention that included training peer leaders to deliver HIV prevention messages. Remafedi (1994; description from Herbst et al., 2005) detailed an intervention aimed at young people that individualised HIV risk-assessment and counselling as well as peer-education and referrals. This intervention lasted for three sessions of a minimum of four hours over two days. Goldbaum et al., 1999 (unpublished) in Herbst et al (2005) carried out a risk-reduction intervention aimed at non-gay identifying MSM. Toro-Alfonso et al. (2002; described in Herbst et al., 2005) reported a peer-delivered intervention that included small group meetings and workshops focused on intimacy, relationships, drug abuse, sexual behaviour and STI/HIV. This intervention was provided over five sessions totalling 15 hours. Stall et al. (1999; described in Herbst et al., 2005) carried out an intervention based on theories of social learning, risk-reduction and relapse prevention, aimed at substance-using MSM and included standard drug treatment as well as coping skills, interpersonal skills and discussion of sexual issues.

- Herbst et al., (2005) commented that, “Although no behavioural theory in particular was associated with significantly better intervention efficacy than any other theory, interventions based on the diffusion of innovation theory and the model of relapse prevention showed greater point estimates for reduction in risk behaviour in the intervention group relative to the comparison group” (p237).

These findings support those in the previous Evidence Briefing. Current findings also add to the reviews from the original Evidence Briefing for peer-related group level interventions.

**Evidence statement: No change from Ellis et al. (2003). There is sufficient review-level evidence to conclude that cognitive-behavioural group work, focusing on risk-reduction, sexual negotiation and communication skills training can be effective in influencing the sexual risk behaviours of MSM.**

**New evidence statement: There is tentative review-level evidence to conclude that peer-related group-level interventions can be effective in influencing the sexual risk behaviours of MSM.**

- Additional studies included in the review level evidence (Perry, 1991; Rosser et al., 1990; Rosser et al., 2002; Sampaio et al., 2002; Kalichman et al., 2001; Harding et al., 2004) examined a variety of interventions that differed by session length and included components e.g. counselling, motivational approaches, skills and communication training.
- Perry (1991; description from Johnson et al., 2002), reported on a counselling intervention targeted at MSM, prior- and post- HIV testing in addition to one of three experimental conditions

to reduce emotional distress: individual stress prevention therapy; interactive video of HIV information and relaxation techniques; or both. This intervention was delivered in multiple sessions, over several weeks. Rosser et al., (1990; description from Johnson, 2002) reported on an intervention that included HIV prevention counselling, a video on safer sex, a video on eroticising safer sex and a 'stop AIDS' workshop. Rosser et al., (2002; described in Herbst et al., 2005) delivered a sex health seminar to address risk factors, HIV risk assessment and sex communication. Sampaio et al., (2002; described in Johnson et al., 2005) included safer sex workshops with games, role-playing, small-group discussion using verbal and non-verbal communication. Topics included; basic information, clarification of misconceptions, recognition of risk, non-genital practices, safer-sex practices, and sexual negotiation.

- Three other interventions (Dockrell et al., 1999; Martin et al., 2001; Turner and Heywood, 2000) were reported by Rees et al. (2004), but were described as methodologically 'unsound'. They included small-group work, responses to sexual behaviour following the revelation of an undetectable viral load and workshop sessions respectively.

#### **5.1.2.3 Multi-component small-group work**

The previous Evidence Briefing concluded that multi-component small-group work involving, for example, skills training and the improvement of self-efficacy was effective in influencing risk behaviour. We found no evidence to disagree with this statement.

**Evidence statement: No change from Ellis et al., 2003. There is sufficient review-level evidence to conclude that building a range of components into group-level interventions contributes to their effectiveness in influencing the sexual risk behaviours of MSM.**

#### **5.1.2.4 Multi-session small-group work**

The previous Evidence Briefing concluded that there was not enough evidence to be able to assess the effectiveness of the number of sessions included in an intervention on the effect of the intervention. We found no evidence to disagree with this statement.

**Evidence statement: No change from Ellis et al., 2003. There is insufficient review-level evidence to either support or reject the conclusions that multi-session interventions are, in themselves, more effective than single session interventions in influencing the sexual risk behaviours of MSM.**

#### **5.1.2.5 Community-level intervention**

Five Category 1 and 2 reviews (Herbst, et. al., 2005; Johnson et al., 2003; Johnson et al., 2005; Rees, 2004; Wilson and Miller, 2003) included a total of 10 original community-level interventions to

add to the six reported in the previous Evidence Briefing. The most frequently used interventions were peer-related.

- Rosser (1991; described in Herbst et al., 2005) reported on a mass media intervention, 'The grim reaper', which was a fear-based advertisement. However, this study did not have a comparison group to be able to compute an effect. The voluntary counselling and testing section (5.5) provides further evidence of the effects of mass media interventions aimed at MSM that have informed the evidence statement below.

**New evidence statement: There is tentative review-level evidence to support the effectiveness of mass media interventions in influencing the uptake of HIV VCT in groups of MSM.**

- Six reviews contained studies regarding peer interventions (Elford et al., 2001; Flowers et al., 2002; Kegeles et al., 2002; Miller et al., 1998; Shepherd et al., 1997; Zimmerman et al., 1997). To summarise, examples of the peer-led interventions reported were: HIV conversations; empowerment training of AIDS prevention and health care and information (a 2002 update of the 1996 study by Kegeles reported in the original Evidence Briefing); and peer-education.
- Hoff et al. (1997) and CDC ACDP (1999) (both described in Johnson et al., 2005) both reported outreach interventions.
- Dahl et al. (1997) (described in Rees et al., 2004) reported a community-wide social marketing intervention that Rees et al. (2004) described as methodologically 'unsound'.
- All community-level interventions reported here (except Dahl et al., 1997 and Rosser, 1991) were included in a meta-analysis by Johnson et al. (2005). They reported that community level interventions were statistically significant and favourable effect (PR = 0.86; CI = 0.76, 0.96).

These studies add to those included in the original review and consolidate the evidence statement regarding peers and opinion-led interventions.

**Evidence statement: No change from Ellis et al. (2003). There is sufficient review-level evidence to conclude that community-level interventions involving peers and popular opinion leaders can be effective in influencing the sexual risk behaviours of MSM.**

#### **5.1.2.6 General issues concerning the effectiveness of interventions with MSM.**

The previous Evidence Briefing concluded that there was not enough evidence to support the conclusion that the duration of an intervention was associated with the likelihood of success. Ellis et al. (2003) stated that those interventions targeted to specific risk groups were more likely to impact on sexual risk behaviour. We have found no evidence to disagree with these statements.

**Evidence statement: No change from Ellis et al. (2003). There is insufficient review-level evidence to support or discount the effectiveness of 'brief' interventions in influencing the sexual risk behaviour of MSM.**

**Evidence statement: No change from Ellis et al. (2003). There is sufficient review-level evidence to conclude that interventions for MSM are more likely to be effective if they are targeted and tailored to the specific community and, ideally, if implementation follows according to the findings of formative research.**

#### **5.1.2.7 Socio-political intervention**

None of the reviews presented data on the effectiveness of socio-political level interventions in HIV prevention or impact upon health outcomes or risk behaviour with MSM.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence to either support or discount the effectiveness of any socio-political interventions in influencing the sexual risk behaviours of MSM.**

#### **5.1.2.8 Inequalities**

None of the reviews presented data on interventions targeting inequalities for MSM.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence to either support or discount the effectiveness of interventions in addressing inequalities in sexual health for MSM.**

#### **5.1.2.9 Cost-effectiveness**

Section 6 provides full details of the three cost-effectiveness reviews relevant to MSM (Pinkerton et al., 2002a; Pinkerton et al., 2002b; Pinkerton and Holtgrave, 2002). The original Evidence Briefing (Ellis et al., 2003) did not contain any relevant cost-effectiveness reviews.

**New evidence statement: There is tentative review-level evidence to conclude that HIV prevention interventions aimed at MSM are cost-effective, and can be cost-saving.**

## 5.2 Commercial sex workers (CSWs)

The term 'commercial sex workers' (CSWs) includes both men and women who sell sex, working on the street and in off street locations (e.g. brothels, massage parlours).

**Category 1:** Herbst et al., 2005; Elwy et al., 2002.

**Category 2:** Albarracin et al., 2005.

**Category 3:** Ross et al., 2002; Kelly et al., 2002.

### **Outcomes**

The most frequently reported outcome was frequency of unprotected sexual intercourse.

### **5.2.1 Findings**

The literature has been examined at the following levels: individual, group, community and socio-political. As there were a small number of primary studies, a brief summary of each is provided for each intervention level.

The three Category 1 and 2 reviews contained nine prevention interventions related to CSWs. There was some overlap with the studies included in the original Evidence Briefing (Ellis et al., 2003). Seven studies were found in addition to the 15 included previously.

#### **5.2.1.1 Individual-level intervention**

Elwy et al. (2002) reported one individual-level study by Jackson et al. (1997) that involved targeting the clients of CSWs. Outreach workers provided individual counselling, HIV testing and condom skills including negotiation, demonstration and promotion as well a free supply of condoms. Findings showed a significant reduction in the number of STIs and the number of sexual partners. Elwy and colleagues (2002) reported that this intervention was a moderate-quality study that used a prospective uncontrolled design, they add no other comments.

The previous Evidence Briefing reported on HIV testing and counselling with additional information and skills training but reported that there was no review-level evidence to either support or discount the effectiveness of any other individual-level intervention for influencing the sexual risk behaviour of CSWs.

**Changed evidence statement: There is insufficient review-level evidence to either support or discount the effectiveness of any other individual-level interventions in influencing the HIV sexual risk behaviours of CSWs.**

### 5.2.1.2 Group-level intervention

Elwy et al. (2002) reported on one group-level intervention by Herbst et al. (1999). This intervention involved targeting the patrons of CSWs in their workplace (port workers) via outreach workers and discussion groups. Findings showed that there was a significant increase in condom use and a reduction in the number of reported partners. However, there was no change in attitudes towards condoms or knowledge of AIDS. Elwy and colleagues made no conclusions regarding the relevance to the UK population.

**Evidence statement: No change from Ellis et al. (2003). There is insufficient review-level evidence to either support or discount the effectiveness of any group-level interventions in influencing the HIV sexual risk behaviours of CSWs.**

### 5.2.1.3 Community-level intervention

Four studies, not included in the previous Evidence Briefing, reported on the role of popular opinion leaders ('diffusion of innovations'), and other community wide, peer-based interventions, including those targeted at the clients of CSWs.

- Miller et al. (1998; description taken from Herbst et al., 2005) targeted CSWs and patrons of gay bars (hustler bars). The 'hustler bar project' involved popular opinion leaders delivering HIV risk information to three hustler bars in New York. Peers therefore, became outreach workers. However, results showed that the intervention favoured the comparison group (delayed treatment or wait list).
- Albarracin (2005) included three studies related to CSWs; Ford et al. (2002), Ford et al. (1999) and Leonard et al. (2000). No details of these studies were provided in Albarracin. However Elwy et al. (2002) provided details of the intervention carried out by Leonard et al. (2000). This intervention involved peer-education in the workplace (truck workers) including discussions about STIs/HIV, condom use skills and communication skills. Findings showed that although there was no change in the number of sexual partners, there was a significant increase in condom use, HIV knowledge, and self-efficacy for using condoms. However, the findings were viewed as unreliable by Leonard and colleagues (2000) as the reported number of sexual partners was not corroborated by female sex workers.
- Ross et al. (2002) and Kelly et al. (2002) described two studies aimed at CSWs. One study in Thailand (Hanenberg et al., 1994) involved a mass distribution and advertising of condoms in all CSW establishments which, within two years, resulted in an increase in condom use from 14% to 97% and, over five years, a 79% decrease in the five major STIs in men. Another study based in Kenya and Zimbabwe (Ngugi et al., 1996) used peer-educators to distribute condoms and safe-

sex information to CSWs. After one year, condom use had increased in Kenya from 5% to 37% and in Zimbabwe from 18% to 66%.

The previous Evidence Briefing reported on HIV testing and counselling with additional information and skills training.

**Evidence statement: No change from Ellis et al. (2003). There is tentative review-level evidence to conclude that interventions delivered at the community level (particularly peer-led interventions) can be effective in influencing the HIV sexual risk behaviours of patrons and CSWs.**

#### 5.2.1.4 Intervention level unclear

- Albarracin et al. (2005) reported on three additional studies, which included prevention education aimed at Greek CSWs (Papaevangelou et al., 1988), and behavioural change in CSWs and their clients (Van Griensven et al., 1998; Walden et al., 1999). No other details of the studies were provided.

#### 5.2.1.5 Socio-political intervention

None of the reviews presented data on the effectiveness of socio-political level interventions for HIV prevention with CSWs.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence to support or discount the effectiveness of socio-political interventions in addressing the sexual health of CSWs.**

#### 5.2.1.6 Inequalities

None of the reviews presented data on the effectiveness interventions in addressing inequalities for HIV prevention with CSWs.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence to support or discount the effectiveness of interventions in addressing the inequalities in sexual health for CSWs.**

## **5.3 People with HIV (PWHIV)**

### **5.3.1 The reviews**

Reviews related to this population include evaluations of targeted prevention interventions for people diagnosed with HIV/AIDS.

**Category 1:** Mathews et al., 2002; Herbst et al., 2005.

**Category 2:** Albarracin et al., 2005; Johnson et al., 2005.

**Category 3:** Elkavich et al., 2005; Kelly and Kalichman, 2002; Metsch et al., 2005; Wolitski et al., 2005.

### **Outcomes**

The most frequently reported outcomes were on techniques for individuals with HIV/AIDS diagnosis to inform previous partners of their health status ('partner notification').

### **5.3.2 The findings**

Findings have been examined at the following levels: individual, group, community and socio-political. As there were a limited number of original studies, a brief summary of each is provided at each intervention level. Category three reviews have been briefly summarised for each level.

There was no overlap with reported studies from the original Evidence Briefing as this publication found no review level evidence to report on the effectiveness of interventions for PWHIV\*. As such many of the evidence statements relating to PWHIV are new.

#### **5.3.2.1 Individual-level intervention**

Six reviews reported on 10 individual level interventions. The most commonly reported interventions were partner notification and counselling.

- Landis (1992; reported in Mathews et al., 2002) described an assessment of the choice between either the provider or patient notifying previous partners (patients could notify all or some of their partners themselves. The remaining partners as well as those who failed to present to services after two weeks were contacted by counsellors). The comparison group included patient referral, and interview with a counsellor to discuss the process of notification. The results of this study showed that offering a choice between patient or provider referral compared to patient referral alone resulted in more partners being notified. In the experimental group, those provided with the

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\* Two studies (Landis, 1992 & Coates et al., 1989) were reported in the supplementary review tables in the original review.

choice notified more previous partners, and more of these partners subsequently tested HIV positive.

- Levy (1998; reported in Mathews et al., 2002) (trial ongoing). This study involved the choice between provider and patient referral; with index patients (patient taking part in the study) receiving help with identifying and naming partners as well as counselling about notification. Indigenous community workers notified those partners the index patients did not want to notify themselves, without revealing the identity of the index patient. This study also included community-based testing for the partner/partners of the index patient. The comparison group received patient referral, whereas index patients received help with identifying and naming partners, patients were also counselled about notification. Community-based testing was also provided for the partners of index patients in this group. In the group with the choice between provider and patient referral, 82% of index patients chose provider referral for at least one partner (covering 71% of partners), suggesting that provider referral is preferred and facilitates notification. However, at the time of reporting this study was ongoing and comparison group data were not available.
- Mathews et al. (2002) stated that “partner notification affects either of two outcomes, i.e. prevention of morbidity in those notified, or prevention of transmission to others – both are benefits” (p.297).
- Johnson et al. (2005) included four individual level interventions, (two of which were also reported in Metsch et al., 2005), (Patterson et al., 2003; Rotheram-Borus et al., 2004; Richardson et al., 2004; Sorensen et al., 2003). These interventions consisted of different designs and approaches including a social cognitive theory based intervention, which included sexual negotiation; prevention counselling; case management and a youth based ‘staying healthy’ intervention. Participants in these studies were predominantly MSM and the meta-analysis results for MSM studies (including studies with small proportions of HIV positive MSM where status was not an entry requirement) showed that although individual-level interventions for this population resulted in reductions in unprotected sex (RR = 0.91; CI = 0.62, 1.34), they were not statistically significant like those for small-group and community interventions.
- Of the Category 3 studies, Elkavich et al. (2005) reported on another individual level intervention that showed significant increases in condom use, ‘outercourse’ (i.e. non-penetrative sex), self-efficacy and safe sex knowledge (Butler et al., 2003). Kelly and Kallichman (2002) reported on three individual-level interventions (including one-to-one counselling) that were more likely to increase protected sex, condom use (including within serodiscordant couples) and result in a reduction in the incidence of HIV (Kamb et al., 1998; Allen et al., 1992a; Padian et al., 1993).

**New evidence statement: There is tentative review-level evidence to support the effectiveness of partner notification and its influence on the sexual risk behaviours of people living with HIV.**

### 5.3.2.2 Group-level intervention

Six reviews included studies of group-level interventions. The most commonly reported interventions were support groups.

- Coates et al. (1989; description taken from Herbst et al., 2005) examined an intervention involving stress reduction training with systematic relaxation, health habit change and stress management skills. A significant effect on the number of sexual partners was observed in a combined analysis with other studies (Herbst et al., 2005).
- Johnson et al. (2005) included Coates et al. (1989) in addition to five other group level interventions (Wolitski et al., 2005; Cleary et al., 1995; Kelly et al., 1993; Rotheram-Borus et al., 2001a; Kalichman et al., 2001). These additional interventions included peer-led work to build a sense of community; two support groups; small-group work aimed at improving HIV coping among others; and counselling. The majority of these small-group interventions reported in Johnson et al. (2005) included MSM participants. The results of a meta-analysis (including one other study with a small proportion of HIV positive MSM where status was not an entry requirement) showed that the effects were more favourable to this population than individual-level interventions (RR = 0.71; CI = 0.51, 0.99).
- Two Category 3 level reviews (Elkavich et al., 2005; Metsch et al., 2005) referred to one additional group-level intervention which reported increases in active coping, fewer sexual partners and less unprotected sex (Rotheram-Borus et al., 2001b). Woltiski et al. (2005) and Metsch et al. (2005) also reported on a group-level intervention involving HIV positive drug users, which consisted of a harm-reduction intervention including methadone maintenance, counselling and case management, as well as manual-guided psychotherapy sessions. Results showed that those involved in the intervention group obtained lower addiction scores, and were less likely to engage in high-risk sexual behaviour and drug-use behaviours (Margolin et al., 2003).
- The review of Elkavich et al. (2005) included one study (Butler et al., 2003) aimed at young HIV positive haemophiliacs which showed significant pre- to post-test increases in safer sexual practices following the intervention.
- Kelly et al. (2002) described a relevant study by Kalichman (2000), which used a cognitive-behavioural intervention, including risk-reduction, aimed at PWHIV to reduce HIV transmission. Findings showed that the intervention group displayed significantly lower rates of unprotected

intercourse and greater condom use at follow up. Kelly et al. (2002) also referred to one study (Padian et al., 1993) involving serodiscordant couples and interventions such as risk-reduction education and condom use modelling. The intervention couples reported increased condom use from 49% to 88% at 16 month follow up.

**New evidence statement: There is tentative review-level evidence to support the effectiveness of small-group level interventions in influencing the sexual risk behaviours of people living with HIV.**

### 5.3.2.3 Community-level intervention

- Fogarty et al. (2001; reported in Albarracin, D., et al., 2005) (categorised as individual/group level in Metsch, 2005). This study involved peer-based condom and contraception promotion aimed at HIV positive African-American women. Compared to the comparison group, the women in the intervention group reported improved consistency in condom use, perceived condoms as more advantageous, and increased levels of self-efficacy for condom use.
- Two Category 3 level reviews (Metsch, 2005; Woltiski, 2005) reported on a skills-based behaviour change intervention conducted by Kalichman and colleagues (2001). This intervention recruited HIV positive men and women from AIDS services and clinics. Lower rates of unprotected sexual intercourse and greater condom use were reported in the group that received the cognitive-behavioural intervention.

Although additional studies have been identified since the original Evidence Briefing there is not enough evidence to support the effectiveness of community-level interventions for people living with HIV.

**New evidence statement: There is insufficient review-level evidence to support the effectiveness of community-level interventions in influencing the sexual risk behaviours of people living with HIV.**

### 5.3.2.4 Socio-political intervention

None of the reviews presented data relevant to the effectiveness of socio-political interventions for people living with HIV.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence to either to support or discount the effectiveness of socio-political interventions in influencing the sexual risk behaviours of people living with HIV.**

### 5.3.2.5 Inequalities

None of the reviews presented data relevant to the effectiveness of interventions in dealing with inequalities for people living with HIV.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence to either to support or discount the effectiveness of socio-political interventions in influencing the sexual risk behaviours of people living with HIV.**

## **5.4 African communities in the UK**

As discussed in Section 2.3 (Context) there are concerns about the risk of HIV transmission among certain African communities in the UK.

### **5.4.1 The reviews**

A total of 14 reviews met the criteria for Category 1-3 and included studies that were of some relevance to African communities in the UK.

**Category 1:** Elwy et al., 2002; Pedlow and Carey, 2003

**Category 2:** Albarracin et al., 2005; Johnson B.T. et al., 2003; Logan, Cole and Leukefeld, 2003; Merzel and D’Afflitti, 2003; Mullen et al., 2002; Neumann et al., 2002; Robin et al., 2004; Semaan et al., 2002a; van Empelen et al., 2003; Wilson and Miller, 2003

**Category 3:** Johnson-Masotti et al., 2003; Kirby, 2002; Fortenberry, 2002 .

Of the 14 reviews, one (Wilson and Miller, 2003) specifically examined “culturally grounded” group interventions in mixed populations. Four (Johnson B.T. et al., 2003; Mullen et al., 2002; Pedlow and Carey, 2003; Robin et al., 2004) focused on adolescents, three (Elwy et al., 2002; Neumann et al., 2002; Logan et al., 2003) were of heterosexual adults, one (Johnson-Masotti et al., 2003) examined interventions aimed at the mentally ill, one (Fortenberry, 2002) explored clinic-based interventions, and one (Merzel and D’Afflitti, 2003) examined community-based health promotion across a number of health areas including HIV.

### **Outcomes**

The most frequently reported outcome was condom use.

### **5.4.2 The findings**

#### **5.4.2.1 Individual-level intervention**

Nine studies were covered by six reviews (Elwy et al., 2002; Johnson B.T. et al., 2003; Kirby, 2002; Logan et al., 2003; Mullen et al., 2002; Pedlow and Carey, 2003).

- Pedlow and Carey’s (2003) review identified six studies, all conducted in health care settings, which delivered interventions to individual adolescents. Five of these studies (Boekeloo et al., 1999; De Lamater et al., 2000; Gillmore et al., 1997; Mansfield et al., 1993; Orr et al. 1996) included a high proportion of African American or Hispanic adolescents. Two of the five interventions (Boekeloo et al., 1999; Orr et al. 1996) were effective in increasing condom use. Johnson B.T. et al. (2003), Kirby (2002) and Mullen et al. (2002) also covered these studies in their reviews.

- Logan et al. (2003) included three studies (Belcher et al., 1998; Grinstead et al., 1999; Kamb et al., 1998) of individual-level interventions targeted at black and minority ethnic (BME) groups in their review of interventions aimed at women (although the interventions were aimed at both men and women in the included studies). However, very few details were available and the reviewers did not draw any conclusions about the effectiveness of individual-level interventions.
- Elwy et al. (2002) described one primary study of an individual-level intervention in their review of interventions for heterosexual men. Wagstaff et al. (1999) targeted black men with an individual education session, educational video, or standard care and education programme. STI rates were reported to have reduced at six-months follow-ups. The reviewers made no conclusions about interventions delivered at this level.
- Fortenberry (2002) included several clinic-based counselling and condom distribution interventions. These interventions were aimed at a variety of populations including African American and Hispanic people. However, the author made no specific conclusions regarding interventions aimed at BME groups.

Although this update has identified a number of studies that were not covered by the previous Evidence Briefing, there is still no clear evidence on the effectiveness of individual-level interventions for BME groups.

**Evidence statement: No change from Ellis et al. (2003). There is insufficient review-level evidence either to support or discount the effectiveness of any individual-level interventions in influencing the sexual risk behaviours of BME groups.**

#### 5.4.2.2 Group-level intervention

Nine reviews (Albarracin et al., 2005; Elwy et al., 2002; Pedlow and Carey, 2003; Logan et al., 2003; Mullen et al., 2002; Neumann et al., 2002; Robin et al., 2004; Wilson and Miller, 2003; Kirby, 2002) covered 53 primary studies, which examined a variety of interventions across a number of setting and populations of BME groups. The majority of the studies reported on interventions delivered to adolescents.

##### Adolescents

- Pedlow and Carey (2003) reviewed 12 studies, which evaluated group-level interventions and included a large proportion of African American, or multi-ethnic youth. Overall, they concluded that many HIV risk reduction interventions for adolescents have been shown to be effective, most frequently on condom use. They did not comment on their findings in relation to BME groups.

- Robin et al. (2004) also reviewed interventions for adolescents, including eight studies of group-level interventions (there was some overlap with Pedlow and Carey, 2003). As part of their conclusions they commented, “the majority of studies showing positive effects targeted African American youth” (p.18). Three studies with positive effects included in their review only recruited African American participants.
- Mullen et al. (2002) examined interventions for sexually experienced adolescents, including eight studies with a large proportion of BME groups. Overall, they found that “more protective outcomes” were associated with the interventions that were exclusively targeted at a single ethnic group (African American or Hispanic in this case).
- Based on meta-analysis of 44 studies, Johnson B.T. et al. (2003) found that there was no significant relationship between condom use and the racial composition of the sample.
- Kirby (2002) reviewed seven studies, all of which were covered by the other reviews. No conclusions were made regarding ethnicity in this review.

Overall, a number of reviews were identified which focused on HIV prevention in adolescents, however none specifically examined or drew conclusions about programmes targeting BME groups.

**New evidence statement: There is insufficient review-level evidence to support or discount the effectiveness of group-level interventions in influencing the sexual risk behaviour of BME adolescents.**

## Adults

The previous Evidence Briefing (Ellis et al., 2003) found evidence from six RCTs and one other study supporting the effectiveness of small-group interventions for BME women. This update identified a number of further studies across four reviews (Elwy et al., 2002; Logan et al., 2003; Neumann et al., 2002; Wilson and Miller, 2003), which focused on group-level interventions in heterosexual adult populations.

- Elwy et al. (2002) reviewed studies of interventions in heterosexual men. They identified a number of studies that recruited from BME groups including African American and Hispanic populations. However, they did not draw any conclusions specifically about interventions in minority populations or interventions at the group-level. Overall, they identified no single consistently effective approach but noted that interventions in more general populations of men had all shown a positive behavioural intervention effect.

- Logan et al. (2003) reviewed the effectiveness of interventions with high-risk heterosexual adults. Seventeen of the studies identified included samples of African Americans of 55% or more, and three studies included Hispanics as the majority of the sample. Overall, meta-analysis of 30 articles found a small but significant positive effect of the interventions on condom use.
- Neumann et al. (2002) also reviewed interventions for heterosexual adults but included US-based studies only. All but one of the studies they identified had also been included by Logan and colleagues (2003). They included 10 studies in a meta-analysis (all of which recruited mixed populations and ethnicities) resulting in an OR of 0.81 (95% CI: 0.69-0.95), indicating that HIV risk-reduction interventions were associated with “significant and modest” effects on unsafe sexual behaviours.
- Johnson-Masotti et al. (2003) (cost-effectiveness review) reviewed interventions for people with severe and persistent mental illness. They included two studies (Otto-Salaj et al., 2001; Susser et al., 1998) where more than 50% of the sample comprised African Americans. Both studies examined small-group cognitive-behavioural skills training. Otto-Salaj et al. (2001) included both men and women, with women showing greater changes across a range of sexual risk behaviours compared to the men who showed a significant change in HIV risk knowledge only. Susser et al. (1998) recruited homeless men and found a decrease in risky sexual behaviours in the men receiving a skills training intervention compared to those receiving an AIDS education programme.

Two reviews (Semaan et al., 2002; van Empelen et al., 2003) focused on HIV prevention interventions for drug users. However, all of the studies included were covered by the other reviews identified for this update and the reviews included in the previous Evidence Briefing.

Overall there were a number of studies that have examined interventions for heterosexual adult populations, including samples from BME groups. However, no review was identified which specifically focused on BME groups and, therefore, it is difficult to draw conclusions about the effectiveness of group-level interventions for BME heterosexual adults.

**New evidence statement: There is tentative review-level evidence to conclude that group-level interventions may have a modest effect on influencing the sexual risk behaviour of BME heterosexual adults.**

### 5.4.2.3 Community-level intervention

In addition, to the five studies of community-level interventions included in the previous Evidence Briefing, five studies included across four reviews (Elwy et al., 2002; Albarracin et al., 2005; Neumann et al., 2002; Mullen et al., 2002) were identified for this update.

- Elwy et al. (2002) included two RCTs (O'Donnell et al. 1995; Solomon and DeJong, 1989), which examined the effectiveness of video-based education delivered to BME groups attending an STI clinic (O'Donnell et al., 1995 specifically targeted African American and Hispanic populations). Intentions to use condoms increased in the intervention groups in both studies.
- Mullen et al. (2002) included a single community-level study (Sellers et al., 1994) that examined condom distribution to Latino adolescents. Participants receiving the intervention reported a non-significant reduction in the number of sexual partners.
- Merzel and D'Afflitti (2003) examined community-based prevention programmes including 11 HIV prevention programmes, three of which were targeted at BME groups (Galbraith et al., 1996; Lauby et al., 2000; Sikkema et al., 2000). Sikkema et al. (2000) examined workshops conducted by opinion leaders with women in a housing development project and found significant increases in condom use, but no effect on the frequency of unprotected intercourse. Lauby et al. (2000) examined education by peer outreach workers in the community, peer-led workshops and the use of role model stories as part of the Women and Infants Demonstration Projects conducted across four communities. They found significant intervention effects for condom use with main partners, but no impact on use with 'other' partners. Galbraith et al., (1996) examined the Focus on Kids project, which included weekly small-group educational sessions focusing on decision-making skills in an urban African American community. There were higher rates of condom use and intention to use condoms in the intervention group compared with adolescents in the study's control arm.
- Albarracin et al. (2005) and Neumann et al. (2002) also included studies of community-level interventions (Deren et al., 1995; Lauby et al., 2000). However, few details of these studies were available or they were covered by the other reviews.

The studies identified for this update include adolescents and male heterosexuals and so build on the conclusions drawn in the previous Evidence Briefing about community-level interventions for BME women. However, in the reviews that did assess the quality of the identified studies, the quality was judged to be low and so the conclusions drawn are tentative.

**Changed evidence statement: There is tentative review-level evidence to conclude that community-level interventions may have an effect on the sexual risk behaviour of BME groups including women, adolescents and heterosexual males.**

#### **5.4.2.4 Socio-political intervention**

None of the reviews identified for the update included studies of socio-political interventions for BME groups.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence either to support or discount the effectiveness of any socio-political level interventions in influencing the sexual risk behaviours of BME groups.**

#### **5.4.2.5 Overall conclusions of the reviews regarding BME groups**

None of the identified reviews drew any specific conclusions about interventions delivered to BME groups. The majority of the reviews focused on other populations (for example, adolescents or heterosexual males) that included samples of BME groups.

#### **5.4.2.6 Culturally grounded interventions**

Wilson and Miller (2003) reviewed 17 studies of interventions that explicitly sought to address cultural concepts. They identified two primary strategies that were used to integrate the concept of culture into prevention research: (1) attending to intervention presentation which primarily focused on the visual and audible characteristics, and (2) attending to intervention content which involved embedding cultural concepts into the design of intervention activities and messages. Some intervention design used a combination of these two strategies.

Six of the studies reviewed aimed to assess whether culturally grounded strategies enhanced intervention effectiveness. Matching facilitators' race and ethnicity to those of the participants appeared to have little extra effect on reducing HIV risk behaviours, but one study found that a culturally specific intervention was more useful in increasing knowledge about AIDS for a subgroup of participants. Four studies examined the difference between the use of a combination of the two strategies and the use of culturally dissimilar materials. Two studies examined culturally specific videos, both found that participants responded better to the culturally specific video compared to culturally unspecific material. Wilson and Miller (2003) reported that more studies were needed that examined the impacts of culture on the effectiveness of HIV prevention programmes.

Wilson and Miller (2003) concluded "in sum, these studies remind us that it is perhaps most important to focus on understanding and integrating cultural concepts into the intervention content, rather than rely exclusively on attending to presentation strategies. These studies also highlight the importance of

examining assumptions regarding what are salient cultural referents to any one group before designing an intervention program” (p.191).

**New evidence statement: There is tentative review-level evidence to conclude that culturally grounded interventions have an effect on the sexual risk behaviour of BME groups.**

#### **5.4.2.7 Inequalities**

None of the reviews presented any data about the effectiveness of interventions addressing inequalities in sexual health.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence either to support or discount the effectiveness of interventions in addressing inequalities in sexual health for BME groups.**

#### **5.4.2.8 Cost-effectiveness**

Three reviews were identified which presented data on the cost-effectiveness of interventions for BME groups. These findings are presented in section 6.1.4. The original Evidence briefing found no review-level evidence regarding cost-effectiveness for BME groups.

**Changed evidence statement: There is insufficient review-level evidence to support or discount that HIV prevention interventions aimed at BME groups are cost-effective.**

## **5.5 Voluntary counselling and testing (VCT)**

VCT includes a range of interventions, described in Section 2.4 (Conceptual Framework).

### **5.5.1 The reviews**

Eight review papers were identified that met the appraisal criteria including two Category 1 reviews (Elwy et al., 2002; Vidanapathirana et al., 2005), which are of some relevance to HIV voluntary counselling and testing:

**Category 1:** Elwy et al., 2002; Vidanapathirana et al., 2005

**Category 2:** Albarracin et al., 2005; Neumann et al., 2002; Semaan et al., 2002; Van Empelen et al., 2003; Weinhardt, 2005.

**Category 3:** Kelly and Kalichman, 2002

Only one of the included reviews (Weinhardt, 2005) specifically examined the impact of HIV VCT on sexual health behaviour. This review was an update of Weinhardt et al. (1999), which was included in the previous Evidence Briefing. The other reviews included primary studies relevant to VCT across a number of different populations. Vidanapathirana et al. (2005) examined mass media interventions to promote the uptake of VCT.

### **Outcomes**

The reviews reported here do not include any findings on health promotion outcomes/intervention impact measures (e.g. knowledge, skills), only intermediate health outcomes (behavioural change).

### **5.5.2 The findings**

#### **5.5.2.1 Men who have sex with men (MSM)**

Two reviews (Vidanapathirana et al., 2005, Weinhardt et al., 2005) included studies of VCT with MSM.

- Vidanapathirana et al. (2005) included a study by McOwan (2002) that examined the effects of a multimedia intervention (including posters, tabloid newspapers and leaflets) targeted at gay and bisexual men. The intervention had a positive effect on the uptake of HIV testing.
- Weinhardt et al. (2005) covered one additional study (Colfax et al., 2002) to those included in the previous Evidence Briefing. The study examined sexual risk behaviour in HIV-positive individuals during early seroconversion. The sample showed reductions in unprotected insertive and receptive anal intercourse with HIV-negative and unknown individuals following receipt of a HIV-positive test.

The previous Evidence Briefing found that there was conflicting evidence on the effectiveness of HIV VCT in influencing the sexual risk behaviours of MSM. Although this update has identified additional positive evidence in this area, it is insufficient to affect the conclusions drawn by Ellis et al. (2003).

**Evidence statement: No change from Ellis et al. (2003). There is insufficient review-level evidence to either support or discount the effectiveness of HIV VCT in influencing the sexual risk behaviours of MSM, regardless of whether they test sero-positive or sero-negative.**

**New evidence statement: There is tentative review-level evidence to support the effectiveness of mass media interventions in influencing the uptake of HIV VCT in groups of MSM.**

### 5.5.2.2 Injecting drug users (IDUs)

Three reviews (Semaan et al., 2002; van Empelen et al., 2003; Weinhardt, 2005) included a total of five additional studies that were relevant to VCT with injecting drug users. None of the reviews examined VCT interventions as a group so details of the individual studies are reported here.

- Deren et al. (1998) compared sexual risk behaviours in HIV-positive and HIV-negative injectors and crack users. There was a reduction in unprotected sex acts across all groups but a greater reduction was seen in seropositive individuals.
- Gibson et al. (1999) examined two interventions: (1) heroin users were randomised to either HIV counselling and testing with 50 minutes post test counselling, problem solving and condom use demonstration, or to receive an educational brochure; and (2) injecting drug users were randomised to receive HIV counselling and testing with 50 minutes post test counselling or the HIV counselling and testing (CT) plus problem solving and condom use demonstration. No differences were seen between any of the groups at 6- and 12-month follow-up, and as noted by Van Empelen et al. "no significant reductions in condom use were reported for the overall sample" (p.1600).
- Three of the studies (Cottler et al., 1998; Kotranski et al. 1998; McCoy et al., 1998) included a standard HIV CT programme compared to an enhanced programme. Kotranski et al. (1998) randomly assigned participants to the standard programme or an enhanced intervention aimed specifically at STI reduction, providing STI information, personalising STI risk, promoting condom use, and discussing barriers and strategies; Cottler et al. (1998) randomly assigned drug users to a standard two-session HIV CT programme or the standard programme plus an additional four two-hour sessions of peer-delivered intervention focused on AIDS, stress management, drug awareness and reduction of high-risk sexual behaviour; and McCoy and colleagues (1998) randomly assigned female African American drug users to groups receiving a standard HIV CT

intervention or an enhanced intervention, which combined the HIV CT with additional small-group sessions. Overall, there was no difference found between the standard and enhanced groups in terms of sexual behaviour, with the exception of the study by McCoy and colleagues (1998), although van Empelen et al. (2003) described the difference as only “marginally significant”.

The previous Evidence Briefing identified five reviews that included 15 studies involving HIV VCT with IDUs. These reviews presented some evidence that HIV VCT can be effective in influencing the sexual behaviours of some IDUs, in particular those who learn that they are seropositive. Overall, the studies identified for the update do not provide any evidence that enhanced VCT programmes are more effective than standard VCT programmes.

**Evidence statement: No change from Ellis et al. (2003). There is tentative review-level evidence to conclude that HIV VCT can be effective in influencing the sexual behaviours of some IDUs, in particular those who learnt that they were seropositive.**

### 5.5.2.3 Women and heterosexual couples

Two reviews (Albarracin et al., 2005; Weinhardt, 2005) included a total of two studies that were not covered by the reviews included in the previous HIV evidence briefing. No details were available regarding the study (Flaskerud et al., 1997) included in Albarracin et al. (2005). The study included in the review by Weinhardt (2005), (Roth et al., 2001) was based on a sample from studies in Rwandan women included previously (Allen et al., 1992a; Allen et al., 1992b; Allen, 1993). The study found increased rates of condom use in serodiscordant couples and the effect was most pronounced in couples where the man was positive and had not been tested before. This finding is consistent with the review-level evidence presented in the previous Evidence Briefing.

**Evidence statement: No change from Ellis et al. (2003). There is sufficient review-level evidence to conclude that HIV VCT can be effective in influencing the sexual risk behaviours of couples who learn that they are sero-discordant for HIV.**

Vidanapathirana et al. (2005) examined four studies of mass media interventions targeted at women to promote the uptake of testing. The following interventions were examined across the four studies: two types of educational programmes (participatory education and didactic education with skill training) (Amero et al., 2001); two “gain-framed” (i.e. adopting safer sexual behaviours would result in healthier outcomes) and two “loss-framed” (i.e. continuing to take risks would result in a reduction of sexual health) videos (Apanovitch et al., 2003); and leaflets including HIV information (Simpson et al., 1998; 1999). All of the studies reported that the interventions were effective in promoting the uptake of HIV testing.

**New evidence statement: There is sufficient review-level evidence to conclude that mass media interventions can be effective in influencing the uptake of HIV VCT in women.**

#### **5.5.2.4 Heterosexual men**

One review (Elwy et al., 2002), which specifically focused on HIV prevention in heterosexual men, included two studies that examined the effectiveness of VCT and were not included in the previous Evidence Briefing. One of the studies was concerned with STI clinic attendees and is discussed in section 5.5.2.6. The other study (Jackson et al., 1997) comprised an on-site clinic providing counselling and HIV testing, and individual skills sessions in condom negotiation, demonstration and promotion, and HIV/STI risk reduction for transport workers in Mombasa, Kenya. The authors reported a significant intervention effect on lowering STI incidence and decreasing the number of sex partners of these men. There was no change in condom use.

In the previous Evidence Briefing, Ellis et al. (2003) identified review-level evidence to support the conclusion that HIV VCT in addition to other components can be effective in influencing sexual risk behaviours in heterosexual men who learn that they are seropositive. There is insufficient review-level evidence available from this update to draw further conclusions on the effectiveness of VCT for heterosexual men.

**Evidence statement: No change from Ellis et al. (2003). There is tentative review-level evidence to conclude that HIV VCT plus another component (for example, offering referrals to other services) can be effective in influencing sexual risk behaviours in heterosexual men who learn that they are seropositive.**

#### **5.5.2.5 Commercial sex workers**

There were no additional studies identified in the included reviews that were relevant to HIV VCT in populations of commercial sex workers. Three studies on CSW were included in the previous Evidence Briefing, but there was insufficient review-level evidence to draw any conclusions.

- Vidanapathirana et al. (2005) included a study, which although it targeted the general public, assessed the effects of the intervention (HIV testing uptake) on CSWs. The intervention was a nationwide multimedia AIDS educational campaign. The study used an interrupted time series design and found a positive change in HIV testing initially but this declined over time to less than the initial value.

**Evidence statement: No change from Ellis et al. (2003). There is insufficient review-level evidence either to support or discount the effectiveness of HIV VCT in influencing the HIV sexual risk behaviours of CSWs.**

**New evidence statement: There is insufficient review-level evidence either to support or discount the effectiveness of mass media interventions on the uptake of HIV VCT among CSWs.**

#### **5.5.2.6 STI clinic attendees**

Two additional studies on STI clinic attendees were covered by three reviews (Albarracin et al., 2005; Elwy et al., 2002; Weinhardt, 2005). One study (Bentley et al., 1998) was included in two reviews and examined counselling (individual sessions providing education and condom use skills) and HIV testing for heterosexual men attending STI clinics in India. Condom use increased, however, there was no change in the number of sex partners reported.

- Weinhardt (2005) included a study (George et al., 1998) that examined rates of STI infection following a positive or negative HIV test at an STI clinic in London. Rates of STI infections were found to have decreased in both HIV-positive and HIV-negative patients. However, this outcome was not consistent with the overall finding by Weinhardt (2005) that the incidence of STIs is increased among HIV-negative participants after VCT.

Ellis et al. (2003) found evidence from a small number of studies that HIV VCT has a beneficial effect for people diagnosed seropositive and that combined interventions may be more effective. The studies identified in this update are consistent with this finding.

**Evidence statement: No change from Ellis et al. (2003). There is tentative review-level evidence to conclude that HIV VCT can be effective in influencing HIV sexual risk behaviours of STI clinic attendees who learn that they are seropositive.**

#### **5.5.2.7 Mixed populations**

One review (Weinhardt, 2005) drew conclusions about the effectiveness of VCT across a variety of settings and populations. As previously stated, this review was an update of the review included in the previous Evidence Briefing (Weinhardt et al., 1999).

- Weinhardt (2005) found that an HIV diagnosis, whether provided to an individual patient or to a couple, significantly reduced the occurrence of unprotected intercourse and reduced the number of sexual partners of individual HIV-positive patients. Significant increases in condom use were

found in couples with at least one partner testing positive for HIV, but not in HIV-positive individuals relative to untested individuals.

Based on the review-level evidence presented in the previous Evidence Briefing there is a growing body of evidence to support the conclusion that HIV VCT can be effective in influencing the sexual risk behaviours of people who learn that they are seropositive.

**Evidence statement: No change from Ellis et al. (2003). There is tentative review-level evidence to conclude that HIV VCT can be effective in influencing the sexual risk behaviours of people who learn that they are seropositive.**

- Vidanapathirana et al. (2005) identified five studies (Beck et al., 1987; Beck et al., 1990; Dwyer et al., 1988; Joshi et al., 1988; Maayan et al., 1989; Tesoriero and Sorin, 1992; Turner and Mutton, 1987) of mass media interventions which aimed to increase the uptake of HIV testing in the general population. All of the studies had an initial positive impact on the uptake of HIV testing. However, in four studies (Beck et al., 1990; Dwyer et al., 1988; Maayan et al., 1989; Tesoriero and Sorin, 1992) the effects of the intervention declined over time and in two studies fell to a value less than recorded prior to the intervention.

**New evidence statement: There is sufficient review-level evidence to conclude that mass media interventions can have an initial positive effect on influencing the uptake of HIV VCT in the general public.**

#### **5.5.2.8 Overall conclusions of the reviews regarding VCT**

Weinhardt (2005) concluded that the results of his review provided “a positive outlook in terms of reducing transmission risk behaviour following an HIV diagnosis” (p.50). However he also commented, “the question of the effect of HIV diagnosis on sexual risk behaviour is not one that can be answered once and laid to rest... [The] effect of the diagnosis is a moving target that depends on the context in which the diagnosis takes place” (p.59).

In their review of the evidence, Kelly and Kalichman (2002) concluded, “voluntary HIV counseling and testing appears partially successful as an HIV prevention strategy in western countries. Infected individuals and those in serodiscordant relationships reduce their risk behavior following testing, although meta-analysis shows limited behavior-change effects produced by counseling and testing among those who learn they are uninfected” (p.628).

Vidanapathirana et al. (2005) concluded “mass media interventions can have immediate and overall effects in promotion of HIV testing” (p.1). However they also noted that no long-term effects were shown and that the intervention did not have a significant impact on detecting seropositive status.

For some of the priority groups, for example CSWs, it is still not possible to draw conclusions about the effectiveness of HIV VCT because of a lack of review-level evidence. On the whole, very few further studies of HIV VCT were identified for this update that had not been covered in the previous Evidence Briefing.

#### **5.5.2.9 Inequalities**

None of the reviews identified presented any data about the effectiveness of HIV VCT in addressing inequalities in sexual health.

**Evidence statement: No change from Ellis et al. (2003). There is no review-level evidence to support or discount the effectiveness of HIV VCT in addressing inequalities in sexual health**

#### **5.5.2.10 Cost-effectiveness**

One review (Farnham et al., 2002) presented data on the cost-effectiveness of HIV counselling and testing. The results of this review are present in section 6.1.7.

**New Evidence statement: There is insufficient review-level evidence to support or discount that HIV counselling and testing interventions are cost-effective.**

## 6 Cost-Effectiveness

### 6.1.1 *The reviews*

Five reviews of the cost-effectiveness of HIV prevention interventions were identified that met the appraisal criteria:

**Category 1:** No evidence

**Category 2:** Farnham et al., 2002; Pinkerton, et al., 2002a

**Category 3:** Johnson-Masotti, et al., 2002; Pinkerton, et al., 2002b; Pinkerton and Holtgrave, 2002

The reviews reported on a number of different populations. Three reviews (Pinkerton et al., 2002a; Pinkerton et al., 2002b; Pinkerton and Holtgrave, 2002) included studies relevant to MSM and BME populations. Farnham et al. (2002) reported exclusively on HIV counselling and testing interventions.

### 6.1.2 *The findings*

In the following sections, the evidence from cost-effectiveness reviews is considered according to the priority groups identified: MSM, African, CSW, PWHIV and VCT.

#### 6.1.3 *Men who have sex with men (MSM)*

**Category 1:** No evidence

**Category 2:** Pinkerton et al., 2002a.

**Category 3:** Pinkerton et al., 2002b; Pinkerton and Holtgrave, 2002.

Of the 16 studies included in the review by Pinkerton et al. (2002a), five studies examined the cost-effectiveness of prevention interventions for MSM. The interventions reviewed included a small-group, cognitive behavioural intervention, a safer sex skills-building session added to an educational session, “peer leader” community-level norm change focus, and an intervention comprising risk reduction counselling, peer education and HIV testing. All of the studies used cost-utility analysis and found that the interventions were cost-saving to society.

The review by Pinkerton et al. (2002b) included one additional study, which examined the cost-effectiveness of community mobilisation through the Mpowerment Project. The cost per HIV infection averted was estimated to be between \$9,500 and \$18,300, far less than the lifetime medical costs of treating HIV disease.

The review by Pinkerton and Holtgrave (2002) did not include any additional cost-effectiveness studies. See Table 11, Appendix F for details of the primary studies included.

**New evidence statement: There is tentative review-level evidence to conclude that HIV prevention interventions aimed at MSM are cost-effective, and can be cost-saving.**

#### **6.1.4 African communities in the UK**

**Category 1:** No evidence

**Category 2:** Pinkerton et al., 2002a.

**Category 3:** Pinkerton et al., 2002b; Pinkerton and Holtgrave, 2002.

The review by Pinkerton et al. (2002a) included two studies that examined the cost-effectiveness of HIV prevention interventions, both of which focused on African American populations. The interventions examined were an intensive one-day workshop focusing on knowledge, attitudes and behaviours for adolescent males and free condoms distributed at community locations. The workshop intervention was found to be cost-effective (compared to treatment of HIV disease) when only those youth who reported sexual activity in the previous three months were included in the analysis. Distribution of free condoms was found to be cost-saving compared to the lifetime cost of HIV-related medical care.

The reviews by Pinkerton et al. (2002b) and Pinkerton and Holtgrave (2002) did not include any additional cost-effectiveness studies for this population. See Table 11, Appendix F for details of the primary studies included.

**New evidence statement: There is insufficient review-level evidence to support or discount that HIV prevention interventions aimed at BME groups are cost-effective.**

#### **6.1.5 Commercial sex workers (CSW)**

**Category 1:** no evidence

**Category 2:** no evidence

**Category 3:** Pinkerton and Holtgrave (2002)

The review by Pinkerton and Holtgrave (2002) made reference to a study that assessed the cost-effectiveness of an intervention focused on increasing condom use among CSWs in Nairobi, Kenya. The programme provided free condoms and offered health education counselling. The annual cost per infection averted was estimated to be between \$8 and \$12, which was judged to be less costly than HIV/AIDS medical care (estimated to be between \$100 and \$1600 in Zaire and Tanzania). No reviews were identified that covered cost-effectiveness studies that were relevant to UK populations of CSW.

**New evidence statement: There is no review-level evidence to support or discount that HIV prevention interventions aimed at CSW are cost-effective.**

### **6.1.6 People living with HIV (PWHIV)**

**Category 1:** No evidence

**Category 2:** No evidence

**Category 3:** No evidence

No reviews were identified that included cost-effectiveness studies that are relevant to UK populations of PWHIV.

**New evidence statement: There is no review-level evidence to support or discount that HIV prevention interventions aimed at PWHIV are cost-effective.**

### **6.1.7 HIV voluntary counselling and testing (VCT)**

**Category 1:** No evidence

**Category 2:** Farnham et al., 2002.

**Category 3:** No evidence

Farnham et al. (2002) reviewed 12 studies that examined the cost-effectiveness of HIV counselling and testing (CT) programmes and their effect on sexual behaviour change. See Table 11, Appendix F for details of the primary studies included.

Based on their review, the authors concluded that HIV CT programmes were generally cost-effective, particularly if targeted to groups of infected or high-risk individuals. However, they also noted that there is continuing debate about the effectiveness of HIV CT in changing sexual behaviour and the cost-effectiveness results should be viewed with caution.

**New evidence statement: There is insufficient review-level evidence to support or discount that HIV counselling and testing interventions are cost-effective.**

## 7 Theory-based interventions

### 7.1.1 The reviews

Fifteen reviews (see below) referred to theory prevention interventions however, only 13 (Herbst et al., 2005; Johnson, 2002; Johnson, 2005; Elwy et al., 2002; Robin et al., 2004; Johnson, 2003; Van Empelen et al., 2003; Elkavich et al., 2005; Kelly et al., 2002; Ross et al., 2002; Woltiski et al., 2005; Pedlow & Carey, 2003) provided full information regarding the theoretical basis for each intervention included in the review. The original Evidence Briefing (Ellis et al., 2003) found that none of their Core reviews considered the role of theory in intervention effectiveness. As such all of the evidence statements in this section are new.

**Category 1:** Elwy et al., 2002; Herbst et al., 2005; Johnson, 2002; Johnson, 2005; Johnson, 2003.

**Category 2:** Robin et al., 2004; Van Empelen et al., 2003

**Category 3:** Elkavich et al., 2005; Kelly et al., 2002; Ross and Williams, 2002; Woltiski et al., 2005; Pedlow and Carey, 2003.

### Findings

Summaries of the theories utilised in the studies can be found in Appendix A. Table 12 contains details of the primary studies and theoretical approaches used.

#### 7.1.1.1 Men who have sex with men (MSM)

Twenty-four studies, in four Category 1 and 2 reviews (Herbst et al., 2005; Johnson, 2002; Johnson, 2005; Johnson, 2003), examined theoretically based interventions for MSM. Diffusion of innovations and relapse-prevention were the most frequently used single theoretical frameworks for prevention interventions targeting MSM, however, studies were most likely to use more than one theory to underpin their intervention (see Table 12, in Appendix F).

Johnson et al. (2002) stated that “interventions that include interpersonal skills training produced the most clearly favourable effects on unprotected sex” (S112). The effects of interpersonal skills training were also raised in Johnson et al. (2003). Findings in Herbst et al. (2005) (22 studies), showed positive and significant reductions in UAI in those interventions reporting any theoretical base. They also reported greater significant reductions in UAI risk in the intervention groups of studies based on the diffusion of innovations theory (OR = 0.62; 95% CI: 0.47-0.83) and those based upon the relapse prevention model (OR = 0.60; 95% CI: 0.47-0.78). However, findings showed no significant difference in control and comparison groups for those interventions underpinned by social learning theory (OR = 0.60; 95% CI: 0.33-1.09) or other behavioural theories (OR = 0.73; 95% CI: 0.45-1.20).

**New evidence statement: There is tentative review-level evidence to conclude that interventions based upon theoretical models, and in particular diffusion of innovations and the model of relapse prevention, are effective in influencing the sexual risk behaviours of MSM.**

#### **7.1.1.2 People with HIV (PWHIV)**

Herbst et al. (2005) Johnson et al. (2005) and Woltiski et al., (2005) all refer to one study (Kelly et al., 1993) with a theoretical framework that included men living with HIV. The authors did not make any specific conclusions regarding theoretically based intervention and PWHIV.

Elkavich et al. (2005), also refer to four additional studies relevant to PWHIV. Three studies by Rotheram-Borus et al. (2001a; 2001b in press)\*, involved the use of social action model intervention aimed at young people. All three studies yielded significant and positive results. Elkavich et al. (2005) also reported the results of a study based upon the use of multiple theories (Butler et al., 2003), aimed at young HIV positive haemophiliacs which showed significant pre- to post-test increases in safer sexual practices.

Kelly et al. (2002) describes one relevant study by Kalichman (2000), which used a cognitive-behavioural intervention, including risk-reduction, aimed at PWHIV to reduce HIV transmission. Findings showed that the five session health maintenance intervention support displayed significantly lower rates of unprotected intercourse and greater condom use at follow up.

Woltiski et al. (2005) describes one relevant study by Kalichman (2001), which used a social-cognitive intervention, including motivational enhancement. After six months, findings showed that those who received the intervention significantly reduced unprotected sex and increased condom use with negative or unknown sero-status partners.

**New evidence statement: There is tentative review-level evidence to conclude that theoretically based interventions can be effective in influencing the sexual risk behaviours of PWHIV.**

#### **7.1.1.3 African communities in the UK**

Two reviews (Elwy et al., 2002; Robin et al., 2004) referred to 17 theory based interventions. A further nine relevant studies were referred to by Wilson and Miller (2003). However these authors failed to clearly specify the theory that underpinned each study.

Elwy et al. (2002) reported that overall, studies reported mixed results. Kalichman (1999) used motivational interviewing with inner-city black men and reported significant positive changes in sexual

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\* Rotheram-Borus et al., (2001a) and (2001b) is also referred to in Woltiski et al., (2005).

communication (including discussions about AIDS), unprotected sex, and sexual negotiation. Kalichman (1997) used cognitive-behavioural skills in another intervention targeting black men. However, this study found no difference between the control and comparison groups. O'Donnell (1995) used theory of reasoned action and social learning theory in a video based intervention which resulted in those exposed to the video redeeming more condom vouchers than those not exposed. Stanton (1998) examined an intervention with Namibian adolescents based upon risk reduction. There was a significant increase in the intervention group for condom use, discussion of sexual history, risk-behaviour with sexual partner and higher self-efficacy for finding condoms when needed. St Lawrence (1995) reported that behavioural skills training for black adolescents resulted in reduced frequency of unprotected sex.

Robin et al. (2004) reported on 11 studies; five used multiple theories and produced positive results. Three studies produced null results and three produced negative results.

Robin et al. (2004) stated that, "many interventions were based on a combination of theories. Social-cognitive theories, the Health Belief Model, social learning theories and social influence theories were applied most often. No clear patterns emerged in study methods, year of publication, intervention content or duration with respect to the theory guiding interventions" (p.17).

**New evidence statement: There is insufficient review-level evidence to either support or discount the conclusion that theoretically based interventions can be effective in influencing the sexual risk behaviours of BME groups.**

#### **7.1.1.4 Drug users**

Three reviews (Elwy et al., 2002; Van Empelen et al., 2003; Woltiski et al., 2005) included 18 theory driven intervention studies aimed at drug users.

Elwy et al. (2002) reported on two RCTs. The first (Baker et al., 1994) was carried out in Australia and involved motivational interviewing with non-treatment seeking injecting drug users (IDU). This study had no effect on changing risk behaviour at either three or six month follow-up. The second study (Malow et al., 1994) incorporated culturally sensitive HIV risk-reduction interventions. The findings showed that rates of multiple partners fell and higher self-efficacy, sexual communication skills and condom use skills were reported in the intervention group. Mixed findings were reported from studies investigating both theory based and non-theory based interventions.

Van Empelen et al. (2003) reported on 15 theory driven interventions aimed at reducing the sexual risk of drug users. Of these studies, only five reported changes in behaviour (such as condom use and number of sexual partners), or condom use skills. However, in general, most studies reported a reduction in unsafe sexual behaviours for both intervention and comparison groups. Theories most

often used in these interventions were the Health Belief Model, theory of reasoned action, social-cognitive theory, or theoretical frameworks such as the transtheoretical model ('stages of change'). The authors concluded that, "the findings show that the programmes that are likely to be successful use multiple theories and methods" (p.1605).

Woltiski et al. (2005) reported the results of one theoretically underpinned intervention (Margolin et al., 2003). HIV positive IDUs were randomised to receive interventions including risk-reduction. Those included in the intervention group were less likely to engage in risky sexual and drug use behaviours at follow-up.

**New evidence statement: There is tentative review-level evidence to conclude that multiple theory-based interventions can be effective in influencing the sexual risk behaviours of drug users.**

#### **7.1.1.5 Commercial sex workers (CSWs)**

Herbst et al. (2005) reported on one theory-based intervention for CSWs (Miller et al., 1998). This intervention used popular opinion leaders to deliver HIV prevention messages to CSWs and potential clients in a community setting in conjunction with the diffusion of innovations theory. However, this intervention yielded a non-significant result.

Ross and Williams (2002) included two successful interventions based upon the diffusion of innovations (Hananberg et al., 1994; Ngugi et al., 1996). Ross and Williams (2002) stated the importance of using a theoretical as well as a rigorous scientific methodology. They also emphasised the importance of changing social norms through the use of community opinion leaders, role models, and peer educators and intervention specialists.

**New evidence statement: There is insufficient review-level evidence to either support or discount the conclusion that theoretically based interventions can be effective in influencing the sexual risk behaviours of CSWs.**

#### **7.1.1.6 Young people**

Pedlow and Carey (2003) included 22 studies that were targeted at young people and incorporated theoretical frameworks. Almost all of the reviewed studies used more than one theory. The most frequently used theories were social cognitive theory, the theory of reasoned action, Health Belief Model, and the information-motivation-behavioural skills model. The authors stated that interventions guided by social cognitive theory provided the opportunity for skills acquisition. Interventions guided by the information-motivation-behavioural skills model provided behavioural skills components that addressed risk-reduction, behavioural self-management and cognitive strategies for implementing risk-reduction behaviour.

**New evidence statement: There is insufficient review-level evidence to either support or discount the conclusion that theoretically based interventions can be effective in influencing the sexual risk behaviours of young people.**

#### **7.1.1.7 Other populations**

Ross et al. (2002) included two studies with theory-based interventions. Santelli et al. (1995) reported on a social learning theory based community intervention aimed at preventing perinatal HIV transmission by preventing transmission to women. This study showed increased condom use in both the intervention and comparison communities however condom use was greater in the intervention community. The study reported on by the CDC (1999) entailed a social learning-theory based media intervention aimed at the general population that, supporting the diffusion of innovations theory, reached not only the intervention groups but also the wider communities.

**New evidence statement: There is insufficient review-level evidence to either support or discount the conclusion that theoretically based interventions can be effective in influencing the sexual risk behaviours of general populations.**

## 8 Discussion

- What works to reduce the sexual risk of HIV transmission among the priority populations in the UK? What works to change the modifying factors that influence sexual risk behaviours for HIV transmission?
- Are theory-based interventions more likely to be effective?
- Are multi-component interventions more likely to be effective?
- What works to reduce inequalities in sexual risk for HIV transmission?
- What interventions are cost-effective?

### 8.1 What works to reduce the sexual risk of HIV transmission among the priority populations? What works to change the modifying factors that influence sexual risk behaviour for HIV transmission?

The original Evidence Briefing found limited information regarding the effects of HIV prevention intervention approaches on the modifying factors that influence sexual risk behaviour. The literature identified for this update has included modifying factors such as 'health literacy' (e.g. knowledge, attitudes, skills, self-efficacy etc.) as evidence of effectiveness. Findings showed that six reviews reported effects on modifying factors (Elwy, 2002; Albarracin, 2005; Johnson, 2002; Johnson B.T., 2003; van Empelen, 2003; Rees et al, 2004), although one found ineffective results (van Empelen, 2003) and one found unclear results (Rees et al., 2004). The majority of the modifying factors that were evaluated as outcomes were in interventions aimed at MSM, heterosexual males and adolescent populations<sup>1</sup>. However, overall a clear pattern of which interventions were effective in addressing health promotion outcomes did not emerge across the priority populations. It is important to note that reviews included in this update have excluded studies on the basis that they have not reported behavioural outcomes and although others have reported changes in modifying factors (e.g. increased knowledge or skills) in their outcomes they are primarily considered in conjunction with behavioural outcomes, such as condom use, and health outcomes, such as HIV incidence.

Some reviews have included intermediate health outcomes (e.g. behaviour) and health promotion/intervention impact measures and authors have provided differing views on personal modifying factors as outcomes (e.g. knowledge or skills). Rees et al. (2004) stated in their conclusions that modifying factors are not considered to be reliable due to the fact that sound evaluations of these types of interventions are lacking. Others have argued that future research ought to include modifying factors in conjunction with health outcomes (e.g. incidence of infection) in order to be clear on the

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<sup>1</sup> They have been included in this evidence briefing update only where they overlap with the target populations under examination.

effectiveness of the intervention (Elwy et al., 2002). However, calls to evaluate intervention impact at a psychosocial level remain (van Empelen et al., 2003; Robin et al., 2004).

## **8.2 The role of theory in intervention effectiveness**

Section 7 addressed the studies that have used theoretical frameworks to underpin their interventions. The results show that diffusion of innovations (MSM and CSWs) and relapse prevention theories (MSM) were effective in reducing risky sexual behaviour. However, the majority of effective theory-based interventions tended to use more than one theory. Nevertheless, there was no clear pattern to the effectiveness of the methods used.

The original Evidence Briefing supported the use of theoretically based prevention interventions (Ellis et al., 2003) and this view has been heavily supported throughout the HIV prevention literature. However, weaknesses are clear to see and it was often the case that no rationale was provided for choosing a specific theory and in some cases interventions were based on a theoretical framework but did not clearly report it in the write-up. In addition to this, it has been noted that not only should interventions be based on theory but that they ought to be developed systematically, possibly with the use of Intervention Mapping<sup>2</sup> which may help with the implementation and evaluation of theory driven interventions (van Empelen et al., 2003).

## **8.3 Multi-component interventions**

The evidence identified for this update found nothing to support or discount the view that multi-component interventions are more effective at preventing HIV through sexual transmission than other, single component interventions.

Two studies by Johnson et al. (2002, 2003) call for more rigorous evaluations of HIV prevention efforts to ascertain with confidence the effects of specific intervention components. This was also the conclusion of the previous evidence briefing. Neumann et al. (2002) called for future studies to include component analysis, report all outcome data related to a study's hypotheses, avoid aggregate indices to measure sexual risk and report important descriptive variables. We support these views.

## **8.4 Inequalities**

The evidence identified for this update found no interventions that addressed the issue of inequality relevant to the UK populations. Thus there has been no change from the original evidence briefing where a lack of interventions addressing relevant socio-economic inequalities was also found.

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<sup>2</sup> A framework for health education intervention development.

Rees et al. (2004) reported the need for future studies concerning interventions with MSM to focus upon the views of all groups of MSM, in particular young MSM, working class MSM, black minority ethnic MSM, disabled MSM, and other vulnerable MSM groups. However, we would maintain that future studies concerning inequalities ought to be considered for all of the UK priority populations.

## **8.5 Cost-effectiveness**

This update includes five studies containing cost-effectiveness evidence. These studies addressed three out of the four priority populations and VCT. However, tentative level evidence was only found for one priority population (MSM) and insufficient level evidence was found for two others (BME, VCT).

From this evidence we can tentatively conclude that small-group, cognitive-behavioural interventions, skills building sessions, peer-education and HIV testing as well as risk-reduction counselling and community peer led interventions can be cost-effective and cost-saving when aimed at MSM. Further studies are needed to add to the existing evidence base for BME and VCT before conclusions can be made regarding the cost-effectiveness of workshops (BME) and VCT. One category 3 review also provided information on the cost-effectiveness of condom distribution schemes and health education counselling for CSWs. However, further Category 1 or 2 evidence are required before conclusions of effectiveness can be made.

Although progress has been made since the original evidence briefing it is clear that further reviews on cost-effectiveness relevant to the UK priority populations are required. Areas have been specifically highlighted in the literature for further study: Vidanapathirana et al. (2005) stated that “Additional research would identify the cost-effectiveness, type of mass media interventions, and characteristics of messages in mass media to promote HIV testing” (p10). Matthews et al. (2002) state that, “the costs and potential harms of partner notification need to be measured and compared” (p299).

These findings show that there are gaps in the evidence for not only the cost-effectiveness of intervention methods but also for the cost-effectiveness of interventions relative to each of the priority populations considered here.

## **8.6 Methodological issues**

One of the main recommendations of the reviews included in this update was to improve the amount, design and methodological rigour of studies assessing interventions (Pedlow and Carey, 2003; Rees et al., 2004; Elwy et al., 2002; Johnson et al., 2003; Johnson et al., 2002; Logan et al., 2002; Neumann, 2002; Robin et al., 2004; Semann et al., 2002; van Empelen et al., 2003; Weinhardt, 2005) and most studies referred to the need for further randomised controlled trials. However, Elwy et al. (2002) recognised the contribution that study designs other than RCTs (e.g. qualitative design) can

make to the evidence base. Other published work has gone one step further and argued that RCTs are an inappropriate method for evaluating health promotion interventions (Kippax, 1998). However, Elwy et al. (2002) remain cautious regarding non-RCTs and states that “the effectiveness of these interventions requires further rigorous evaluation before widespread implementation” (p1829).

The main methodological limitations reported in the reviews concerned small sample sizes. Weinhardt (2005) reported that effect sizes could not be discerned for each intervention due to limited information. In their meta-analysis, Neuman et al. (2002) found that there were too few studies with which to determine the specific characteristics of the interventions that had produced significant protective results. Albarracin et al. (2005) reported inconsistent findings between their fixed and random effects meta-analyses. They recommended that future research should aim to provide a sufficiently large number of effect sizes to estimate the population variance more precisely, thereby reconciling the discrepancies between the fixed and random effect findings. Elwy et al. (2002) hold the view that “studies should have the statistical power to demonstrate effectiveness, and this should be calculated prior to research being funded and implemented” (p1829).

Following on from these points, Rees et al. (2004) emphasises not only the need for studies to be conducted rigorously, but also the need for research to be rigorously reported. Several reviews were limited in their analyses or conclusions because the primary studies assessed did not report all of the available evidence that was required for inclusion in the review or meta-analysis. Logan et al. (2002) called for future research to be more standardised in its reporting of intervention results and Neumann et al. (2002) hold the view that journals ought to allow more space for the results of reviews to be reported comprehensively. They also stated that information that cannot fit into a journal should be widely available on a website, the URL of which should be included in the journal article. Currently this is the practice of some journals (e.g. British Medical Journal) but not all.

## **8.7 Limitations, inconsistencies and gaps in the evidence**

The findings of this update show many of the same limitations, inconsistencies and gaps as the original Evidence Briefing. The main issues we found with the current review level evidence are stated below. For implications of the limitations, inconsistencies and gaps in the evidence see the policy and practice recommendations section (9) and the research recommendations section (10).

There was a dearth of UK-based evidence on intervention effectiveness. Thus, one of the main limitation we found was the lack generalisability to the UK population as so few studies included in the reviews took place in the UK.

We found that much of the literature included in the reviews focused upon MSM and BME groups, with only very little review-level evidence concentrating on CSWs and people with HIV. However, there have been improvements in the evidence available for people with HIV since the first evidence

briefing, where no review-level evidence was found. Nevertheless, there is a distinct lack of secondary research focusing upon interventions with either male or female CSWs.

Following on from the previous point there was a lack of evidence reported for individual and group level interventions for CSWs and very little evidence reported at the community level for people with HIV. There were also a few studies that we were unable to categorise by intervention level because full details of the studies were not available in the reviews.

We found no evidence relating to the impact of interventions on inequalities or interventions addressing socio-political issues. In particular, there was a lack of evidence addressing the impact of interventions on socio-economic status and on vulnerable groups.

## **8.8 Men who have sex with men (MSM)**

Based on the review level evidence identified, there were insufficient results to make conclusions regarding the effectiveness of community level interventions for MSM. Kegeles and Hart (1998; cited in Johnson et al., 2003) note that “community-based interventions have the capacity to reach people who would not participate in facility-based interventions, and who may be at higher risk than many who enrol in small group or individual level interventions” (p.2). Positive findings have been reported regarding peer-led community interventions, however, more evidence is needed on the effective components of community level interventions.

There is a lack of evidence, and hence the potential for future research to focus upon newly identified predictors of increased sexual risk behaviour among MSM relating to: HIV treatment optimism, social norms regarding intentional unsafe sexual practices, and use of the internet to solicit sexual partners (Herbst et al., 2005). Rees et al. (2004) noted that no review has synthesised the effects of interventions using the primary outcome of serodiscordant or unknown status unprotected anal intercourse.

We found no reviews that incorporated studies addressing inequalities or socio-political related interventions. Rees et al. (2004) reported the need for future studies concerning interventions with MSM to focus upon the views of all groups of MSM, in particular young MSM, working class MSM, black minority ethnic MSM, disabled MSM, and other vulnerable MSM groups.

Even though several Category 1 and 2 reviews incorporated studies of interventions focusing on MSM we found few studies that had been conducted in UK populations. Almost all of the reviews examined for MSM contained studies from outside the UK, with the exception of Rees et al. (2004). More studies of interventions targeted at UK-based populations of MSM are urgently required.

## **8.9 Commercial sex workers (CSWs)**

There was tentative review level evidence to conclude that community level interventions can affect the sexual risk behaviours of CSWs and their patrons. However, insufficient evidence was found to support or discount the effectiveness of individual or group level interventions. Once again the studies reported were carried out in countries other than the UK (including Thailand) and as such their findings may be of limited relevance to UK-based populations of CSWs. As CSWs are considered a priority population and at a high-risk for sexual transmission of HIV, it is crucial that further research is undertaken to determine which interventions are effective in this population. In addition to the gaps reported in the original Evidence Briefing (Ellis et al., 2003), Logan et al. (2002) noted that future research in this population should include an understanding of coping styles, social support needs, problem-solving skills, and promotion of health practices, possibly through the use of cognitive-behavioural therapy.

Miller et al. (1998; description in Herbst et al., 2005) carried out a peer-led intervention with male CSWs, the findings showing that the intervention had no effect on the risk behaviour of patrons or CSWs. However, this intervention was carried out in the US, took place in a bar and may represent a significantly different culture to the UK's male CSW population and patron population. Rees et al. (2004) reported several qualitative studies with male sex workers that aimed to elicit sexual health needs (not reported in this update due to their low quality). The results showed that male CSWs were frequently involved in risky sexual behaviour, were involved with drugs, and felt a lack of control over their lives. Men interviewed suggested that outreach, counselling and befriending networks would be welcome. Based on these findings, research should be carried out in UK-based populations of male CSWs to determine if community-based interventions are effective.

Limited, moderate-quality evidence has been reported regarding the effectiveness of interventions in the workplace with heterosexual men who potentially frequent sex workers (e.g. truck drivers). None of these studies were relevant to UK populations. However, relevant and rigorous studies with the same focus ought to be carried out in the UK.

## **8.10 People with HIV (PWHIV)**

The evidence identified led us to conclude that there was tentative review-level evidence to support the effectiveness of partner notification and small-group level interventions in influencing the sexual risk behaviours of people living with HIV. The findings of partner notification interventions have been positive. However, Mathews et al. (2002) raised the issue that the harms of partner notification have been poorly investigated. They also stated that "patient education and counselling and provider training are likely to improve partner notification and prevent domestic violence. However, there is no clear evidence to guide decisions about the provision of effective patient education and counselling, and provider training" (p.298).

There was insufficient review-level evidence to support the effectiveness of community-level interventions in influencing the sexual risk behaviour of people living with HIV. One Category 3 review (Fogarty et al., 2001; described in Metsch et al., 2005) aimed at women with HIV included a community-based study involving peer-led condom and contraception promotion. This study (Fogarty et al., 2001) was deemed to be successful because "First, women reported a preference for interacting with HIV-positive peers. Second, there was a close collaboration with case managers and community referral agencies due to the high unmet needs of participants. Third, behaviour change messages were tailored to address current motivations, intentions, and partner characteristics. Finally, intervention messages for the peers were reinforced by medical care providers, and most participants were in care" (p.199). This study, carried out in the US, showed promising results, however, it was limited to African American HIV positive women. Therefore, more research is needed to determine the effectiveness of community-level interventions targeting people living with HIV.

One Category 3 review Padian et al. (1993; description from Kelly et al., 2002) reported on a successful group-level intervention aimed at serodiscordant couples using risk-reduction and condom use modelling. This study used a longitudinal cohort as opposed to a control group design. However, findings suggested positive effects for the intervention. However, no details were provided of the sexual orientation or gender of the population.

We found a lack of evidence related to inequality or that considered issues such as access to services, stigma and discrimination. In addition, none of the studies identified for this update were carried out in the UK, and therefore their transferability to UK-based populations living with HIV may be questionable.

### **8.11 African communities in the UK**

Although our searches uncovered a wide variety of studies that included evidence relating to BME groups, none of the studies included in these reviews were carried out in the UK. We found that there was tentative review-level evidence to conclude that group-level interventions may be effective in influencing the sexual risk behaviour of adolescent BME and community-level interventions may be effective in influencing the sexual risk behaviour of female, adolescent and heterosexual male BME groups. The majority of studies were undertaken in the US and included black African American or Hispanic populations. As such these studies have limited transferability to UK populations of BME groups.

In addition to the gaps identified in the original Evidence Briefing (Ellis et al., 2003) the dearth of evidence to support or discount the effectiveness of individual-level interventions is notable.

Evidence suggests that racial, ethnic and cultural, as well as social norms, may hinder safe sex practices and act as barriers to HIV prevention interventions (Logan et al., 2002). Although studies

including culturally specific interventions have been carried out, none have taken place in the UK. The UK's BME communities differ to those in other countries and may require alternative approaches to those reported in the review-level evidence.

### **8.12 Voluntary counselling and testing (VCT)**

Although we found additional VCT studies to add to the evidence base, there were no findings to compel us to change the evidence statements and conclusions from the original Evidence Briefing (Ellis et al., 2003). We can however, add to them that there is tentative evidence to support the view that mass media interventions are effective in influencing the uptake of VCT for MSM, women, and the general public. However, there was a lack of review-level evidence to support this view for CSWs.

### **8.13 Cost-effectiveness**

This is the first time that cost-effectiveness reviews have been reported in an HIV evidence briefing. The evidence reported in this update led us to state that there was tentative review level evidence to conclude that interventions aimed at MSM populations are effective. The cost-effectiveness reviews included studies aimed at BME groups, CSWs and VCT. However, information on the primary studies was limited and all of the studies included were non-UK based. Nevertheless, all studies reported in this update (section 6) demonstrated that the interventions were cost-effective and may even be cost-saving to society. Based on these findings research should be undertaken on the cost-effectiveness of UK-based interventions.

### **8.14 Theory-based interventions**

This update includes the first attempt to record and collate the theories that underpin interventions for each priority population. Many authors have recommended that future primary studies are designed within a theoretical framework. The evidence identified led to tentative conclusions to support the effectiveness of theory-based interventions for studies aimed at MSM and people with HIV, including injecting drug users. There is additional evidence to support the effectiveness of theory-based interventions for CSWs and BME groups, however, it is insufficient to draw conclusions on. It is likely that other primary studies used theories within their interventions. However, if this is the case it was not clearly reported by either the authors of the primary, or the secondary study.

### **8.15 Limitations of the Evidence Briefing**

This update followed the same methodology as the original Evidence Briefing and therefore has all the same limitations reported in Ellis et al. (2003). In addition to these limitations we add that although all efforts were made to retrieve shortlisted documents we were unable to obtain 11% of the literature, which may have resulted in some relevant articles being missed.

Our most recent category one paper was published in 2005 (Johnson et al.), and the most recent primary studies presented within this level were published in 2004. This updates the existing evidence base of primary studies and reviews by six years. However, the majority of primary studies were published before this date with only 29% of published after 1998 and two studies unpublished\*.

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\* Of those primary studies included in Tables 6-12, Appendix F.

## **9 Implications for policy and practice**

The policy and practice recommendations reported below are based solely on the evidence statements of sufficient or tentative review-level evidence of effectiveness. As such, they consider only the evidence provided and retain the gaps and limitations that have been previously discussed. They ought not to be considered alone but in conjunction with other non-review evidence and other relevant source information. The recommendations provided here should not be considered alone but in addition to those of the original Evidence Briefing (Ellis et al., 2003).

### **9.1 Implications for policy and practice with men who have sex with men (MSM)**

The evidence presented for MSM populations in this update supports the effectiveness of cognitive-behavioural individual-level interventions; cognitive-behavioural group work focusing upon risk-reduction, sexual negotiation and communication skills; peer-related group level interventions; and community-level interventions involving peer and popular opinion leaders. Very few of the interventions reported were carried out within the UK and therefore not all findings may be transferable to the UK's MSM population.

The recommendations for MSM ought to be considered in conjunction with the MSM section of the Discussion (8.8) and the MSM evidence section (5.1). Our recommendations add to those of the original Evidence Briefing. We recommend that future research should:

- Place interventions in relevant theoretical frameworks
- Undertake individual-level cognitive-behavioural interventions, including self-justification, risk-reduction, education, and counselling
- Undertake group-level peer-led interventions, that address, for example, issues of intimacy, relationships, communication skills, coping skills, interpersonal skills, risk-reduction and relapse prevention.

### **9.2 Implications for policy and practice with commercial sex workers (CSWs)**

Our findings show that although there was evidence supporting the effectiveness of peer-led community level interventions for female CSWs in the previous evidence briefing (Ellis et al., 2003), these same methods were not effective when used with male sex workers.

Two Category 3 studies demonstrated effectiveness for peer-led interventions and condom distribution schemes. However, these interventions were not carried out in the UK and may represent different CSW and patron populations to those in the UK. Also, several studies were reported (by Albarracin et al., 2005) but few details were provided and therefore we are unable to make any

practice recommendations. These conclusions should be considered with reference to the CSWs Discussion (8.9) and evidence (5.2) sections.

### **9.3 Implications for policy and practice with people with HIV (PWHIV)**

Based on the evidence identified for people with HIV we made tentative review-level evidence statements supporting the effectiveness of partner notification and small-group level interventions. Very few of the interventions reported were carried out within the UK and therefore not all findings may be transferable to the UK's PWHIV population.

The recommendations for PWHIV should be considered in conjunction with the PWHIV section of the Discussion (8.10) and the PWHIV evidence section (5.3). Our recommendations add to those of the original Evidence Briefing. We recommend that future research should:

- Place interventions in relevant theoretical frameworks
- Undertake partner notification, including the choice between patient or provider referral
- Undertake small-group work, including stress management, HIV coping, and counselling.

### **9.4 Implications for policy and practice with African communities in the UK**

The reviews identified in this update revealed tentative evidence to conclude that group-level interventions may have a modest effect on the sexual risk behaviours of BME heterosexual adults. Tentative review-level evidence was also available to conclude that community-level interventions may be effective for females, adolescents and heterosexual males. However, interventions reported in this update took place outside the UK, primarily in the US with African American, Hispanic and multi-ethnic populations. Given the cultural differences to the UK's African populations (see African section in the Discussion, 8.11) we suggest that these findings are not transferable to the UK's African population, therefore we are unable to make any specific practice recommendations.

These conclusions for African communities in the UK should be considered with reference to the African evidence section (5.4), the discussion and the African section (8.11) in the Discussion for further details.

### **9.5 Implications for policy and practice with voluntary counselling and testing (VCT)**

The evidence identified for this update has made no further conclusions regarding VCT intervention effectiveness than those stated in the original Evidence Briefing (Ellis et al., 2003). However, we did conclude that there is tentative review level evidence to support the effectiveness of mass media interventions in influencing the uptake of HIV VCT in MSM, women, heterosexual men, and the

general public. As there is insufficient evidence regarding the harms of HIV VCT we suggest that VCT interventions and VCT promotion are aimed only at high-risk populations.

The recommendations for VCT should be considered in conjunction with the VCT section of the Discussion (8.12) and the VCT evidence section (5.5). Our recommendations add to those of the original Evidence Briefing.

- Future research should explore mass media promotion for VCT aimed at MSM and African populations.

## **10 Recommendations for research**

The research recommendations below build on those previously stated in the original Evidence Briefing (Ellis et al., 2003) and aim to address the gaps that exist in the current intervention evidence.

### **10.1 General recommendations for secondary research/reviews**

This update has found no evidence that dispute the general recommendations for primary and secondary research stated in the original Evidence Briefing. Although we have identified high quality, well-reported reviews, almost all of them originate from outside of the UK. As such, all original recommendations remain applicable. To the secondary research recommendations we would add that there is a need to:

- Conduct a review of UK-based primary studies with respect to cost-effectiveness of HIV prevention interventions
- Conduct a review of good quality UK-based qualitative research of HIV prevention interventions
- Ensure that future studies report on the details of the population included in the intervention, and state the proportion of HIV positive people included
- Ensure that future studies report the details of the intervention level (individual, group, community).

### **10.2 General recommendations for primary research**

To the primary research recommendations we would add that there is a need to:

- Underpin primary research with relevant theory
- Include full details of the theory/theories used to be reported
- Standardise the reporting of primary research
- Design research studies that analyse findings in order to identify the component characteristics that result in sexual risk reduction
- Explore further research on migrant populations resident in the UK who come from countries with high HIV prevalence
- Include more rigorous qualitative research of HIV prevention at all levels and with all target groups (including migrant populations living in the UK)
- Explore more research at the socio-political level for HIV prevention with all priority populations
- Explore more research that considers the potential effects of criminal prosecutions for the sexual transmission of HIV on onward transmission of the virus.

### **10.3 Recommendations for research with men who have sex with men (MSM)**

In addition to the recommendations above and those in the original Evidence Briefing, those below apply to MSM. There is a need for research to:

- Investigate HIV treatment optimism and its impact upon sexual risk-taking behaviour
- Consider interventions of sexual risk taking, including social norms regarding intentional unsafe sexual practices, and use of the internet to solicit sexual partners
- Explore interventions using the primary outcome of serodiscordant or unknown status unprotected anal intercourse
- Look at disabled MSM and equality
- Examine African MSM and explore issues such as cultural impediments to sexual health promotion interventions
- Look at the intervention effectiveness and cost-effectiveness of individual versus group level interventions underpinned by cognitive-behavioural techniques
- Examine the effectiveness interventions that include, for example, condom distribution, skills training, sexual communication, sexual health knowledge and HIV disclosure.

### **10.4 Recommendations for research with commercial sex workers (CSWs)**

There is a need for research with CSWs to:

- Be carried out within a relevant theoretical framework
- Include an understanding of coping styles, social support needs, problem-solving skills and health promotion practices
- Explore the effectiveness of condom distribution schemes for both male and female CSWs.
- Consider workplace interventions focusing on men who potentially use CSWs, such as truck drivers
- Investigate interventions with male CSWs in the UK, including community-based outreach interventions.

### **10.5 Recommendations for research with African communities in the UK**

- There is an urgent need for UK-based culturally sensitive research with African women, men and adolescents to be carried out at all intervention levels
- There is also a need for specific research to be conducted with African migrant populations living in the UK.

### **10.6 Recommendations for research with people with HIV**

There is a need for research with people with HIV to:

- Investigate HIV treatment optimism and its impact upon sexual risk-taking behaviour

- Explore the potential harms of partner notification
- Include community-based peer-led condom and contraceptive promotion
- Be aimed at serodiscordant couples
- Address the issue of access to services for people with HIV
- Explore the effects of interventions including coping skills and disclosure on people with HIV
- Examine the effectiveness of community-based organisation interventions compared to clinic-based interventions.

### **10.7 Recommendations for research in relation to voluntary testing and counselling (VCT)**

- There is a need for UK-based research on the effects of an HIV test resulting in a positive test on the sexual risk behaviour of serodiscordant couples.

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## **Appendix A. Theories of behaviour change**

The summaries (based on Fisher & Fisher's chapter in Peterson and DiClemente's *Handbook of HIV Prevention*, 2000) for the Health Belief Model, AIDS Risk Reduction Model, Transtheoretical Model and the Information-Motivation-Behavioural Skills model have been taken directly from the original Evidence Briefing by Ellis et al. (2003) and added to here with summaries of Motivational Interviewing (Miller and Rollnick, 2002) and Social Learning Theory (Bandura, 1977).

### **The Health Belief Model (HBM)**

(Source: Fisher & Fisher in Peterson, J.L. & DiClemente, R.J. (eds) (2000) *Handbook of HIV prevention*. New York: Kluwer Academic/Plenum Publishers).

The 'grandparent of all health behaviour models' (Fisher and Fisher, p5), the Health Belief Model (HBM) (Rosenstock, 1974) is a model of conscious decision-making. Perceived susceptibility (to illness, damage etc) and perceived severity (of negative health outcomes) together lead to perceived vulnerability which in turn leads to readiness to act. Health behaviour options are evaluated by the individual in terms of their perceived benefits and costs. The effectiveness of the new behaviour is judged as one of the 'benefits' of behaviour change (i.e. whether it works in averting harm). The HBM recognises the importance of a 'cue stimulus' to kick-start the new health behaviour (e.g. symptoms, mass media messages, opportunistic interventions). In 1998, the concept of self-efficacy was added. The HBM historically has focused on simple rather than complex behaviours (e.g. getting an injection rather than negotiating safer sex) and therefore its relevance to HIV prevention is questionable. There is only equivocal support for the HBM outside of the HIV field. The model has been used more for its predictive power in terms of behaviour than for designing interventions, and 'is essentially a listing of constructs rather than a model *per se*' and merely 'suggests conditions that prompt one to seek health-relevant services' (Fisher and Fisher, p8).

### **AIDS Risk Reduction Model (ARRM)**

(Source: Fisher & Fisher in Peterson, J.L. & DiClemente, R.J. (eds) (2000) *Handbook of HIV prevention*. New York: Kluwer Academic/Plenum Publishers).

The AIDS Risk Reduction Model (ARRM) was developed by Catania et al. (1990), and is one of two stage models of behaviour change; the other is the Transtheoretical Model (see below). Both assume change is a process, with different factors intervening at each step. However, the change processes are not viewed as irreversible or unidirectional. The initial stage, the labelling of behaviour as 'problematic', is facilitated by accurate information. Then comes the decision to commit to change, which is affected by a range of personal and social factors. Weighing the costs of behaviour change is important, taking into account factors such as enjoyment etc. The final stage is taking action. Health education messages can be critical here. But, Fisher and Fisher (2000) argue, there has been little research on those variables connected with the enactment stage. Catania et al. outline few conditions

affecting enactment of behaviour change (and 'thus suggest little in the way of content for effective interventions', Fisher and Fisher, p12). Internal/external cues facilitate movement from one stage to another and health messages can be crafted to whichever stage an individual or population has reached in the change process. Fisher and Fisher point out that knowing which stage a population is at can be useful in effectively targeting interventions, but they acknowledge mixed support for the relationship between variables, stage attainment and outcomes, though many critical variables in the ARRM are shown in the literature to be linked with ultimate behavioural change. Importantly, little work has been done on how people move between stages. Also, there is little on incorporating the ARRM into interventions. Overall, empirical support is equivocal.

### **Transtheoretical Model (TM)**

(Source: *Fisher & Fisher in Peterson, J.L & DiClemente, R.J. (eds) (2000) Handbook of HIV prevention. New York: Kluwer Academic/Plenum Publishers*).

The Transtheoretical Model (TM) outlines six stages of change:

- Precontemplation – not interested in changing behaviour
- Contemplation – ready for information on behaviour and how to change
- Preparation – 'appropriate recruits for traditional 'action-oriented' interventions'
- Action
- Maintenance – six months after action
- Termination – beyond temptation to relapse.

In addition, the authors of the model, Prochaska and Velicia (1997), suggested 10 processes (for example, consciousness raising; environmental evaluation) that assist the individual in changing behaviour, reflecting critical common elements in the hundreds of extant models of change, and which have been validated with safer sex and condom use. Some of these processes are more suited to earlier in the cycle, some to later; earlier, there should be more emphasis on experiential processes; later, on behavioural processes. As with the ARRM, the intervention implications of the TM are that there is the need to know where the population is in terms of stage, then to deliver 'stage-matched' interventions. From other health areas, there is support for different change processes used at different stages. Research suggests the TM can be applied to HIV as to other areas, but it is not clear how the components of the model interact: Fisher and Fisher note that there has been a lack of multivariate work done on this. They also note that few longitudinal or experimental studies have been done on the TM, and – an important point – that it may be very difficult to design interventions based on the TM.

### **The Social Cognitive Theory (SCT)**

The Social Cognitive Theory (SCT) has been effectively applied to behaviour change in a number of different health areas; Bandura (1994) has played a key role in making it applicable to HIV prevention.

The SCT emphasises skills and self-beliefs: in other words, self-efficacy, which ‘affects whether people will attempt to change at all, how much effort they will exert and how much they will persist in a change attempt without giving up’ (Fisher and Fisher, p24). They state that knowledge and skills count for nothing without self-efficacy. There are four components:

- Information (including convincing people that they can change their behaviour). Bandura emphasises the need to put stress on perseverance so setbacks will not throw the individual; information needs to be culturally competent, credible etc.
- Self-regulation/risk reduction skill development. Self-regulation skills consist of knowing one’s risk triggers, rehearsing arguments in favour of the new behaviour, the ability to self-reinforce; cognitive self-guidance (suggested intervention methods are the use of role models and of cognitive rehearsal); risk reduction, which can involve technical skills (use of condoms) or social skills (negotiating safer sex) (suggested intervention methods include, again, the use of role models, who should be identifiable with through culture, race, ethnicity, gender etc.)
- Self-efficacy with regard to skills. There is the need to increase self-efficacy in relation to skills, by practising in progressively more difficult contexts, with constructive feedback
- Social support development/engagement. It is posited that the social support which is most proximate is most important.

As Fisher and Fisher point out, there is strong evidence for the role of self-efficacy in promoting behaviour change, though this is not universal (see O’Leary et al. for contradictory findings). They also note that there is empirical evidence for the importance of normative support. Kalichman’s review (1996) supports the effectiveness of interventions based on or incorporating ‘core’ elements of the SCT. Overall, the SCT is supported by evidence across a number of health behaviours. However, it shares many features with other models and doesn’t contain an explicit elicitation research component.

### **The Theory of Reasoned Action (TRA)**

Fishbein and Ajzen’s Theory of Reasoned Action posits the following equation of behaviour change:

$$B \sim BI = [A_{act}]w_1 + [SN]w_2$$

where B= behaviour, BI= behavioural intent, A act=attitude toward an HIV preventive act, SN= subjective norm or perception of referent support for performance of act, and W1+ W2 are regression weighting. Attitudes and norms are themselves functions of psychological factors, e.g. beliefs and evaluations of consequences of acts etc. According to the theory, attitudes toward an HIV preventive act are a function of beliefs about the consequences of performing the act (Bi) multiplied by evaluations of those consequences (ei). Subjective norms concerning HIV preventive acts are a function of perceptions of whether specific categories of ‘referent other’ (e.g. peers, partners) want the

individual to perform the act (NBj) multiplied by the individual's motivation to comply with these referents' wishes (MCj).

Elicitation research is seen as crucial to identify these beliefs. Personality, demographic and other variables are influential only via beliefs, attitudes and norms etc. The TRA states that it is necessary to strengthen intentions in order to increase preventive behaviour. Interventions can strengthen intentions by strengthening attitudes and norms, by changing psychological factors. It is not clear that all factors external to the TRA influence behaviour only via the components proposed by the model: feelings about sexuality, information and skills, vulnerability perception, gender and ethnicity need crucial examination. However, overall, Fisher and Fisher judge the TRA to be 'well-specified and well-tested' (p29), and that it has proved successful in predicting HIV preventive behaviour. Significantly, there is broad support for interventions based on the TRA.

### **Theory of Planned Behaviour (TPB)**

The Theory of Reasoned Action (TRA) doesn't address the extent to which prevention does not fall within the individual's control. This is what Ajzen, the author of the Theory of Planned Behaviour (TPB), seeks to address. When an individual does not perceive that they have total control over their behaviour, behaviour is affected. Perceptions of control interact with attitudes, norms and intentions, such that perceived control should affect behaviour when attitudes norms and intentions are favourable to behaviour but not when they aren't. Where an individual perceives they have complete control over their behaviour, the TPB reverts to the TRA.

Perceived control and behavioural intention have been significantly correlated; there is inconsistent evidence on the direct relationship between perceived control and behaviour. Interventions have proved broadly supportive of the TPB, but the ability of the constructs to predict HIV preventive behaviour over the TRA seems negligible. Perceptions of control play a significant role in influencing intentions to practise HIV preventive behaviour. 'Research suggests that promoting perceptions of control is helpful in promoting HIV preventive behaviour, a fact that is consistent with the TPB' (Fisher and Fisher, p38).

### **Motivational Interviewing (MI)**

(Source: *Miller & Rollnick. Motivational Interviewing: Preparing people for change, 2<sup>nd</sup> ed. The Guilford press, London, 2002*)

Motivational interviewing is defined as a client-centred, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence and is heavily influenced by Carl Roger's humanistic approach to person-centred counselling. MI focuses upon an individual's current interests and concerns; it does not address past issues. The discrepancies that are explored and developed as part of MI are due to incongruities among aspects of the client's own values and

experiences. The aim of MI is to resolve any such ambivalence, usually in a specific direction of change.

MI is a method of communication as opposed to a set of techniques. It differs from other motivational strategies as it does not impose any external approaches (e.g. behavioural approaches) but instead focuses upon an intrinsic motivation to change. This method holds that unless a change is in the person's interest it will not occur, as change is inherent to a person's own values and concerns.

MI can be used in conjunction with other theories (e.g. TTM) and has shown positive effects when used as a consultation prior to the use of other services. There are four stages to MI:

- **Expressing empathy** – acceptance facilitated change; skilful reflective listening is fundamental; ambivalence is normal.
- **Developing discrepancy** – the client rather than the counsellor should present the arguments for change; change is motivated by a perceived discrepancy between present behaviour and important personal gains or values.
- **Rolling with resistance** – avoid argument for change; resistance is not directly opposed; new perspectives are invited but not imposed; the client is a primary resource in finding answers and solutions; resistance is a signal to respond differently.
- **Support self-efficacy** – a person's belief in the possibility of change is an important motivator; the client, not the counsellor, is responsible for choosing and carrying out change; the counsellor's own belief in the person's ability to change becomes a self-fulfilling prophecy.

### **Social Learning Theory (SLT)**

(Source: *Bandura A. Social Learning Theory. Prentice-Hall International, Inc., London. 1977*)

Social Learning Theory emphasises the importance of observing and modelling the behaviours, attitudes and emotional reactions of others. Bandura (1977) argues that most human behaviour is learned in this way and that from observing others one forms an idea of how new behaviours are performed. These ideas are subsequently coded and act as a future guide for action. The processes of observational learning are:

- **Attentional processes:** including modelled behaviour (distinctiveness, affective valence, complexity, prevalence, functional value) and observer characteristics (sensory capacities, arousal level, perceptual set, past reinforcement). Modelled conduct varies in effectiveness and some models are able to hold the attention of others for extended periods, as such, specific people (e.g. community leaders) are sought out as models.
- **Retention process:** including symbolic coding, cognitive organisation, symbolic rehearsal and motor rehearsal, as individuals cannot be influenced by observation of modelled behaviour if they cannot remember it.

- **Motor reproduction:** including physical capabilities, availability of component responses, self-observation of reproductions and accuracy feedback. This involves converting symbolic representations into appropriate actions.
- **Motivational process:** including external reinforcement, vicarious reinforcement and self-reinforcement, because individuals are more likely to adopt modelled behaviour if it results in outcomes that are perceived as valuable and rewarding.

Modelling plays a role in spreading ideas and social practices within a society. Diffusion of innovation is achieved by introducing new behaviour, through prominent examples, which are then adopted at a rapid rate and either stabilise or decline dependent upon their perceived value.

### **Relapse prevention**

(Source: Marlatt, G.A. & Gordon, J.R. *Determinants of relapse: Implications of the maintenance of behavior change*. In: Davidson, P.O., and Davidson, S.M., eds. *Behavioral Medicine: Changing Health Lifestyle*. New York: Brunner/Mazel, 1980. pp.410-452).

Most of the work on the relapse prevention model (RPM) has been done in the context of substance abuse, where relapse is a significant factor in the success of interventions. While the addictive nature of some substances and their physiological effects are likely to play a part in relapse, the RPM posits that there are also environmental and social determinants, and suggest that aspects of their model could be applied to 'refraining from illicit sexual activities'. The RPM predicts response to the relapse in terms of cognitive-behavioural theoretical principles.

The basic assumptions are that the individual has entered into a voluntary agreement to follow a behavioural rule, and by complying has a perceived sense of personal control over the target behaviour. The perception of control continues until a high risk situation is encountered: in many cases this would be an event beyond the individual's control such a confrontation with another person, peer pressure or another social trigger, or an environmental trigger. Typically the situation gives feelings of hopelessness or powerlessness, and the ability to cope depends on adequate coping response (e.g. be assertive in responding to social pressure). Successful control leads to expectation of control over subsequent events (associated to Bandura's 1977 notion of self efficacy). As self efficacy decreases and relapse is immanent, individuals may recall good feelings/outcomes from engaging in the activity, rather than the negative ones. At this point the model becomes less specific to sexual behaviour, as for substance use, since substances themselves are often used as methods of coping with stress.

Once the behavioural rule is broken, there is no going back, and this is known as the 'abstinence violation effect' (AVE). To cope with the cognitive dissonance this causes, individuals may perceive that they may as well relapse again. If the failure is attributed to a personal weakness, the expectancy of failure in the future is reinforced.

The authors suggest that relapse training should be considered before giving up the behaviour. The settings in which behaviour takes place should be investigated, and strategies to avoid situations or cope with them should be devised. Individuals should be forewarned of psychological consequences of failure (AVE) with the reassurance that just because the individual has failed, this does not mean that they would necessarily fail in the future.

### **Summary**

It is important to note that the theories outlined above by no means constitute an exhaustive list. In addition, the literature makes reference to Empowerment theory, self-disclosure theory and Coleman's maturational model of coming out.

## Appendix B. Example of a search strategy

### Medline search strategy

1. meta-analysis/
2. review literature/
3. (meta-analy\$ or meta analy\$ or metaanaly\$).ti,ab.
4. (systematic\$ adj4 (review\$ or overview\$)).mp.
5. meta-analysis.pt.
6. review.pt.
7. review.ti.
8. review literature.pt.
9. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
10. Case Report.mp
11. letter.pt.
12. historical article.pt.
13. review, reported cases.mp.
14. review, multicase.mp.
15. 10 or 11 or 13 or 14
16. 9 not 15
17. animal/
18. human/
19. 17 not (17 and 18)
20. 16 not 19
21. Acquired Immunodeficiency Syndrome/
22. exp HIV/
23. HIV Infections/
24. acquired immunodeficiency syndrome.ti,ab.
25. aids.ti,ab.
26. hiv.ti,ab.
27. human immunodeficiency virus.ti,ab.
28. acquired immun\$1 deficiency syndrome.ti,ab.
29. human immun\$1 deficiency virus.ti,ab.
30. 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29
31. (prevent\$ or reduc\$ or minimis\$ or minimiz\$ or decreas\$).mp.
32. (interven\$ or promot\$ or educat\$ or influenc\$).mp.
33. health education/
34. Patient Education/
35. exp Health Promotion/
36. Sex Education/
37. Safe Sex/
38. safe\$ sex.ti,ab.
40. (condom\$ or barrier\$).ti,ab.
41. (behavior\$ or behaviour\$).ti,ab.
42. Health Behavior/
43. Sex Behavior/
44. Contraception Behavior/

45. Counseling/
46. counsel\$.ti,ab.
47. Behavior Therapy/
48. Psychotherapy, Group/
49. attitude\$ change\$.mp.
50. (lifestyle change\$ or life style change\$).mp.
51. 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50
52. 30 and 51
53. Disease Transmission, Vertical/
54. (vertical transmission or (mother adj5 child\$) or pediatric or paediatric or perinatal).mp.
55. AIDS Vaccines/
56. Vaccin\$.mp.
57. exp Anti-HIV Agents/
58. exp Antiviral Agents/
59. (antiviral\$ or anti viral\$ or antiviral\$ or anti virus\$).mp.
60. (antiretroviral\$ or anti retroviral\$ or antiretrovirus\$ or anti retrovirus\$).mp.
61. (antihiv\$ or anti hiv\$).mp.
62. Occupational Exposure/
63. (occupational exposure or occupational safety or occupational hazard\$ or occupational risk\$).ti,ab.
64. Hearing Aids/
65. hearing aid\$.ti,ab.
66. exp Blood Transfusion/
67. exp Organ Transplantation/
68. (blood transfusion\$ or organ transplant\$).ti,ab.
69. Developing Countries/
70. exp Africa/
71. India/
72. (developing countr\$ or underdeveloped countr\$ or under developed countr\$ or third world or africa\$ or india\$).ti,ab.
73. 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72
74. 52 not 73
75. 20 and 74
76. Limit 75 to english language
77. Limit 76 to yr=2001-2006
78. from 77 keep 1-1000
79. from 77 keep 1001-1324

## Appendix C: CAT screening tool

The CAT is divided into two stages. The first stage assesses the strengths of the methods used to identify and select all of the available literature, since this is regarded as one of the most important factors in ensuring a balanced view of the evidence. If a paper passes this first stage, then the quality of its methodological analysis and the appropriateness of its conclusions are assessed.

Authors: _____			
Title: _____			
Source: _____			
Does this paper address your topic area?	Yes	No	Unsure
Circle whether the paper is a:			
• Systematic review	• Meta-analysis		
• Synthesis	• Literature review		
• Other review (please specify)			
Does it address (circle as appropriate):			
• Effectiveness (interventions and treatments)	• Causation		
• Monitoring and surveillance trends	• Cost		
• Other (please specify)			
Does the paper have a clearly focused aim or research question? (1)	Yes	No	Unsure
Consider whether the following are discussed:			
The population studied	Yes	No	Unsure
The interventions given	Yes	No	Unsure
The outcomes considered	Yes	No	Unsure
Inequalities	Yes	No	Unsure
Do the reviewers try to identify all relevant English language studies?	Yes	No	Unsure
Consider whether details are given for:			
Databases searched (2a)	Yes	No	Unsure
References followed up (2b)	Yes	No	Unsure
Experts consulted (2b)	Yes	No	Unsure
Grey literature searched (2b)	Yes	No	Unsure
Years searched (2c)	Yes	No	Unsure
Search terms specified (2c)	Yes	No	Unsure
Inclusion criteria described (2d)	Yes	No	Unsure
Is it worth continuing?	Yes	No	
Why / Why not? _____			
_____			

Do the authors address the quality (rigour) of the included studies? (3, 3d)	Yes	No	Unsure
Consider whether the following are used:			
A rating system (3b)	Yes	No	Unsure
More than one assessor (3c)	Yes	No	Unsure
If study results have been combined, was it reasonable to do so?	Yes	No	Unsure
Consider whether the following are true:			
Are the results of included studies clearly displayed? (4a)	Yes	No	Unsure
Are studies addressing similar research questions? (4b)	Yes	No	Unsure
Are the studies sufficiently similar in design? (4b)	Yes	No	Unsure
Are the results similar from study to study (test of heterogeneity)? (4b)	Yes	No	Unsure
Are the reasons for any variation in the results discussed?	Yes	No	Unsure
What is the overall finding of the review? Consider: How the results are expressed (numeric – relative risks, etc); whether the results could be due to chance (p-values and confidence intervals).			
_____			
_____			
Are sufficient data from individual studies included to mediate between data and interpretation/conclusions? (5)	Yes	No	Unsure
Does this paper cover all appropriate interventions and approaches for this field (within the aims of the study)?	Yes	No	Unsure
If no, what? _____			
Relevance			
Can the results be applied/are generalisable to a UK population/population group?	Yes	No	Unsure
Are there cultural differences from the UK?	Yes	No	Unsure
Are there differences in healthcare provision with the UK?	Yes	No	Unsure
Is the paper focused on a particular target group (age, sex, population sub-group etc)?	Yes	No	Unsure
Accept for inclusion in the evidence briefing?	Yes	No 1,2,3	Refer to 4,5 third party
Use to inform the review of effectiveness?	Yes	No	
Use to inform the background discussion?	Yes	No	
Additional comments: _____			
_____			

## Appendix D. List of reviews by Category 1-5

The appraised reviews were categorised as follows:

### Category 1 reviews

- Elwy, A. R., Hart, G. J., Hawkes, S., and Petticrew, M. (2002). Effectiveness of interventions to prevent sexually transmitted infections and human immunodeficiency virus in heterosexual men: a systematic review. *Archives of Internal Medicine* 162: 1818-1830.
- Herbst, J. H., Sherba, R. T., Crepaz, N., Deluca, J. B., Zohrabyan, L., Stall, R. D., and Lyles, C. M. (2005). A meta-analytic review of HIV behavioral interventions for reducing sexual risk behavior of men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes* 39 (2): 228-241.
- Mathews, C., Coetzee, N., Zwarenstein, M., Lombard, C., Guttmacher, S., Oxman, A., and Schmid, G. (2002). A systematic review of strategies for partner notification for sexually transmitted diseases, including HIV/AIDS. *International Journal of STD & AIDS* 13: 285-300.
- Pedlow, C. T. and Carey, M. P. (2003). HIV sexual risk-reduction interventions for youth: A review and methodological critique of randomized controlled trials. *Behavior Modification* 27 (2): 135-190.
- Rees, R., Kavanagh, J., Burchett, H., Shepherd, J., Brunton, G., Harden, A., Thomas, J., Oliver, S., and Oakley, A. (2004). HIV health promotion and men who have sex with men (MSM): a systematic review of research relevant to the development and implementation of effective and appropriate interventions. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.
- Vidanapathirana, J., Abramson, M. J., Forbes, A., and Fairley, C. (2005). Mass media interventions for promoting HIV testing. *The Cochrane Database of Systematic Reviews*, Issue 3.

### Category 2 reviews

- Albarracin, D., Gillette, J. C., Earl, A. N., Glasman, L. R., Durantini, M. R., and Ho, M. H. (2005). A Test of Major Assumptions About Behavior Change: A Comprehensive Look at the Effects of Passive and Active HIV-Prevention Interventions Since the Beginning of the Epidemic. *Psychological Bulletin* 131 (6): 856-897.
- Farnham, P. G., Pinkerton, S. D., Holtgrave, D. R., and Johnson-Masotti, A. P. (2002). Cost-effectiveness of counseling and testing to prevent sexual transmission of HIV in the United States. *AIDS and Behavior* 6 (1): 33-43.
- Johnson, B. T., Carey, M. P., Marsh, K. L., Levin, K. D., and Scott-Sheldon, L. A. (2003). Interventions to reduce sexual risk for the human immunodeficiency virus in adolescents, 1985-2000: a research synthesis. *Archives of Pediatrics & Adolescent Medicine* 157 (4): 381-388.

- Johnson, W. D., Hedges, L. V., and Diaz, R. M. (2003). Interventions to modify sexual risk behaviors for preventing HIV infection in men who have sex with men. *The Cochrane Database of Systematic Reviews*, Issue 1.
- Johnson, W. D., Hedges, L. V., Ramirez, G., Semaan, S., Norman, L. R., Sogolow, E., Sweat, M. D., and Diaz, R. M. (2002). HIV prevention research for men who have sex with men: a systematic review and meta-analysis. *Journal of Acquired Immune Deficiency Syndromes* 30 (Suppl 1): S118-S129.
- Johnson, W. D., Holtgrave, D. R., McClellan, W. M., Flanders, W. D., Hill, A. N., and Goodman, M. (2005) HIV intervention research for men who have sex with men: a 7-year update. *AIDS Education & Prevention* 17 (6): 568-589.
- Logan, T. K., Cole, J., and Leukefeld, C. (2002). Women, sex, and HIV: Social and contextual factors, meta-analysis of published interventions, and implications for practice and research. *Psychological Bulletin* 128 (6): 851-885.
- Merzel, C. and D'Afflitti, J. (2003). Reconsidering community-based health promotion: promise, performance, and potential. *American Journal of Public Health* 93 (4): 557-574.
- Mullen, P. D., Ramirez, G., Strouse, D., Hedges, L. V., and Sogolow, E. (2002). Meta-analysis of the effects of behavioral interventions on the sexual risk behavior of sexually experienced adolescents in controlled studies in the United States. *Journal of Acquired Immune Deficiency Syndrome* 30 (Suppl 1): S94-S105.
- Neumann, M. S., Johnson, W. D., Semaan, S., Flores, S. A., Peersman, G., Hedges, L. V., and Sogolow, E. (2002). Review and meta-analysis of HIV prevention intervention research for heterosexual adult populations in the United States. *Journal of Acquired Immune Deficiency Syndromes* 30 (Suppl 1): S106-S117.
- Pinkerton, S. D., Johnson-Masotti, A. P., Holtgrave, D. R., and Farnham, P. G. (2002). A review of the cost-effectiveness of interventions to prevent sexual transmission of HIV in the United States. *AIDS and Behavior* 6 (1): 15-31
- Robin, L., Dittus, P., Whitaker, D., Crosby, R., Ethier, K., Mezoff, J., Miller, K., and Pappas-Deluca, K. (2004). Behavioral interventions to reduce incidence of HIV, STD, and pregnancy among adolescents: a decade in review. *Journal of Adolescent Health* 34 (1): 3-26.
- Semaan, S., Des-Jarlais, D. C., Sogolow, E., Johnson, W. D., Hedges, L. V., Ramirez, G., Flores, S. A., Norman, L., Sweat, M. D., and Needle, R. (2002). A meta-analysis of the effect of HIV prevention interventions on the sex behaviors of drug users in the United States. *Journal of Acquired Immune Deficiency Syndromes* 30 (Suppl 1): S73-S93.
- Van-Empelen, P., Kok, G., van-Kesteren, N. M. C., van-den-Borne, B., Bos, A. E. R., and Schaalma, H. P. (2003). Effective methods to change sex-risk among drug users: a review of psychosocial interventions. *Social Science & Medicine* 57 (9): 1593-1608.

- Wilson, B. D. and Miller, R. L. (2003). Examining strategies for culturally grounded HIV prevention: a review. *AIDS Education & Prevention* 15 (2): 184-202.
- Weinhardt, L. S. (2005). HIV diagnosis and risk behavior. In: Kalichman, S. (ed) *Positive Prevention: Reducing Transmission Among People Living with AIDS/HIV*, pp 29-60. New York: Kluwer Academic/Plenum Publishers.

### Category 3 reviews

- Elkavich, A., Rotheram-Borus, M. J., Goldstein, R., Flannery, D., and Jones, P. (2005). Young People Living with HIV. In: Kalichman, S. (ed) *Positive Prevention: Reducing Transmission Among People Living with AIDS/HIV*, pp 163-193. New York: Kluwer Academic/Plenum Publishers.
- Fortenberry, J. D. (2002). Clinic-based service programs for increasing responsible sexual behavior. *Journal of Sex Research* 39 (1): 63-66.
- Harper, G. W., Hosek, S. G., Contreras, R., and Doll, M. (2003). Psychosocial Factors Impacting Condom Use Among Adolescents: A Review and Theoretical Integration. *Journal of HIV/AIDS Prevention & Education for Adolescents & Children* 5 (3-4): 33-69.
- Johnson-Masotti, A.P., Weinhardt, L.S., Pinkerton, S.D., and Otto-Salaj, L.L. (2003). Efficacy and cost-effectiveness of the first generation of HIV prevention interventions for people with severe and persistent mental illness. *Journal of Mental Health Policy and Economics* 6:23-35.
- Kelly, J. A. and Kalichman, S. C. (2002). Behavioral research in HIV/AIDS primary and secondary prevention: Recent advances and future directions. *Journal of Consulting & Clinical Psychology* 70 (3): 626-639.
- Kirby, D. (2002). Effective approaches to reducing adolescent unprotected sex, pregnancy, and childbearing. *The Journal of Sex Research* 39 (1): 51-57.
- Metsch, L. R., Gooden, L. K., and Purcell, D. W. (2005). Interventions in Community Settings. In: Kalichman, S. (ed) *Positive Prevention: Reducing Transmission Among People Living with AIDS/HIV*, pp 193-217. New York: Kluwer Academic/Plenum Publishers.
- Pinkerton, S.D., Kahn, J.G., and Holtgrave, D.R. (2002b). Cost-effectiveness of community-level approaches to HIV prevention: A review. *The Journal of Primary Prevention* 23 (2): 175-198.
- Pinkerton, S.D., and Holtgrave, D.R. (2002) Assessing the cost-effectiveness of alternative approaches to HIV prevention. In: O'Leary, A. (ed) *Beyond condoms: Alternative approaches to HIV prevention*, pp139-171. New York: Kluwer Academic/Plenum Publishers.
- Ross, M. W. and Williams, M. L. (2002). Effective targeted and community HIV/STD prevention programs. *Journal of Sex Research* 39 (1): 58-62.

- Wolitski, R. J., Janssen, R. S., Onorato, I. M., Purcell, D. W., and Crepaz, N. (2005). An Overview of Prevention with People Living with HIV. In: Kalichman, S. (ed) *Positive Prevention: Reducing Transmission Among People Living with AIDS/HIV*, pp 1-29. New York: Kluwer Academic/Plenum Publishers.

#### Category 4 – see References for full details

Author(s)	Year	Reason for not including in Category 1-3
DiClemente, R.J. et al.	2002	Not a review or synthesis, but identifies gaps in the evidence.
Elford J. et. al.	2002	Not a review or synthesis, but includes information about relevant communities and sexual practices in the UK.
Gallant, M. & Maticka, T.E.	2004	Study based on African population in Africa.
Genuis, S.J. & Genuis, S.K.	2005	Not a review or synthesis, but good overview of HIV prevention interventions.
Glik, D. et al.	2002	Not a review or synthesis, but useful information about performing arts education.
Gordon, C.M. et al.	2005	Not a review or synthesis, but has some useful information on published studies.
Kennedy, M. & Doll, L.S.	2001	Not a review or synthesis, but includes information on relevant prevention interventions.
Kirby, D.	2002b	Not a review or synthesis, but some useful information on the effect of school and school programmes on adolescent sexual behaviour.
Martin, G.	2005	Not a review or synthesis, but contains information on relevant prevention interventions.
Semaan, S. et al.	2002	Not about intervention effectiveness but includes useful information about US-based HIV prevention studies.
Shoveller, J. A. and Pietersma, W-A. W.	2002	Not about intervention effectiveness but includes useful information about the quality of US-based HIV preventions studies.
Simoni, J.M. & Pantalone, D.W.	2002	Not about prevention interventions but includes some useful research into HIV disclosure and safer sex.
Simoni, J.M. & Pantalone, D.W.	2004	Not about prevention interventions but includes some useful research into HIV disclosure and safer sex.
Smith M.D.	2001	Not about intervention effectiveness to relevant groups
Yep, G. A., Merrigan, G. M., et al	2002-03	Not a review or synthesis, but contains information on relevant prevention interventions.

#### Category 5 - see References for full details

Author(s)	Year	Reason for not including in Category 1-4
Aggleton, P.	2004	Not HIV prevention intervention
Albarracin, D. et al.	2001	Not about intervention effectiveness. Examines behaviour models.
Albarracin, D. et al.	2003	Not about intervention effectiveness. Examines behavioural and cognitive models.
Albarracin, D. et al.	2003	Duplicate
Albarracin, D. et al.	2004	Not HIV prevention interventions
Albarracin, D. et al.	2004	Duplicate

American Academy of Pediatrics	2001b	Not a synthesis, review or meta-analysis.
American Academy of Pediatrics	2001	Not a review and about condom effectiveness
American Academy of Pediatrics.	2001a	Academic paper, not review or synthesis
Aral, S.O et al	2002	Treatment as HIV prevention
Arriola, K.R.J. et al.	2005	Not about intervention effectiveness.
Askin, S.	2004	Comment on another review
Bailey, R.C. et al.	2001	Male circumcision to prevent HIV transmission
Biddlecom, A.E.	2004	Not about intervention effectiveness
Bok, M.	2002	Description of HIV prevention interventions/reports/books etc. but no analyses of the effect of the programmes.
Bonell, C.	2002	Not about intervention effectiveness
Bonell, C. & Imrie, J.	2001	Not about intervention effectiveness
Bonner, K.	2001	Male circumcision.
Borgia, P. et al.	2005	Not a review
Bradley-Springer, L.	2001	Not about intervention effectiveness
Burke, B.L. et al.	2003	Not relevant to priority populations.
Burke, B.L. et al.	2003	Duplicate
Burke, B.L. et al.	2004	Not relevant to priority populations.
Caceres, C.F.	2002	Not about intervention effectiveness
Card, J.J. et al.	2001	About the development of an archive of effectiveness programmes. But doesn't give sufficient details about primary studies in terms of effectiveness.
Cates, W. Jr.	2005	Microbicides and condom effectiveness
Centers for Disease Control and Prevention	2001	Guidelines (mostly treatment).
Centers for Disease Control and Prevention	2002	STIs/HIV and treatment/care
Centers for Disease Control and Prevention, et al.	2003	Guidance to incorporate prevention into treatment
Chippindale, S. & French, L.	2001	Not a review of the literature. Not about intervention effectiveness.
Cohen, D.A. et al.	2004	Development of a tool to estimate the relative cost-effectiveness of HIV prevention interventions.
Coon, D.W. et al.	2003	Not a synthesis of primary studies.
Crepaz, N. et al.	2004	Not about intervention effectiveness.
Demmer, C.	2003	Not about intervention effectiveness although it does include implications for practice around HIV prevention
Dodds, C.	2002	Review HIV prevention literature.
Doncel, G. & Mauck, C.	2004	Vaginal microbicides
Donenberg, G. R. & Pao, M.	2005	Treatment and not prevention interventions
Dore, H.	2005	Comment on review – Johnson, B.T. et al. (2003)
Dudgeon, W.D. et al.	2004	Not about an intervention for HIV prevention.
Dunn, C. et al.	2001	Not relevant to priority populations.
Elias, C. & Coggins, C.	2001	About microbicides
Fenton, K.A.	2001	About STI prevention
Flores, S.A. & Crepaz, N.	2004	Not about intervention effectiveness. Focuses on quality markers for intervention research.
Frankis, J. & Flowers, P.	2005	Sexual behaviour change not related to HIV prevention
Freeman, E.E., et al.	2006	Doesn't cover intervention effectiveness.
Genuis, S.J. & Genuis, S.K.	2004	Not review etc. and STI focused not HIV
Ghaziani, A. & Cook, T.D.	2005	Not a review of intervention effectiveness.

Gilleece, Y. & Sullivan, A.	2005	Not review etc. and HIV/STI treatment not prevention
Glatt, A.E.	2001	Overview of a Cochrane review
Glik, D. et al.	2002	Duplicate
Gordon, C.M. et al.	2005	Duplicate
Gott, M.	2004	Not about HIV prevention interventions
Hader, S.L. et al.	2001	Not about the effectiveness of an intervention
Helms, J.L. & Hirbour, C.A.	2004	No - just description of interventions, but may be useful in write up.
Heuveline, P.	2004	Not about intervention effectiveness
Hilton, B.A. et al.	2001	HIV prevention in drug users focussing on harm reduction rather than sexual behaviour.
Holmes, K.K. et al.	2004	Condom effectiveness
Holtgrave, D.R.	2004	Methodology paper. US population only.
Horowitz, S.M.	2003	STI prevention.
Infectious Diseases Society of America	2004	Guidance on care
Jemmott, J. B. et al.	2002	Not relevant to priority populations
Jenkins, R.A. & Kim, B.	2004	Not relevant to HIV prevention in the UK
Johnson, W.D. et al.	2002	Not about intervention effectiveness
Johnson-Mascotti, A.P. et al.	2001	Not based on synthesis of data.
Keithley, J.K. & Swanson, B.	2001	HIV treatment
Kelly, J.A. & Kalichman, S.C.	2002	Duplicate
Kelly, P. J. et al.	2005	Not relevant
Kiene, S.M. et al.	2005	Not relevant review
Kinniburgh J.	2004	Does not look at HIV prevention interventions.
Kippax, S.	2002	Not a review, synthesis etc.
Klein, C. et al.	2002	Not about intervention effectiveness.
Komiti, A. et al	2001	Not about intervention effectiveness
Lyttle, P.H. & Thompson, S.C.	2004	Not HIV prevention intervention
Marks, G. et al.	2005	Not about intervention effectiveness
Marsh, K.L., et al.	2001	Methodological paper about meta-analysis with HIV prevention examples.
Mathews, C. et al.	2004	Not a synthesis of primary studies. See Mathews, C et al. (2002)
Mayaud, P. & McCormick, D.	2001	Treatment of STIs
Mijajlovic, S. et al.	2003	HIV treatment
Minnis, A.M. & Padian, N.S.	2005	Barrier method contraception and microbicides
Mize, S.J. et al.	2002	Only deals with US studies of African-American women.
Moore, J. S. et al	2002	Microbicides and female condoms
Mullen, P.D. et al.	2002	Duplicate.
Mutchler, M.G.	2002	Primary study
O'Brien, K. et al.	2004	Not about a HIV prevention intervention
O'Leary, A. et al.	2002	Academic not a review
Orel, N.A. et al.	2005	Not about a prevention intervention, discusses 'effectiveness' of US publications
Parsons, J.T.	2005	Not a review
Paxton, L. et al	2002	HIV treatment
Pedlow, C.T. & Carey, M. P.	2003	Duplicate
Pinkerton, S.D. et al.	2006	Not a review or synthesis. Cost-effectiveness of a single study.
Porche, D.J. & Swayzer, R. III	2003	Lists types of interventions but doesn't comment on effectiveness
Porche, D.J. & Swayzer, R. III	2003	Duplicate

Porche, D.J. & Swayzer, R., III	2003	Duplicate
Power, R. et al.	2002	Exclude - HIV treatment
Price, N.	2001	Not about intervention effectiveness. Mainly draws on developing countries so not relevant to UK.
Rhodes, T. et al.	2004	Not relevant to UK population. Link between IDU and HIV transmission in Russia.
Robinson, B.B. et al.	2002	Not a review of intervention effectiveness
Rodriguez, C.M., et al.	2002	Interventions to prevent HIV via IDU. Not relevant to UK population.
Ross, M.W. & Williams, M.L.	2001	Discusses link between sex and drug use.
Rothman, R.E. et al.	2003	HIV testing not prevention interventions.
Russak, S.M. et al.	2005	Population covers military personnel only.
Sangani, P. et al.	2004	STI treatment for the prevention of HIV infection.
Sarkar, N.N.	2001	Not a review or synthesis
Savasta, A.M.	2004	Not about intervention effectiveness
Schmiedl, R.	2004	Not a review of HIV prevention intervention effectiveness.
Siegfried, N. et al.	2003	Circumcision to reduce HIV transmission.
Siegfried, N., et al.	2005	Male circumcision
Strathdee, S.A. & Patterson, T.L.	2005	Not a review etc.
Suarez, T. et al.	2002	Not HIV prevention intervention
Swearingen, S.G. & Klausner, J. D.	2005	Not HIV prevention interventions
Updegrave, K.K.	2001	Male circumcision
Uphold, C.R. & Mkanta, W.N.	2005	Not about HIV prevention intervention effectiveness
Van Empelen P. et al.	2003	Duplicate
Villa, D.P. & Demmer, C.	2005	Not HIV prevention or relevant review
Ward D.J. et al.	2004	STI interventions not HIV
Weller, S. & Davis, K,	2001	About condom effectiveness
Wilkinson D. et al.	2002	Microbicides
Wilkinson, D. et al.	2002	Microbicides
Wilkinson, D., et al.	2002	Microbicides
Wolitski, R. J. et. al.	2002	Not HIV prevention intervention
Yang, H. et al.	2005	Behaviour and transmission not prevention interventions

## Appendix E. In depth summary of Category 1 and 2 reviews

### Category 1

- **Elwy, A.R. (2002) Effectiveness of interventions to prevent sexually transmitted infections and human immunodeficiency virus in heterosexual men.**

<b>Data pool:</b>	
Population	Black and ethnic minority groups and voluntary counselling and testing in heterosexual men
Setting(s)	Any
Interventions	Any
Searches	Databases were searched: AIDSline, ASSIA, BIDS (IBSS;EMBASE), British Nursing Index (BNI), CINAHL, Cochrane Database of Systematic Reviews, Current Research in Britain (CRIB), Database of Reviews of Effectiveness (DARE), ERIC, Health Promis (Health Development Agency, United Kingdom), HealthSTAR, Health CD, Helping Involve Men (HIM; John Hopkins), HMIC (King's Fund, United Kingdom), MEDLINE, National Research Register (United Kingdom), OCLC Papers First & Proceedings First, Popline, Psycinfo, SIGLE, Sociological Abstracts. Hand searches were also carried out in: AIDS, AIDS Care, International Journal of STD and AIDS, and Sexually Transmitted Diseases.
Selection/inclusion criteria	<p>Studies were included if:</p> <ol style="list-style-type: none"> <li>(1) Intervention populations included heterosexual male subjects 15 years or older.</li> <li>(2) Data on heterosexual men's sexual behaviour were present and analysed separately from other groups included in the study or at least 80% of the study population consisted of heterosexual participants.</li> <li>(3) Study designs were coded by: (i) randomised or non-randomised controlled (ii) prospective observational, and (iii) retrospective observational.</li> <li>(4) The outcomes assessed in the study included at least one of the following: morbidity; behavioural outcomes and; social psychological outcomes. Studies were coded as being moderate to high quality.</li> </ol>
Quality assessment	See selection/inclusion criteria
Types of studies	See selection/inclusion criteria
Number of studies	28 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Morbidity; behavioural outcomes (condom use, reduction in number of sex partners, unprotected sex); social psychological outcomes (attitudes towards condoms or HIV, intention to use condoms or change risky behaviour, knowledge of HIV and AIDS, self-efficacy of condom use, communication skills and quality of sexual relationships).
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Drug users receiving treatment – interventions were highly successful at changing sexual behaviour; including decreases in the number of sexual partners. These studies varied in design, however, two studies used motivational and educational aspects, focused upon risk prevention, increasing levels of personal concern regarding HIV/AIDS and personalised the threat of HIV. These interventions also addressed condom use and drug and risky behaviour relapse prevention.</li> <li>• Out of treatment injecting drug users – two RCTs aimed to increase condom use and decrease the number of sexual partners. They used stress management, drug awareness, AIDS education and personal risk awareness through peer education. However, no changes in condom use of sexual partners was seen.</li> <li>• Men in the workplace – Three studies targeted men in the workplace: truck drivers</li> </ul>

	<p>targeted with VCT, skills in condom negotiation, condom use, demonstration and prevention and STI and HIV risk reduction showed a significant intervention effect on lowering STI incidence and decreasing the number of sexual partners; Brazilian port workers were targeted with face-to-face contact by peer outreach workers to discuss HIV/AIDS as well as free distribution of condoms. This resulted in significant reported increase in condom use and decrease in the numbers of sexual partners over two years. However, no change in attitude towards condoms or their knowledge of HIV/AIDS was reported. Truck workers in Senegal were targeted with peer-education intervention to increase condom use as well as skills training in condom use, condom negotiation, and communication and HIV/STI education. However, results were seen as unreliable and reports of decreased sexual partners were not corroborated by women.</p> <ul style="list-style-type: none"> <li>● Men attending clinics – nine studies (incorporating video-based education, motivation and skills based training, showed mixed results reported for attitudes towards condoms and knowledge of AIDS. Results were positive for improved communication skills with sex partner and condom use (two studies).</li> <li>● Heterosexual males – six studies showed mixed results.</li> <li>● Other men – four studies were included; one showed a significant reduction in STI incidence; one reported a positive effect on frequency of unprotected sex, condom use and number of sex partners; one showed no effect for condom use; changes were also reported in intention to engage in risky behaviour, and AIDS related knowledge.</li> </ul>
<p><b>Gaps and inconsistencies identified by the review:</b></p>	<p>Bias of mixed sex groups.  Small sample sizes reported significant results, which may show publication bias.  Most studies were conducted in the United States and involved black and minority ethnic groups and the findings for these studies may not be generalisable.</p>
<p><b>Research recommendations:</b></p>	<ul style="list-style-type: none"> <li>● Research needs to focus on morbidity outcomes (e.g. incident infection) rather than only behavioural or social psychological outcomes.</li> <li>● Interventions need to target heterosexual men or at least ensure that heterosexual men participate in single-sex intervention groups and then evaluations can then identify the approaches that are best suited to this population.</li> <li>● More research needs to be carried out in other parts of the world where rates of STIs and HIV are high among heterosexual men and where they are increasing.</li> <li>● Studies other than RCTs can identify promising interventions; the effectiveness of these interventions requires further rigorous evaluation before widespread implementation.</li> <li>● Studies should have the statistical power to demonstrate effectiveness, and this should be calculated prior to research being funded and implemented.</li> </ul>

- **Herbst, J.H. et al. (2005) A meta-analytic review of HIV behavioral interventions for reducing sexual risk behavior of men who have sex with men.**

<b>Data pool:</b>	
Population	Men who have sex with men.
Setting(s)	Any.
Interventions	Any behavioural interventions.
Searches	The Prevention Research Synthesis project database was updated through to 2003. Electronic databases were searched (AIDSLINE, Medline, PsycInfo, Embase, and the Web of Science, SocioFile and ERIC). In addition, searches were conducted of published abstracts from recent international AIDS conferences, the Cochrane Controlled Trials Register, the Current Controlled Trials Register, and the Computer Retrieval of Information on Scientific Projects database. The EPPI Centre were also requested to do a search of their database of effectiveness reviews. Forty journals published between June 2002 and July 2003 were also hand searched and experts in the field were contacted.
Selection/inclusion criteria	<p>Studies had to meet the following criteria:</p> <ul style="list-style-type: none"> <li>• Evaluate an HIV, AIDS, or STD behavioural intervention targeting or focusing on MSM (including homosexual, bisexual, or non-gay-identified men);</li> <li>• Include only men, with 85% or more reporting same-sex behaviour;</li> <li>• Assess the same group prospectively over time or compare multiple groups receiving an intervention with a control or comparison group;</li> <li>• Assess outcomes before and after completion of the intervention; and</li> <li>• Report outcome data necessary to calculate effect size estimates for at least 1 sex behaviour or biologic outcome measure. (For reports that did not report sufficient information to calculate effect size estimates, the authors attempted to contact authors for clarification or additional information).</li> </ul>
Quality assessment	<p>The methodological quality of the included studies was assessed by coding the following study design elements:</p> <ul style="list-style-type: none"> <li>• Evaluation design (e.g., 1-group vs. multiple-group),</li> <li>• Assignment method (random vs. non-random),</li> <li>• Type of control group (wait list vs. treatment),</li> <li>• Time of follow-up assessments, and</li> <li>• Overall and differential retention rates.</li> </ul>
Types of studies	Randomised controlled trials and non-randomised controlled trials (employed assignment methods that allowed self selection or assignment based on capacity or convenience).
Number of studies	33 studies were included.
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Unprotected anal intercourse, number of sex partners, condom use, and unprotected oral intercourse, STD diagnosis.
<b>Review findings:</b>	<p>Interventions were associated with a significant decrease in unprotected anal intercourse (24 studies; OR 0.77, 95% CI: 0.65, 0.92), number of sexual partners (9 studies; OR 0.76; 95% CI: 0.61, 0.94) and with a significant increase in condom use during anal intercourse (9 studies; OR 1.61, 95% CI: 1.16, 2.22).</p> <p>Intervention characteristics associated with effectiveness were identified:</p> <ul style="list-style-type: none"> <li>• Theoretical models (based on diffusion of peer norms or relapse prevention)</li> <li>• Interpersonal skills training (negotiation/communication of safer sex and assertiveness training)</li> </ul>

	<ul style="list-style-type: none"> <li>• <math>\geq 4</math> delivery methods (any of the following methods: counselling, group discussions, lectures, live demonstrations, and role play/practice)</li> <li>• Exposure complexity (intensity/dose of intervention, <math>&gt;1</math> session, <math>\geq 4</math> hours exposure, <math>\geq 3</math> week time span)</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• Lack of biologic endpoints. "Although the results of this review demonstrate that HIV behavioural interventions are efficacious in changing self-reported risk behaviours among MSM, it remains uncertain how large an effect would be required to lead to significant reductions in STD or HIV incidence".</li> </ul> <p>Also see <i>Research recommendations</i></p>
<b>Research recommendations:</b>	<p>The following recommendations were identified:</p> <ul style="list-style-type: none"> <li>• Careful empiric tests that demonstrate these same effects across subgroups of MSM (e.g., non-gay-identified and substance-using MSM).</li> <li>• Evaluations of the effects of behavioural interventions designed specifically for subgroups of MSM and the effects of interventions adapted and tailored for these subgroups.</li> <li>• Future intervention efforts should consider newly identified predictors of increased sexual risk-taking among MSM, including HIV treatment optimism, social norms regarding intentional unsafe sex, and use of the Internet to solicit sex partners.</li> <li>• There is a crucial need for intervention research to meet the needs of emerging MSM communities throughout the world. An overwhelming need for proven models of HIV prevention for MSM in developing world settings is self-evident.</li> <li>• Future intervention studies should complement self-reported behavioural measures with more objective biologic outcomes in predictions of intervention efficacy and collect information on partner selection (e.g. "HIV serosorting").</li> </ul>

- **Mathews C. et al. (2002) A systematic review of strategies for partner notification for sexually transmitted diseases including HIV/AIDS.**

<b>Data pool:</b>	
Population	STD/HIV patients (USA, Denmark, Lusaka, South Africa based study)
Setting(s)	Clinic setting
Interventions	Partner notification
Searches	<ul style="list-style-type: none"> <li>• Searches were conducted on five databases: MEDLINE, EMBASE, Psychological Abstracts, Sociological Abstracts, Cochrane Controlled Trials register.</li> <li>• Hand-searches were carried out on the Proceedings of the International AIDS Conferences from 1994 to 2000 and the International Society for STD Research meetings (ISSTD) from 1991 to 1999.</li> </ul>
Selection/inclusion criteria	<p>Studies were included if they met the following criteria:</p> <ul style="list-style-type: none"> <li>• Published or unpublished randomised controlled trials (RCTs)</li> <li>• comparing two or more alternative partner notification strategies for people diagnosed with STDs which measured: partner elicited, located, notified, medically evaluated, harms to the index patient or partner, index patient re-infection rates, incidence of STDs, or changes in index patient's or partner's behaviour.</li> </ul>
Quality assessment	<p>Six core methodological criteria were used to identify study quality:</p> <ol style="list-style-type: none"> <li>(1) Randomisation designed and completed in an appropriate manner.</li> <li>(2) Participation rate greater than 80%.</li> <li>(3) Participants analysed in the groups to which they were assigned.</li> <li>(4) Outcome assessors blinded to the assignment status of the participants.</li> <li>(5) Groups similar at the start of the trial.</li> <li>(6) Groups treated equally in all aspects other than the intervention.</li> </ol>
Types of studies	Published or unpublished randomised controlled trials
Number of studies	11 studies.
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Patient notification
<b>Review findings:</b>	<p>In the first trial those patients that were offered a choice between provider and patient referral, compared with referral alone, resulted in more partners being notified with NNT= 0.6; 95% CI=0.5 to 0.7). In the group with the choice most partners (70, 89.7%) were notified by the provider and only eight by the index patient. More partners in the group with the choice tested HIV-positive: 0.23 compared with 0.03 per index patient; NNT-5; 95% CI=2.7 to 25. There was no difference in the number of partners elicited. The participation in the first study was 46%, those who declined to participate, were ineligible or unavailable were more likely to be female, black and to have been tested confidentially rather than anonymously. The male participants were more likely to be homosexual or bisexual.</p> <p>The second study compared a choice between provider and patient referral, with patient referral alone. Among the group of index patients randomly allocated to receive a choice between provider and patient referral, provider referral was preferred, with 82% of patients choosing provider referral with at least one partner.</p> <ul style="list-style-type: none"> <li>• Evidence suggests that giving index patients a choice between provider and patient referral may be more effective than patient referral.</li> </ul>
<b>Research recommendations:</b>	<p>The following recommendations were reported:</p> <ul style="list-style-type: none"> <li>• One of the aims of these interventions needs to be long-term behaviour change and appropriate support.</li> <li>• Another aim needs to be the availability of effective treatments.</li> </ul>

	<ul style="list-style-type: none"><li>• Evaluations of partner notification strategies need to address these issues, as well as potentially harmful effects, and cost.</li></ul>
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- **Pedlow C.T. and Carey M.P. (2003) HIV sexual risk-reduction interventions for youth: A review and methodological critique of randomized controlled trials.**

<b>Data pool:</b>	
Population	Adolescents, ages 13 to 19 years.
Setting(s)	Any.
Interventions	Any intervention which aimed to reduce sexual risk behaviours.
Searches	Computerised literature searches of PsycInfo, AIDSLINE, Medline, and CINAHL, using the keywords and descriptors: HIV, AIDS, STD, prevention, education, risk reduction, intervention, adolescent(s), teen(s), and youth. In addition, the reference sections from articles and reviews were also searched.
Selection/inclusion criteria	<p>Studies were included if they met the following criteria: (1) primarily teenage samples (mean ages <math>\leq</math> 19 years old or, for studies that did not report the mean age, the age range was within 13 to 19 years); (2) randomized controlled trials (RCTs); (3) primary outcomes of reduction of sexual risk behaviors (e.g., frequency of unprotected sex, condom use); and (4) studies published in peer-reviewed journals prior to September 2000 were included.</p> <p>Interventions designed to increase rates of HIV testing were not included unless they also had specific sexual risk reduction outcomes.</p>
Quality assessment	Only RCTs were included and the authors undertook a critique of the literature by examining the use of theory, intervention content and format, measurement, study design, and data analysis.
Types of studies	Randomised controlled trials.
Number of studies	22 RCTs.
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Sexual risk behaviours.
<b>Review findings:</b>	The authors found that, overall, 13 of the 23 interventions were shown to be effective in reducing sexual risk behaviour. The authors concluded that these studies provide considerable evidence for the efficacy and effectiveness of HIV prevention programmes for adolescents.
<b>Research recommendations:</b>	<p><b>Theory</b></p> <ul style="list-style-type: none"> <li>• Research is needed to evaluate strategies to enhance readiness-to-change risk behaviour, including motivational interviewing.</li> <li>• Future studies can better apply theory to intervention design by determining the needs of the population, including developmental factors, prior to implementing the intervention.</li> </ul> <p><b>Intervention format and delivery</b></p> <ul style="list-style-type: none"> <li>• More research is needed to compare individual and group approaches and to develop effective brief, single-session, individualised interventions.</li> <li>• Empirically validated interventions for sexually inexperienced youth are needed.</li> </ul>

- **Rees R et al. (2004) HIV health promotion and men who have sex with men (MSM): a systematic review of research relevant to the development and implementation of effective and appropriate interventions**

<b>Data pool:</b>	
Population	Men who have sex with men.
Setting(s)	Any.
Interventions	HIV health promotion interventions or sexual risk reduction interventions in the context of HIV.
Searches	Searches were conducted in 13 databases/registers: Medline, Embase, CINAHL, ERIC, Social Science Citation Index, PsycInfo, British Education Index, EPPI Centre databases (BiblioMap, PrevRev), Database of Abstracts of Reviews of Effects (DARE), HealthPromis, Cochrane Controlled Trials Register, Cochrane Database of Systematic Reviews, Cochrane HIV/AIDS Group trials register, African Trials Register, Health Promotion Library Scotland catalogue, SIGLE, NGC, HIV/AIDS Prevention Research Synthesis (PRS) database. Hand searching was undertaken in Social Aspects of AIDS book series (eds 1993, 1995, 1997 and 2000). Bibliographies of systematic reviews were scanned.
Selection/inclusion criteria	Studies were included if they met the following criteria: <ul style="list-style-type: none"> <li>• Randomised controlled trial or controlled trial.</li> <li>• Intervention delivery completed after 1996 (reports were excluded if publication was prior to 1996 or if this data was unavailable).</li> </ul>
Quality assessment	Four core methodological criteria were used to identify three levels of study quality. 'Sound' outcome evaluations were those deemed to meet the four criteria of: <ol style="list-style-type: none"> <li>(1) Providing pre-intervention data for all individuals in each group;</li> <li>(2) Providing post-intervention data for each group;</li> <li>(3) Reporting findings for each outcome measure indicated in the aims of the study; and</li> <li>(4) Employing a control/comparison group equivalent to the intervention group on socio-demographic and outcome variables.</li> </ol>
Types of studies	Randomised controlled trials and controlled trials
Number of studies	12 effectiveness reviews, 12 outcome evaluations of interventions delivered in or after 1996 were identified and 14 studies on MSM's views. 8 studies were considered methodologically sound and included in the effectiveness synthesis.
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Unprotected anal intercourse, other sexual practices, attitudes/motivations/intentions, beliefs/perceptions, anal intercourse, and knowledge/awareness.
<b>Review findings:</b>	Findings from the eight studies indicated that: <ul style="list-style-type: none"> <li>• Interventions based on cognitive-behavioural techniques for MSM who identify themselves as at high risk appear to be effective in reducing the number of men reporting sero-discordant or unknown status unprotected anal intercourse.</li> <li>• The effect on casual unprotected anal intercourse of information provision or information and counselling given within the context of participants' lifestyles is unclear.</li> <li>• Due to limitations in the reporting of outcomes, the effect of various interventions on knowledge/ awareness and attitudes/beliefs were all deemed to be unclear.</li> <li>• No evidence of effect was found for UK community interventions based upon peer-delivered HIV risk reduction messages for any of the review's priority outcomes. Peer educators had mixed responses to these interventions, preferring factual information</li> </ul>

	<p>provision to discussion of behaviours or attitudes.</p> <p>A key message of the report was “There is a relatively large evidence base for informing policy and practice in the area of MSM and the barriers to and facilitators of HIV-related sexual health. It is limited, however, in terms of its coverage of UK-based interventions, the extent of use of unreliable evaluation designs and the study of selected vulnerable groups of MSM”.</p>
<p><b>Research recommendations:</b></p>	<p>The following recommendations were reported:</p> <ul style="list-style-type: none"> <li>● Further rigorously conducted and reported primary and secondary research is required on the views of all groups of MSM, in particular young MSM, working class MSM, black and minority ethnic MSM, disabled MSM and other vulnerable groups of MSM.</li> <li>● Explore the comparative effectiveness of individual versus group level interventions based on cognitive-behavioural techniques;</li> <li>● Explore the effectiveness of interventions which address the complexity of the competing risks that MSM have to balance when making decisions about their HIV-related sexual health; and</li> <li>● Explore the effectiveness of interventions that aim to inform MSM of the various markers that they or their sexual partners might be using to determine HIV status, and the extent to which these can be relied upon.</li> </ul> <p>Interventions that call for further evaluation include the following:</p> <ul style="list-style-type: none"> <li>● Interventions for young MSM to take into consideration the complicating factors surrounding condom use and the impact of condoms on sexual pleasure;</li> <li>● Interventions specifically for young MSM to support inclusive conceptualisations of MSM identity(s);</li> <li>● Interventions for HIV positive MSM to address the communication and strategic skills needed to deal with situations HIV positive MSM find difficult (e.g. disclosure, condom use);</li> <li>● Interventions targeting HIV positive MSM relating to the conflicts inherent in balancing sexual intimacy and pleasure with condom use and communication about HIV; and</li> <li>● Interventions to help men deal with the psychological impact of HIV diagnosis and subsequent life as a sexual being.</li> </ul> <p>Intervention areas that call for evaluation since they are lacking in sound evaluations and yet match needs identified by particular groups of vulnerable MSM, include:</p> <ul style="list-style-type: none"> <li>● Interventions aimed at young MSM to address gaps in their knowledge about the HIV risks of oral sex and to support their testing decisions;</li> <li>● Interventions aimed at all MSM that develop understanding of the way lives vary with HIV status, understanding of the range of approaches men have to disclosing status, shared responsibility for sexual safety between positive, negative and untested MSM, and communication about HIV status;</li> <li>● Interventions aimed at family and friends of MSM that enable them to support their HIV information and other support needs;</li> <li>● Interventions aimed at the gay community and at society in general to reduce the stigma of HIV and attributions of blame for HIV;</li> <li>● Interventions aimed at society in general that enable development of an understanding of the HIV sexual health needs of MSM, the means to address these</li> </ul>

	<p>and to provide knowledge about where to go for further information on the HIV sexual health needs of MSM;</p> <ul style="list-style-type: none"><li>● Interventions aimed at health professionals to provide training in HIV specific communication skills;</li><li>● Support for drop-in centres to develop inclusive, relevant and non-judgemental services;</li><li>● Support for specialist HIV services to provide personally relevant information and advice that is accessible and understandable and to ensure the necessary time is spent on HIV positive MSM's information needs;</li><li>● Accessible provision of free condoms for MSM who sell sex; and</li><li>● Provision of resources for meeting places and befriending networks for young MSM.</li></ul>
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• **Vidanapathirana J. et al. (2005) Mass media interventions for promoting HIV testing.**

<b>Data pool:</b>	
Population	Any intervention targeting the general public, as well as those targeting specific groups (including, commercial sex workers, drug users, MSM, bisexual people, pregnant women and adolescents).
Setting(s)	Any.
Interventions	Specific or general mass media campaigns, targeted at a population level or a specific target group that aimed to increase VCT for HIV. Relevant media: radio, television, print (newspapers, magazines, booklets, leaflets, posters, pamphlets), films, documentaries, billboards, street theatre or combinations of these.
Searches	Used the Cochrane HIV/AIDS search strategy. Following databases searched: Cochrane Central Register of Controlled Trials, Medline, Embase, NLM Gateway, CINAHL, AIDSearch, PsycInfo, Sociological Abstracts and Communication studies. All databases were searched until end of April 2004. The reference lists of related reviews and all articles obtained were also reviewed for additional citations. Experts in the field were contacted to identify ongoing research. Relevant websites of international agencies (e.g. UNAIDS, WHO, UNFPA) were also searched.
Selection/inclusion criteria	Studies had to meet the following criteria: (1) RCT, controlled clinical trial or interrupted time series analysis; (2) intervention targeting the general public or specific target groups; (3) specific or general mass media campaigns, targeted at population level or at specific target groups; and (4) outcome measure of direct impact of utilisation of HIV testing.
Quality assessment	For RCTs and controlled clinical trials: quality assessment included an evaluation of the following components for each included study, (a) similarity of both the intervention and control groups and that groups were treated equally expect for the intervention; (b) the method of generation of the randomised sequence; (c) the method of allocation concealment; (d) who was blinded/not blinded; (e) losses to follow-up and whether an intention to treat analysis was undertaken.  Interrupted time series: quality assessment was considered according to seven criteria determined by the EPOC group, (a) intervention occurred at clearly defined point in time and there were at least three data points before and after the intervention; (b) intervention was independent of other changes, and a formal test trend was reported; (c) interventions were unlikely to have affected data collection; (d) there was assessment of primary outcomes, or there were objective outcome variables; (e) completeness of the data set, which covered 80% or more of the total number of participants.
Types of studies	RCT, controlled clinical trial or interrupted time series analysis.
Number of studies	14 studies (2 RCTs, 3 non-randomised controlled studies and 9 interrupted time series)
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Direct impact of intervention on the utilisation of HIV testing.
<b>Review findings:</b>	All individual studies concluded that mass media were effective, and this was confirmed by reanalysis by the authors of the interrupted time series studies which all had initial impact. Mass media interventions for the promotion of VCT showed significant immediate (random effect: estimated mean = 5.49, 95% CI: 2.37 to 8.61) and overall (random effect: estimated mean = 6.10, 95% CI: 1.81 to 10.38) effects. No long term effects were seen (random effect: estimated mean = 4.45, 95% CI: -0.19 to 9.08).
<b>Research recommendations:</b>	<ul style="list-style-type: none"> <li>• Future research is required to identify the impact of mass media intervention for promotion of HIV testing on seropositivity status in high-risk groups and epidemic countries.</li> <li>• Additional research would identify the cost-effectiveness, type of mass media</li> </ul>

	<p>interventions, and characteristics of messages in mass media to promote HIV testing.</p> <ul style="list-style-type: none"><li>• More studies are required of new media strategies to maintain impacts in the long term.</li></ul>
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## Category 2

- **Albarracin, D. et al. (2005) A test of major assumptions about behaviour change: A comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic.**

<b>Data pool:</b>	
Population	Any
Setting(s)	Any
Interventions	Theoretically underpinned behavioural interventions
Searches	<ul style="list-style-type: none"> <li>• Five databases were searched, there were: MEDLINE, PsychINFO, ERIC, Social Science Citation Index and Dissertation Abstracts International.</li> <li>• Hand searches were also undertaken in AIDS, AIDS Education and Prevention, AIDS Research, American Behavioural Scientist, American Journal of Community Psychology, American Journal of Nursing, American Journal of Public Health, Basic and Applied Social Psychology, Communication Research, Communications, Health Communication, Health Education Quarterly, Health Education Research, Health Psychology, Journal of the American Medical Association, Journal of Applied communication Research, Journal of applied Social Psychology, Journal of Consulting and clinical Psychology, Journal of Personality and Social Psychology, journal of Sex Research, Medical Anthropology, Morbidity and Mortality Weekly Report, Qualitative Health Research, and Social Science and Medicine.</li> </ul>
Selection/inclusion criteria	<p>Studies were included if they met the following criteria:</p> <ul style="list-style-type: none"> <li>• Outcome to promote the use of condoms</li> <li>• Role-playing, practicing condom-use-related skills</li> <li>• HIV counselling and testing</li> <li>• Studies where effect sizes could be calculated</li> </ul>
Quality assessment	Included studies met the inclusion criteria (no other details were provided)
Types of studies	Intervention Groups and control groups
Number of studies	191 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Change in attitude; change in norms; change in perceived threat; change in control perceptions; change in behavioural skills; change in knowledge.
<b>Review findings:</b>	<p>Findings from the HIV studies included were:</p> <ul style="list-style-type: none"> <li>• There was significant association at the point of pre-test and behaviour change based on the joint consideration of experimental and control groups, which suggests that HIV positive people generally increase their condom use.</li> <li>• Samples including MSM changed most in response to interventions than other samples</li> <li>• However, MSM were generally insensitive to the type of intervention strategy used with the exception of greater behaviour change in response to condom provision and less change in response to attitudinal arguments.</li> <li>• Those groups with high numbers of people with African backgrounds show more behaviour change in general and this change is attributable to behavioural skills arguments; self-management strategies and; HIV counselling and testing.</li> <li>• Condom provision seems more effective for those with European backgrounds.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	Limited data included on HIV positive individuals limited the analysis of the effectiveness of differing intervention components.

	There were discrepancies between the results of fixed- and random-effect analyses with the significant results reducing using the random-effects model.
<b>Research recommendations:</b>	<p><i>Recommendations were that:</i></p> <p>Future research for MSM might concentrate on improving the efficacy of other techniques that are efficacious to other high-risk groups.</p> <p>Future research should try to provide a sufficiently large number of effect sizes to estimate the population variance more precisely and thus reconcile the discrepancies between the fixed and random-effect findings.</p>

- Farnham, P. G., Pinkerton, S. D., Holtgrave, D. R. and Johnson-Masotti, A.P. (2002). Cost-effectiveness of counseling and testing to prevent sexual transmission of HIV in the United States. *AIDS and Behavior* 6 (1): 33-43.

<b>Data pool:</b>	
Population	Any.
Setting(s)	Any.
Interventions	HIV counselling and testing.
Searches	Searches of electronic databases including AIDSLINE, Medline, PsycINFO and HealthStar to update searches for a previous review (Farnham, 1998).
Selection/inclusion criteria	Studies had to meet the following inclusion criteria: (1) a clear identification of a prevention or care and treatment programme; (2) a quantitative estimate of programme costs; (3) a quantitative estimate of programme outcomes, and (4) a quantitative comparison of costs and outcomes. Studies also had to report on sexual behaviour change following VCT.
Quality assessment	None reported.
Types of studies	Cost-effectiveness analyses and cost-benefit analyses.
Number of studies	11 cost studies.
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Benefit-cost ratio and cost per year of life saved.
<b>Review findings:</b>	The literature indicated that the interventions reviewed were generally cost-effective if targeted to groups of infected or high-risk individuals, although there is continuing debate over the efficacy of HIV counselling and testing in changing sexual behaviour. The authors conclude that HIV counselling and testing should be part of an overall prevention strategy which also included more intensive sexual risk reduction interventions such as individual, small-group, and community-level approaches.
<b>Research recommendations:</b>	None made.

- **Johnson, B.T. et al. (2003) Interventions to reduce sexual risk for the human immunodeficiency virus in adolescents, 1985-2000: A research synthesis.**

<b>Data pool:</b>	
Population	Adolescents.
Setting(s)	Any.
Interventions	Educational, psychosocial or behavioural interventions advocating sexual risk reduction for HIV prevention.
Searches	The following strategies were used to locate articles: (1) Six electronic databases (Medline, PsycInfo, AIDSLine, CINAHL, Dissertation Abstract Online and ERIC) from inception to 2000; (2) requests for papers were sent to researchers; (3) references of obtained articles; (4) manual searching of conference proceedings, and (5) manual searching of recent journals (including AIDS Education and Prevention, American Journal of Public Health, Archives of Pediatric and Adolescent Medicine, Health Psychology, Journal of Consulting and Clinical Psychology and JAMA).
Selection/inclusion criteria	<p>The following selection criteria were used:</p> <ul style="list-style-type: none"> <li>• Evaluate an intensive educational, psychosocial or behavioural intervention(s) advocating sexual risk reduction for HIV prevention;</li> <li>• Use a randomised controlled trial or quasi-experimental design with rigorous controls;</li> <li>• Have specific behavioural-dependent measures relevant to sexual risk;</li> <li>• Have sample adolescents (pre-college); and</li> <li>• Provide sufficient information to calculate effect sizes (ES).</li> </ul> <p>Interventions were excluded if they did not emphasis HIV content and extremely brief interventions for which message exposure was not ensured. In addition, interventions that used measures not specific to a particular sexual behaviour (e.g. general composite measures) were excluded.</p>
Quality assessment	No details reported.
Types of studies	Randomised controlled trials and quasi-experimental studies using rigorous controls.
Number of studies	44 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Sexual frequency, condom use, communications with sex partner, skills for condom use negotiations, skills for condom use, acquired condoms or spermicide, diagnosed STDs (other than HIV).
<b>Review findings:</b>	Relative to control, interventions significantly enhanced (1) participants' skills for sexual risk communications, (2) skills for condom use, (3) the quantity of sexual risk communications, and (4) participant's condom use. Interventions also reduced sexual frequency outcomes. Twelve studies examined behavioural markers; there was no constant intervention effect on acquisition of condoms or spermicide, being diagnosed with an STD other than HIV, or obtaining tests for HIV (one study).
<b>Research recommendations:</b>	Future studies should be conducted across a wider range of geographical regions and risk contexts.

- **Johnson, W.D. et al. (2003) Interventions to modify sexual risk behaviours for preventing HIV infection in men who have sex with men**

<b>Data pool:</b>	
Population	MSM of any age, race/ethnicity, sexual orientation, gender identity or nationality.
Setting(s)	Any.
Interventions	Interventions designed to promote sexual risk reduction in order to reduce transmission of HIV or other STDs.
Searches	<p>Studies were sought from the following sources from 1988 to 1997:</p> <ul style="list-style-type: none"> <li>• Nine electronic databases: AIDSLine, CINAHL, Dissertation Abstracts International, ERIC, HealthSTAR, Medline, PsycInfo, Sociofile, and Web of Science.</li> <li>• Hand searches of relevant journals (including AIDS, AIDS and Behavior, AIDS Education and Prevention, American Journal of Public Health, International Journal of STD and AIDS, Journal of Acquired Immune Deficiency Syndromes), bibliographies of relevant articles, and other published reviews.</li> <li>• Unpublished reports from researchers.</li> </ul>
Selection/inclusion criteria	Studies were considered eligible if they examined the effects of behavioural interventions to reduce risk for HIV or STD transmission. Studies were reviewed against the following criteria: (1) outcome relevance (measurement of at least one of a list of behavioural or biologic outcomes, e.g., unprotected sex or incidence of HIV infections) and, (2) methodologic rigour (randomised controlled trials or certain strong quasi-experimental designs with comparison groups).
Quality assessment	Studies were eligible based on study design; in addition allocation concealment was assessed. Other details were not reported.
Types of studies	Controlled trials, randomised or quasi-experimental with a control group.
Number of studies	Thirteen eligible studies were identified.
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Intervention effects on unprotected sex.
<b>Review findings:</b>	A summary measure of intervention effects on reducing unprotected sex was favourable across all 12 studies (odds ratio [OR] 0.73; 95% CI: 0.60, 0.88). Effects were found to be homogenous across the studies. These results indicated that 23% fewer men reported unprotected anal sex after receiving an intervention than after the comparison condition.
<b>Gaps and inconsistencies identified by the review:</b>	Few studies focusing on MSM of colour, or HIV-seropositive men. Few behavioural outcome studies have examined individual-level interventions.
<b>Research recommendations:</b>	Many more rigorous evaluations of HIV prevention efforts with MSM are needed to ascertain with confidence the effects of specific intervention components, population characteristics, and methodologic features.

- **Johnson, W.D. et al. (2005) HIV interventions research for men who have sex with men: a 7-year update**

<b>Data pool:</b>	
Population	Men who have sex with men.
Setting(s)	Any.
Interventions	Any behavioural intervention.
Searches	Resources included electronic databases (including Medline, PsycInfo, PubMed, AIDSLine, Web of Science), reviews and other studies in the HIV prevention literature, expert recommendations, hand searches of selected journals, and manuscripts and unpublished reports submitted by researchers in the field.
Selection/inclusion criteria	Evaluated according to outcomes measured and study design. Eligible studies measured intervention effects on behaviours understood to affect risk of HIV transmission (e.g. unprotected sex, condom use, number of sexual partners) and biological outcomes (including incidence of infection by HIV or other STD). Acceptable study designs were randomised controlled trials, and certain quasi-experimental designs (required to include independent comparison groups assigned without bias, and to include separate baseline data for intervention and control groups).
Quality assessment	Studies were restricted by inclusion. No further details were reported.
Types of studies	Randomised controlled trials, and certain quasi-experimental designs.
Number of studies	40 studies.
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Unprotected sex (defined as anal intercourse without a condom)
<b>Review findings:</b>	<p><b>Versus minimal to no HIV prevention:</b> 38 interventions reduced unprotected sex by 27% (95% CI: 15%, 37%). The proportion of participants reporting unprotected sex was reduced by 16% (95% CI: 10%, 21%). In subgroup analyses, significant favourable effects were observed for small group and community interventions. Effects among individual-level interventions were also favourable, but not statistically significant.</p> <p><b>Versus standard or other HIV prevention:</b> 16 interventions reduced unprotected sex by 17% beyond changes observed in standard or other HIV prevention interventions, and the proportion of participants reporting unprotected sex was reduced by 6%.</p> <p><b>Interventions for HIV-positive MSM:</b> A 21% reduction in unprotected sex was observed across 15 studies which included HIV-positive MSM. Effects were more favourable across 7 studies of small group interventions.</p>
<b>Gaps and inconsistencies identified by the review:</b>	Some high-risk populations have been under researched: African American and Latino MSM, and MSM in countries where English is not the primary language.
<b>Research recommendations:</b>	Further research on effective interventions for the above.

- **Johnson, W.D. et al. (2002) HIV prevention research for men who have sex with men: a systematic review and meta-analysis**

<b>Data pool:</b>	
Population	Men who have sex with men (US-based interventions/studies)
Setting(s)	Any.
Interventions	Any. Most interventions were delivered in small group settings.
Searches	Online databases (only Medline, AIDSLine, PsychLit specified), reviews and other studies in the HIV prevention literature, expert recommendations, and manuscripts and unpublished reports submitted by researchers. The search was finished in June 1998.
Selection/inclusion criteria	Studies were evaluated for inclusion according to the following criteria: (1) behavioural outcome of interest including unprotected sex, use of male condoms, number of sex partners, and 17 other sexual, drug use and testing behaviours associated with risk for HIV transmission (not specified); (2) controlled trial, (either randomised or quasi-experimental with comparison group) that met the rigor criteria for the HIV/AIDS Prevention Research Synthesis (PRS) project.
Quality assessment	Included studies met the rigor criteria for the HIV/AIDS PRS project. No further details were reported.
Types of studies	See Selection/inclusion criteria.
Number of studies	Of 99 US studies, which met the inclusion criteria, ten studies were focused on MSM. Of the ten studies, one was focused on reduction in emotional distress after HIV testing and did not report behavioural outcomes. The analyses were therefore limited to nine controlled trials.
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	The three most commonly reported outcomes across the studies were unprotected sex, condom use, and number of sex partners.
<b>Review findings:</b>	A summary effect measure of intervention effects on unprotected sex was found to be favourable compared to comparison conditions (odds ratio [OR], 0.69; 95% confidence interval [CI]: 0.56, 0.86). Favourable results were found for increasing condom use across 4 studies, and for reducing number of sexual partners across 6 studies. Interventions that included interpersonal skills training had the most favourable effects on unprotected sex (unadjusted). Interventions were found to be most effective among studies that included younger participants and populations with a higher background prevalence of unprotected sex. Community studies had more favourable effects than small group interventions.
<b>Gaps and inconsistencies identified by the review:</b>	The following gaps were identified: <ul style="list-style-type: none"> <li>• Lack of studies examining MSM of ethnic minorities, HIV-seropositive men.</li> <li>• Lack of eligible studies with behavioural outcomes data focused on individual-level interventions for MSM in the US.</li> <li>• High-risk participants</li> <li>• Effects of small group interventions over extended period of time</li> <li>• Community-level interventions at short follow-up</li> <li>• Measurement at multiple follow-up times within studies.</li> </ul>
<b>Research recommendations:</b>	More rigorous evaluations of HIV prevention efforts with MSM are needed to ascertain with confidence the effects of specific intervention components, population characteristics, and methodologic features.

- **Logan T.K. et al. (2002) Women, sex, and HIV: Social and contextual factors, Meta-analysis of published interventions, and implications for practice and research.**

<b>Data pool:</b>	
Population	Various populations including ethnic minorities
Setting(s)	Any
Interventions	Social and contextual factors
Searches	14 databases were searched: AIDSLINE, Social Science, Citation Index, Science Citation Index Expanded, ERIC, CINAHL, HealthSTAR, TROPAG & RURAL, Social Work Abstracts, SERFILE; Sociological Abstracts, Info Trac Web, PsychINFO, CC Search, and Medline. Hand searches were conducted for studies reported from 1990 to May 2000 in : AIDS, AIDS and Behaviour, AIDS Care, AIDS Education and Prevention, American Journal of Public Health, JAMA, Sexually Transmitted Diseases and The Lancet.
Selection/inclusion criteria	<p>Studies were included if they:</p> <ul style="list-style-type: none"> <li>• Targeted high-risk, heterosexual adult populations for HIV-prevention interventions;</li> <li>• Included sexual behaviour outcome data or a proxy measure for condom use and/or number of sex partners;</li> <li>• Had post-test outcomes for participants in an intervention group and a control group;</li> <li>• Targeted the same individuals for intervention and follow-up measures (which primarily excluded community level programs);</li> <li>• Examined the effects of an intervention (studies with HIV testing and counselling only or condom distribution only were not included);</li> <li>• Included summary or inferential statistics sufficient for the calculation of effect sizes.</li> </ul>
Quality assessment	See selection/inclusion criteria.
Types of studies	Randomised control trials
Number of studies	30 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Condom use and number of partners
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Gender was examined as a possible moderator, these analyses showed a nonsignificant negative effect size for men indicating that there is likely no difference in the outcome on number of partners for men in intervention and control groups.</li> <li>• Focused comparison of effect sizes from continuous variables and those from the condom outcome variable revealed a negative and significant finding between days to follow-up and condom use (<math>z = -3.52, p = .0002</math>, one-tailed).</li> <li>• Interventions that incorporated a culture – race component than those without it showed very little difference, for condom use (<math>r = .085, p &lt; .001</math> vs. <math>r = .057, p &lt; .001</math>) and non-significance for number of partners (<math>r = .090, p = .0192</math> vs. <math>r = .060, p = .0307</math>).</li> <li>• For both condom use and number of partners variables, the class of interventions with social factors had slightly larger weighted mean effect sizes than the class of interventions with no social factors (<math>r = .082, p &lt; .001</math> vs. <math>r = .057, p &lt; .001</math> [condom use] and <math>r = .079, p = .0183</math> vs. <math>r = .064, p = .0384</math> [partner, non-significant]).</li> <li>• For condom use the greatest weighted mean effect size was found for those interventions that targeted low income women (<math>r = .090, p &lt; .001</math>). The smallest weighted mean effect size was in studies targeting women from other clinics (<math>r = .054, p = .0392</math>).</li> <li>• For the partner dependent variable, the greatest weighted mean effect size found in the diffuse comparisons was found for the STD clinic class (<math>r = .100, p &lt; .01</math>). This class only included two study effect sizes and must be viewed with caution. The other clinic class</li> </ul>

	yielded the lowest weighted mean effect size ( $r = .029$ , $p = .2912$ ), which was not significant.
<b>Gaps and inconsistencies identified by the review:</b>	<p>There were a small number of studies included in the meta-analysis.</p> <p>The included studies had such varied measures of condom use and number of sexual partners, varied periods of follow-up, and varied ways of estimating change that the effects may have been diluted.</p> <p>Coding the moderators could have been more precise had there been more information available in each primary study.</p> <p>(Also see review findings).</p>
<b>Research recommendations:</b>	<p><b>Recommendations for practice are to:</b></p> <ul style="list-style-type: none"> <li>• Increase the comprehensiveness of HIV prevention interventions</li> <li>• Advance female-controlled methods, and</li> <li>• Change social and cultural norms regarding sexual behaviour.</li> </ul> <p><b>Future HIV prevention intervention research needs:</b></p> <ul style="list-style-type: none"> <li>• More efforts to close the gap between research on HIV risk behaviour and intervention research;</li> <li>• To advance research for effective behavioural as well as biological interventions, and</li> <li>• Better and more standardised reporting of intervention results.</li> </ul>

- **Merzel & D'Aflitti (2003) Reconsidering community-based health promotion: promise, performance, and potential.**

<b>Data pool:</b>	
Population	Any
Setting(s)	Any community setting
Interventions	Community-based interventions
Searches	Searches were conducted on: Medline, PubMed, HealthComm-Key
Selection/inclusion criteria	<p>Studies were included if:</p> <ul style="list-style-type: none"> <li>• They were based in the US since 1980.</li> <li>• Only articles published from 1980 to 2001.</li> <li>• Studies that targeted communities as opposed to select groups or limited settings.</li> <li>• Programmes that had some sort of published outcome.</li> </ul>
Quality assessment	Unclear
Types of studies	Unclear
Number of studies	6 HIV prevention studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Outcomes of effectiveness were: condom use; carrying condoms; risky sexual behaviour.
<b>Review findings:</b>	<p>Findings showed that:</p> <ul style="list-style-type: none"> <li>• HIV projects sought to modify social norms regarding risk behaviours and increasing the social acceptability of risk avoidance. This was attempted through role modelling, self-efficacy to engage in risk reducing behaviour, reinforcing educational messages.</li> <li>• These programmes were tailored to the specific communities.</li> <li>• The HIV interventions relied on informal methods of community involvement.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• The studies were too limited to be able to calculate statistical significance.</li> <li>• The interventions were also limited in that they primarily focused upon individuals, with most people receiving mass education alone.</li> <li>• Many studies did not address normative and policy changes.</li> <li>• There was a propensity for HIV studies to demonstrate type II and type III errors.</li> </ul>
<b>Research recommendations:</b>	<ul style="list-style-type: none"> <li>• Community members, particularly peers should be closely involved in intervention design and delivery and messages should be tailored to target audiences through the use of real role model stories of success.</li> <li>• There is a need to continually monitor norms and tailor interventions towards difference populations.</li> <li>• Future studies ought to be underpinned by theory.</li> <li>• Health promotion theories need to move beyond the individual level and incorporate the social context in which behaviour occurs.</li> <li>• Future community programmes should include intensive educational and skills-building interventions aimed at high-risk individuals and messages reaching across the entire community.</li> </ul>

- **Mullen P.D. et al. (2002) Meta-analysis of the effects of behavioural HIV prevention interventions on the sexual risk behaviour of sexually experienced adolescents in controlled studies in the United States.**

<b>Data pool:</b>	
Population	Adolescents (United States)
Setting(s)	Schools and community settings
Interventions	Behavioural and social interventions
Searches	Published in Sogolow et al. (2002)
Selection/inclusion criteria	<p>Included trials tested:</p> <ul style="list-style-type: none"> <li>• Tested behavioural or social intervention programmes designed to prevent HIV infection</li> <li>• Were conducted in the United States with adolescents of middle or high school age (13-19 years)</li> <li>• Were studied or reported from 1988 to 1998, and</li> <li>• Measured change in sexual risk behaviour or a biological indicator</li> <li>• Used control or comparison groups with participants assigned to conditions either randomly or by other than random methods, such as matching that appeared to be unbiased.</li> <li>• Non-random tests met inclusion criteria if they included pre-test measures and either reported no baseline differences between study groups or controlled statistically for such differences.</li> </ul>
Quality assessment	See selection/inclusion criteria
Types of studies	Randomised control trials and quasi-experimental trials with control groups.
Number of studies	20 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Condom use, number of partners, mixed behavioural index, Composite behavioural risk variable, incidence of STDs.
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• The studies that measured frequency of sex without condoms indicated that the intervention group was significantly less likely than the control or comparison group to have sex without condoms ([OR] 0.66 [95% CI] 0.55 – 0.79, p&lt;.001).</li> <li>• The analysis for the second measure, number of partners, was not significant.</li> <li>• Both the studies that used a mixed behaviour index to measure sexual risk reported significant positive effects ([OR] 0.66, [95% CI] 0.50 – 0.88, p&lt;.01) and ([OR] 0.65, [95% CI] 0.50 – 0.85, p&lt;.01).</li> <li>• The composite behavioural risk variable (made up of one effect from each intervention) was comparable to the outcome for sex without condoms ([OR] 0.65, [95% CI] 0.50 – 0.85, p&lt;.01).</li> <li>• Neither of the two studies that measured incidence of STDs was significant from the null.</li> <li>• Stratified analysis showed that of the five studies with 100% single ethnicity four consisted of African American, one was with Hispanic. None of these studies were based in classrooms (other studies (mixed ethnicities) show no differences). These studies show more protective outcomes that may be an indicator of the importance of a cultural fit with the approach to this topic. It may also be possible that the discussions are more effective with adolescents whose perspectives are more aligned, possibly due to ethnic similarities.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	Although tests for publication bias were not significant, the funnel plot analysis suggests publication bias in some studies.
<b>Research recommendations:</b>	<ul style="list-style-type: none"> <li>• Future research ought to try to better understand the variable of setting.</li> <li>• In the absence of more data about the intervention characteristics that contributed to the</li> </ul>

	effects, this paper recommends that interventions with evidence of effectiveness be implemented as designed, with minimal adaptation to meet local needs.
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- **Neuman M.S. (2002) Review and meta-analysis of HIV prevention intervention research for heterosexual adult populations in the United States.**

<b>Data pool:</b>	
Population	Heterosexual adults (United States)
Setting(s)	Any
Interventions	Behavioural and social interventions
Searches	Published in Sogolow et al. (2002)
Selection/inclusion criteria	<p>Studies were included if they:</p> <ul style="list-style-type: none"> <li>• Tested HIV prevention interventions to reduce sex- and drug-related risk behaviours,</li> <li>• Reported positive, negative or null findings,</li> <li>• Were conducted anywhere in the world</li> <li>• Were reported from 1988 to present, and</li> <li>• Are published or unpublished</li> <li>• Used a control or comparison group, collected at least post-intervention data (except for quasi-experimental studies that collected both pre- and post-intervention data), and have either random assignment to study conditions, no apparent assignment bias, no statistical difference between groups at baseline.</li> </ul>
Quality assessment	See selection/inclusion criteria
Types of studies	See selection/inclusion criteria
Number of studies	17 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Unprotected sex and condom use and STD incidence.
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• The overall weighted average effect sizes show that risk-reduction interventions with heterosexual adults were associated with significant and modest reductions in unsafe sexual behaviours.</li> <li>• Stratification for participant grouping was significant (<math>p = .030</math>) which indicates that interventions delivered to groups had stronger effects than those delivered to individuals.</li> <li>• Individual level counselling was less likely to be a good primary prevention strategy.</li> <li>• More of the studies included in the biologic meta-analysis had interventions delivered in fewer than four sessions, and had the first follow-up conducted three months or more after the intervention has ended. Fewer of the studies included in the biologic meta-analysis delivered interventions to individuals or focused exclusively on women.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• There are too few studies included to determine which intervention characteristics produce significant protective effects.</li> <li>• This study is limited because of the small number of included studies due to the fact that it focuses on only heterosexual adults.</li> <li>• The sample was too small to analyse for attrition.</li> <li>• There is a lack of institutional interventions; few community level interventions; few interventions for men who do not inject drugs; a lack of interventions for behavioural maintenance; a lack of interventions with an alternative to the use of the male condom; and a need for component analyses to specify the components responsible for effectiveness.</li> <li>• Also, few interventions conducted in residential, commercial or public access settings and few interventions that teach men condom use skills and negotiation.</li> </ul>
<b>Research recommendations:</b>	<ul style="list-style-type: none"> <li>• Further rigorous studies need to be conducted on the subject of interventions for heterosexual adults.</li> </ul>

	<ul style="list-style-type: none"><li>• It would be useful if researchers tried to establish consensus on behavioural outcomes and their measurement, use of intent to treat analysis, periodicity and duration of follow-up and length of recall periods for behaviours.</li><li>• Included component analysis; report all outcome data related to a study's hypotheses; avoid an aggregate index to measure sexual risk and important descriptive variables.</li><li>• Journals ought to allow the space for results to be reported comprehensively and information that cannot fit into a journal should be widely available on a website, the URL of which should be included in the journal article.</li></ul>
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- **Pinkerton et al. (2002b) A review of cost-effectiveness of interventions to prevent sexual transmission of HIV in the United States**

<b>Data pool:</b>	
Population	Any (US).
Setting(s)	Any (US).
Interventions	Interventions to reduce the sexual transmission of HIV conducted in the US.
Searches	The authors conducted searches in electronic databases, including AIDSLINE, Medline, PsycInfo and HealthSTAR using combinations of the following keywords: costs, cost-effectiveness, cost-benefit, HIV prevention, AIDS prevention, and HIV infection.
Selection/inclusion criteria	Articles had to be published in peer-reviewed journals.
Quality assessment	No details reported.
Types of studies	Cost utility analyses, cost effectiveness analyses, 'effectiveness analyses' and cost analyses.
Number of studies	16 cost studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Quality adjusted life year (QALY), cost per HIV infection averted
<b>Review findings:</b>	Small-group, community-level, and outreach-based sexual risk reduction interventions, in particular, were shown to be cost saving and efficient strategies for the prevention of HIV transmission in moderate to high-risk populations.

- **Robin L. et al. (2004) Behavioural interventions to reduce incidence of HIV, STD and pregnancy among adolescents: A decade in review. (Level 2)**

<b>Data pool:</b>	
Population	Adolescents and ethnic minorities
Setting(s)	Any
Interventions	Behavioural interventions to reduce sexual risk-taking
Searches	Six electronic databases were searched: Medline, Psychlit, Popline, ERIC, Sociofile and CHID. Unspecified manual searches were also carried out.
Selection/inclusion criteria	<p>Studies were included if they:</p> <ul style="list-style-type: none"> <li>• Specified a theoretical basis for the intervention programme.</li> <li>• Provided information about the intervention (e.g. duration, content, facilitators).</li> <li>• Defined clear aims.</li> <li>• Random assignment or matched control groups using a quasi-experimental design that matched units through stratification of risk behaviours and demographic variables.</li> <li>• Studies were included if they had more than 16 participants per condition, followed participants for at least four weeks post-intervention, or had immediate pre- or post-test for interventions lasting four months or longer.</li> <li>• Had attrition rates of less than 40% at follow-up four weeks after the end of the intervention.</li> <li>• Studies were also included if they measured sexual intention for those 13 years or younger.</li> </ul>
Quality assessment	See selection/inclusion criteria.
Types of studies	Randomised control trials or quasi-experimental design with controls.
Number of studies	24 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Abstinence; reduced sexual activity or number of sexual partners; less risky sexual behaviours; reduced number of pregnancy or repeat pregnancy; or reduced STD prevalence.
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Most interventions were based on multiple theories, however, no clear pattern of study method presented itself. The most commonly used theories were: social cognitive theories; the Health Belief Model; social learning theories and; social influence theories.</li> <li>• Among commonly measured behaviours (eight out of 12 studies), condom use was affected most consistently, and delayed initiation of sexual intercourse was least affected (four of 11 studies).</li> <li>• Among measures less commonly used, pregnancy or partner impregnation was recorded. Three studies recorded negative results; increased likelihood of males engaging in sexual intercourse in the last month compared to the control group; increased reports of pregnancy and STDs; less contraceptive use at most recent sexual encounter for females who were sexually inexperienced at baseline or; less contraception efficiency among females in the intervention group.</li> <li>• Once studies were aggregated into the 17 programmes and variants, 10 programmes had positive effects, one had mixed effects, four had null effects and two had negative effects.</li> <li>• Studies with positive effects were published after 1995, included both males and females, targeted African American youth and took place in schools.</li> <li>• Programmes that produced positive effects used trained adult facilitators.</li> <li>• Effective programmes included content that was specific to reducing sexual risk behaviour (e.g. sexual refusal strategies and condom-use skills).</li> <li>• Effective programmes employed interactive and participatory educational strategies.</li> </ul>

	<ul style="list-style-type: none"> <li>• Programmes that emphasised skills to reduce specific behaviours, interventions more generally targeted toward increasing youth resiliency and competencies show promising approaches to reducing sexual risk behaviour.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• Limitations included differences among groups that were reported but not controlled for in the analysis, and the unit of randomisation not matching the unit of analysis.</li> <li>• Limits on the strength of effect sizes due to the differences in follow-up periods and possible limits on information available from the primary studies included.</li> </ul>
<b>Research recommendations:</b>	<p>Future programmes ought to focus upon appropriate skills, adapting programmes for length, being clear what constitutes a given programme and decide who ought to facilitate them</p> <p>Resiliency-based programmes ought to be further explored with regard to reducing the sexual risk behaviour of adolescents.</p> <p>Researchers should design studies that will clearly reveal which programme characteristics drive positive effects in sexual risk-reduction.</p>

- **Semaan, S. et al. (2002) A meta-analysis of the effect of HIV prevention interventions on the sex behaviors of drug users in the United States.**

<b>Data pool:</b>	
Population	Drug users and condom use
Setting(s)	United States
Interventions	Reduce HIV drug and sexual risk behaviours and infection rates among drug users
Searches	Databases were searched: HIV/AIDS Prevention Research Synthesis (PRS), AIDSline, MEDLINE, HealthSTAR, PsycINFO, Sociofile, Educational Resource Information Centre, the Cumulative Index of Nursing and Allied Health, and Dissertation Abstracts. Manual searches were also carried out in 53 key journals, books, reports and reference lists.
Selection/inclusion criteria	<ul style="list-style-type: none"> <li>• Inclusion criteria were related to: scope, outcome measurement, methodological rigour, and calculation of effect sizes.</li> <li>• Scope: focus on HIV/AIDS prevention, use of behavioural risk reduction as a means of prevention, and to a publication date as early as 1988.</li> <li>• Outcome measurement: evaluation data must have been collected on at least one of 20 specified HIV-related behavioural outcomes, or 10 biological outcomes.</li> <li>• Methodological rigour: studies must be defined as experimental designs or certain quasi-experimental designs (experimental designs: individuals, groups or communities were randomly assigned and at least post-intervention data collected. Quasi-experimental: assignment was unbiased, not random, pre- and post-intervention data were collected and groups were not reported to be significantly different at baseline or that baseline differences had been controlled significantly.</li> <li>• Calculation of effect sizes: data had to be available to calculate effect sizes for increasing condom use and reducing unprotected sex.</li> </ul>
Quality assessment	See selection/inclusion criteria
Types of studies	See selection/inclusion criteria
Number of studies	33 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Behavioural outcomes for reducing the number of unprotected sex acts or increasing the use of condoms.
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• The overall weighted effect size for 33 studies was protective and significant (OR, 0.86; 95% CI, 0.76-0.98).</li> <li>• The effects sizes were heterogeneous and studies with comparison groups that did not receive an intervention showed a significantly stronger effect (k = 3; OR, 0.60; 95% CI, 0.43-0.85) than did studies with comparison groups that received a HIV prevention intervention (k = 30; OR, 0.91; 95% CI, 0.81-1.03).</li> <li>• Four of the 33 studies in the meta-analysis had a significant positive effect. They had no distinguishing characteristics from the other studies.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• Descriptive data comes from a single report</li> <li>• Attrition was not examined</li> <li>• Did not include studies that were not published or reported due to non-significant results.</li> <li>• Analysis was restricted to the first follow-up data.</li> </ul>
<b>Research recommendations:</b>	Suggestions for future analysis (see gaps and inconsistencies identified by the review)

- **van Empelen et al. (2003) Effective methods to change sex-risk among drug users: a review of psychosocial interventions**

<b>Data pool:</b>	
Population	Drug users in or out of treatment
Setting(s)	Any
Interventions	Psychosocial or behavioural
Searches	Databases were searched: MEDLINE, PsycINFO, ERIC and Online Contents.
Selection/inclusion criteria	<p>Studies were included if they:</p> <ul style="list-style-type: none"> <li>• Were identifiable as psychosocial or behavioural in nature;</li> <li>• Aimed at a target group that was clearly identifiable as IDU, non-IDU or substance dependent.</li> <li>• Compared the intervention group to a comparison group (regardless of whether it was comparison or control).</li> </ul>
Quality assessment	See selection/inclusion criteria
Types of studies	See selection/inclusion criteria
Number of studies	17 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Psychosocial or behavioural (e.g. unsafe sex, number of sexual partners and condom use)
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Only five out of 17 studies found changes in sexual behaviour or condom use skills.</li> <li>• Three studies found marginal trend with regards to condom use.</li> <li>• Most studies reported a reduction in unsafe behaviour for the entire population i.e. both experimental and comparison groups.</li> <li>• Individual interventions were generally ineffective and were characterised by a lack of theoretical basis, short intervention period and limited number of sessions.</li> <li>• Group and community studies indicate that social norms and social support are important.</li> <li>• Observed behaviour by other IDUs resulted in a reduction in personal risk-taking by other IDUs.</li> <li>• Effective interventions were characterised by more sessions, longer sessions, or sustainability over time (e.g. community interventions).</li> <li>• Modelling (social learning theory) was used most often in the community interventions.</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	Most studies reported a reduction in unsafe behaviour for the entire population i.e. both experimental and comparison groups (both groups education in HIV prevention).
<b>Research recommendations:</b>	<p>Future interventions should be theory driven as well as empirically based.</p> <ul style="list-style-type: none"> <li>• Should use RCTs ideally with a comparison group receiving standardised treatment</li> <li>• Evaluations should be more comparable using standardised and specific behavioural outcomes and follow-up levels.</li> <li>• Should evaluate the intervention impact at a psychosocial level.</li> <li>• Intervention Mapping may help in the design of models.</li> </ul>

• **Weinhardt L.S. (2005) HIV diagnosis and risk behaviour**

<b>Data pool:</b>	
Population	HIV-positive, HIV-negative, and untested participants, serodiscordant couples, and mixed samples
Setting(s)	Any
Interventions	HIV diagnosis, voluntary counselling and testing (VCT)
Searches	Two databases were searched: MEDLINE and PsycINFO. Further hand-searches were undertaken in AIDS, AIDS Care, AIDS Education and Prevention, American Journal of Public Health, Health Psychology, Journal of the American Medical Association, and Sexually Transmitted Diseases.
Selection/inclusion criteria	Included studies provided: <ul style="list-style-type: none"> <li>• Assessment of when, relative to data collection, at least some participants received an HIV-positive diagnosis or test result;</li> <li>• Sexual behaviour outcome data or proxy measure (STD incidence)</li> <li>• Two or more assessments with the same participants, to allow examination of behaviour change over time;</li> <li>• Data from a sample independent from earlier studies included in this review;</li> <li>• Summary or inferential statistics sufficient for the calculation of within-group effect sizes.</li> </ul>
Quality assessment	See selection/inclusion criteria
Types of studies	Randomised control trials and quasi-experimental with controls
Number of studies	21 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	Number of partners, condom use, unprotected intercourse.
<b>Review findings:</b>	<p>The findings show that:</p> <p><b>Unprotected intercourse (effect sizes n=26)</b></p> <p>The mean weighted effect sizes for the HIV-positive group (<math>d+ = 0.44</math>; 95% CI, 0.37 to 0.51) and the serodiscordant couple group (<math>d+ = 0.85</math>; 95% CI, 0.71 to 0.99) indicated significant risk reduction, and both were greater than the weighted mean effect size for the untested (<math>d+ = 0.13</math>; 95% CI, 0.07 to 0.18) and HIV-negative participants (<math>d+ = 0.18</math>; 95% CI, 0.12 to 0.23; <math>P_s &lt; .001</math>).</p> <p><b>Condom use (effect sizes n=15)</b></p> <p>The mean weighted effect sizes for the HIV-positive group (<math>d+ = 0.59</math>; 95% CI, 0.38 to 0.81) and the serodiscordant couple group (<math>d+ = 1.31</math>; 95% CI, 1.14 to 1.48) were positive and significant and were greater than the mean weighted effect size for the HIV-negative participants (<math>P_s &lt; .005</math>). Only the discordant couples had larger increases than untested participants.</p> <p><b>Number of sexual partners (effect sizes n=14)</b></p> <p>The weighted mean effect size for the HIV-positive group was significantly positive (<math>d+ = 0.34</math>; 95% CI, 0.20 to 0.47), as was the HIV-negative effect size (<math>d+ = 0.24</math>; 95% CI, 0.15 to 0.34). Both groups showed greater change than the untested group (<math>d+ = 0.07</math>; 95% CI, 0.03 to 0.18). There was severe heterogeneity in the HIV-negative group. No data on number of sexual partners from serodiscordant couples studies.</p> <p><b>HIV and STD incidence (effect sizes n=6)</b></p> <p>The weighted mean effect size among HIV-positive participants was significantly greater than the HIV-negative and untested participants. These data indicated that the incidence of STD infection decreased among HIV-positive individuals (<math>d+ = 0.18</math>, 95% CI, 0.08 to 0.28), but increase among HIV-negative individuals (<math>d+ = -0.12</math>, 95% CI, -0.22 to -0.02) as</p>

	<p>well as untested individuals (<math>d+ = -0.05</math>, 95% CI, <math>-0.09</math> to <math>-0.01</math>).</p> <p>Key message 'This pattern of results is consistent with the idea that individuals testing HIV positive initially reduce their overall sexual activity compared to pre-diagnosis, and therefore do not increase the number of times they use condoms in the period immediately after being diagnosed. These results provide a positive out-look in terms of reduced transmission risk behaviour following an HIV diagnosis.'</p>
<p><b>Gaps and inconsistencies identified by the review:</b></p>	<ul style="list-style-type: none"> <li>• The characteristics of the counselling used in several studies were not described thoroughly, for example, the duration or specific procedures used (interventions varied from pre- and post-test counselling of specific duration to no details of counselling and counselling supplemented with other educational intervention such as peer-group discussion, videotaped presentations and partner counselling). As such effect sizes for types of counselling intervention provided could not be carried out.</li> </ul>
<p><b>Research recommendations:</b></p>	<p>Studies such as this help to inform how HIV tests are conducted, types of counselling provided, the perceived severity of an HIV infection, and maturation of cohorts affected by HIV. As these populations are continually changing it is necessary to carry out more studies on the effects of HIV diagnosis as an intervention for high risk sexual behaviour.</p>

- **Wilson, B. D. M. and Miller, R. M. (2003) Examining strategies for culturally grounded HIV prevention: A review.**

<b>Data pool:</b>	
Population	Ethnic minority groups
Setting(s)	Any
Interventions	Culturally grounded interventions
Searches	Four electronic databases were searched: PsychINFO, MEDLINE abstracts, AIDS Line and ERIC.
Selection/inclusion criteria	<p>Studies were included if they:</p> <ul style="list-style-type: none"> <li>• Were published in peer-review journals,</li> <li>• Specifically aimed to prevent HIV transmission within a group or groups that reside within the United States,</li> <li>• Evaluated and reported intervention results,</li> <li>• Indicated that culture was a central or critical component of the intervention by including the term within their title, abstract, or key words/subject headings,</li> <li>• Were published between 1985 and 2001.</li> </ul>
Quality assessment	None provided
Types of studies	Randomised control trials or comparison designs
Number of studies	17 studies
<b>Outcomes reported and/or used for assessing 'effectiveness'</b>	<p>Aims to:</p> <ul style="list-style-type: none"> <li>• Identify the populations studied</li> <li>• Identify intervention methodologies used</li> <li>• Categorise the types of strategies used to make HIV prevention programmes culturally specific and</li> <li>• Locate strategies for integrating culture in theoretical programme models of studies</li> </ul>
<b>Review findings:</b>	<ul style="list-style-type: none"> <li>• Two types of strategies were in current use for integrating culture: attending to intervention presentation and attending to intervention content.</li> <li>• Examples of meaningful methods of attending to culture were identified in the current review. Nearly half the studies integrated ethnic-specific themes into the HIV programme and two studies sought to respond to the unique cultural experiences of MSM from racial/ethnic minority group. A couple of studies also sought to attend to sex and race.</li> <li>• Two culturally bound factors that have been identified as influential in HIV prevention initiatives are societal preferences for heterosexual relationships over homosexual ones and beliefs about gender roles that privilege men over women.</li> <li>• Future efforts to examine empirically the relationships between critical cultural characteristics and HIV risk and protective behaviours and attitudes are an important direction in the HIV field (Diaz's (1998) model of psychocultural self-regulation is a promising step in this direction).</li> </ul>
<b>Gaps and inconsistencies identified by the review:</b>	<ul style="list-style-type: none"> <li>• There are very few efforts made to articulate how these strategies relate to or evolve from the theoretical models guiding HIV prevention efforts and relatively few authors have assessed whether culturally grounding programmes enhances their effects.</li> <li>• Searches were limited to abstracts, titles, and key words, as such studies referring to culturally grounded interventions on in the body of the text may have been excluded.</li> <li>• Similarly, studies may have been excluded that targeted norms of a social group, such as gay men.</li> </ul>
<b>Research recommendations:</b>	<p>HIV prevention interventionists ought to further their discourse and empirical enquiry in:</p> <ul style="list-style-type: none"> <li>• Defining culture,</li> <li>• Developing models of best practice for intervention design, and</li> </ul>

	<ul style="list-style-type: none"><li>• Developing theory that accommodates cultural concepts as part of the logic that underlies interventions.</li></ul>
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**Appendix F: Tables of primary studies within level one and two review papers**

**Table 6. Primary studies from review level evidence relevant to men who have sex with men (MSM).**

Primary studies	Reviews													
	Herbst J.H. et al. (2005)	Rees R et al (2004)	Johnson W.D. et al. (2002)	Johnson W.D. et al. (2003)	Johnson W.D. et al. (2005)	Semaan et al. (2002)	Albarracin et al. (2005)	Wilson & Miller (2003)	Merzel & D'Aflitti (2003)	Cohen et al. (2004)	Pinkerton et al (2002a)	Pinkerton et al (2002b)	Kegeles and Hart (1998)	Oakley et al (1996)
<b>Individual</b>														
Dilley et al (2002) (VCT)														
Explore et al. (2004)														
Gold and Rosenthal (1995)														
Gold and Rosenthal (1998)														
Imrie et al (2001)														
Patterson et al (2003)														
Piccano et al. (2001)														
Richardson et al (2004)														
Rosser (1990)														
Rotherham-Borus et al (2004) (substance using)														
Sorensen et al (2003) (substance abusers)														
<b>Group</b>														
Amirkhanian et al. (2003)														
Carballo-Diequez et al (2004) (Latino)														
Choi et al. (1996)														
Coates et al. (1989) (PWHIV)														
Dockrell et al. (1999)														
Goldbaum et al. (1999) unpublished														
Harding et al (2004)														
Kalichman et al (2001)														
Kelly et al. (1989)														

Primary studies	Reviews													
	Herbst J.H. et al. (2005)	Rees R et al (2004)	Johnson W.D. et al. (2002)	Johnson W.D. et al. (2003)	Johnson W.D. et al. (2005)	Semaan et al. (2002)	Albarracin et al. (2005)	Wilson & Miller (2003)	Merzel & D'Aflitti (2003)	Cohen et al. (2004)	Pinkerton et al (2002a)	Pinkerton et al (2002b)	Kegeles and Hart (1998)	Oakley et al (1996)
Kelly et al. (1993)														
Kelly et al. (1996)														
Martin et al (2001)														
Miller (1995)														
Perry (1991)														
Peterson et al. (1996)														
Remafedi (1994)														
Roffman et al (1997)														
Roffman et al (1998)														
Rosser et al. (1990)														
Rosser et al. (2002)														
Rotherham-Borus et al (2001)														
Sampaio et al. (2002)														
Shoptaw et al. (in press) (meth-dependent)														
Stall et al (1999)														
Toro-Alfonso et al. (2002)														
Tudiver et al. (1992)														
Turner and Heywood (2000)														
Valdiserri et al. (1989)														
Holtgrave & Kelly (1997) *														
Pinkerton et al. (1997) *														
<b>Community</b>														
CDC ACDP (1999) (identified as non-gay MSM)														

Primary studies	Reviews													
	Herbst J.H. et al. (2005)	Rees R et al (2004)	Johnson W.D. et al. (2002)	Johnson W.D. et al. (2003)	Johnson W.D. et al. (2005)	Semaan et al. (2002)	Albarracin et al. (2005)	Wilson & Miller (2003)	Merzel & D'Aflitti (2003)	Cohen et al. (2004)	Pinkerton et al (2002a)	Pinkerton et al (2002b)	Kegeles and Hart (1998)	Oakley et al (1996)
Elford et al. (2001)														
Flowers et al. (2002)														
Hoff et al (1997)														
Honnen and Kleinke (1990)														
Kegeles et al. (1996)														
Kegeles et al. (2002)														
Kelly et al. (1991)														
Kelly et al. (1992)														
Kelly et al. (1997)														
Miller et al. (1998)														
Rosser (1991)														
Shepherd et al. (1997)														
St Lawrence (1994)														
Zimmerman et al. (1997)														
Kahn & Haynes-Sanstad (1997) *														
Kahn et al. (2001) *														
Pinkerton et al. (1998) *														
Tao & Remafedi (1997) *														

Shaded areas denote reviews included in the original Evidence Briefing.

\* Cost-effectiveness primary studies.

**Table 6 continued:**

Primary studies	Intervention	Study design	Outcomes reported in review	Included in previous briefing?
<b>Individual</b>				
Dilley et al (2002) (VCT)	CT and self-justification sessions, diary intervention	RCT	Any UAI with non-primary partner of unknown status	No
Explore et al. (2004)	Counselling session	Non-RCT	None	No
Gold and Rosenthal (1995)	Self-justification group. Relapse prevention. Diary	RCT	Any UAI slip-ups during intervention period	Yes for MSM
Gold and Rosenthal (1998)	relapse prevention. Recall UAI slip-ups, AIDs prevention education, diary	RCT	Any UAI slip-ups during follow-up period	No
Imrie et al (2001)	Gay men project: counselling (CB)	RCT	UAI, STD incidence	No
Patterson et al (2003)	Social cognitive theory based intervention	Non-RCT	None	No
Piccano et al. (2001)	Telephone-based motivational counselling	Non-RCT	UAI, number of sexual partners, UOI, CU	No
Richardson et al (2004)	Prevention counseling	Non-RCT	None	No
Rosser (1990)	Individual HIV prevention counselling and safe sex education	RCT	Safe sex	No
Rotherham-Borus et al (2004) (substance using)	Individual HIV risk education	Non-RCT	None	No
Sorensen et al (2003) (substance abusers)	Intensive case management	Non-RCT	None	No
<b>Group</b>				
Amirkhanian et al. (2003)	Social network leader training programme: HIV prevention conversations	Non-RCT	CU during last intercourse, UAI	No
Carballo-Diequez et al (2004) (Latino)	Sessions on various topics, discussion of diaries	Non-RCT	Unclear	Yes PWHIV
Choi et al. (1996)	API living well project: counselling, safe-sex education (culturally specific)	RCT	UAI, number of sexual partners	Yes for MSM
Coates et al. (1989) (PWHIV)	Stress reduction training with relaxation, health habit change, and stress management skills.	RCT	Number of sexual partners	Yes for PWHIV
Dockrell et al. (1999)	Small group work, work-books	Non-RCT	Unclear	No

Primary studies	Intervention	Study design	Outcomes reported in review	Included in previous briefing?
Goldbaum et al. (1999) unpublished	AIDS community demonstration: outreach distribution of risk reducing supplies	Non-RCT	stage of change for anal sex using condoms	No
Harding et al (2004)	Sessions on S&M scene	Non-RCT	Unclear	No
Kalichman et al (2001)	Support group	Non-RCT	Unclear	No
Kelly et al. (1989)	Project ARIES: risk reduction education, cognitive-behavioural self-management, sexual assertion training, development of relationship skills.	RCT	UAI, number of casual sexual partners, UOI, CU	Yes for MSM
Kelly et al. (1990)				
Kelly et al. (1993)	cognitive-behavioural group	RCT	Insertive and receptive UAI	No
Kelly et al. (1996)				
Martin et al (2001)	Effects on sexual risk-behaviour of being told that viral load is undetectable	Non-RCT	Unclear	No
Miller (1995)	Keep it up: relapse prevention workshop	Quasi-experimental	UAI	No
Perry (1991)	Counselling before and after HIV testing, stress training, interactive video, relaxation techniques	RCT	Unclear	No
Peterson et al. (1996)	AIDs risk education, self-management assertiveness training	RCT	Any UAI	Yes for MSM
Remafedi (1994)	University of Minnesota youth and AIDs project: risk-assessment, counselling peer-education and referrals	Non-RCT	UAI (insertive and receptive)	No
Roffman et al (1997)	Project ARIES: relapse prevention counselling, relaxation, coping skills and motivational enhancement	RCT	UAI, number of sexual partners, UOI, CU	No
Roffman et al (1998)	Relapse prevention, Group counselling	Non-RCT	UAI, number of sexual partners, UOI, CU	No
Rosser et al. (1990)	Group discussion, workshops	RCT	Unclear	No

Primary studies	Intervention	Study design	Outcomes reported in review	Included in previous briefing?
Rosser et al. (2002)	Minnesota 500 men's study: risk factor seminar, risk-assessment and sex communication	RCT	UAI outside of serconcordant, long-term, monogomous relationship, CU	No
Rotherham-Borus et al (2001) HIV+	HIV risk education	Non-RCT	Unclear	No
Sampaio et al. (2002)	Project contact: workshop, skills training and discussion	RCT	UAI with any partner	No
Shoptaw et al. (in press) (meth-dependent)	Cognitive behavioural therapy and risk reduction intervention group	RCT	UAI	No
Stall et al (1999)	facilitator and counsellor for coping and interpersonal skills, substance misuse treatment	Non-RCT	UAI with non-monogomous partner	No
Toro-Alfonso et al. (2002)	Stop AIDs project: small group meeting, peer-education on sex, emotion, relationships, drug use.	Non-RCT	UAI	No
Tudiver et al. (1992)	Talking sex project: AIDS education and relationship, education and coping strategies, discussion, role-play	RCT	UAI, CU	Yes for MSM
Turner and Heywood (2000)	Work-shop sessions	Non-RCT	Unclear	No
Valdiserri et al. (1989)	AIDs prevention programme: group lecture, training skills	RCT	Number of sexual partners, CU (insertive and receptive)	Yes for MSM
Holtgrave & Kelly (1997) *	Cognitive-behavioural intervention	Cost utility analysis	QALY	No
Pinkerton et al. (1997) *	Safer sex skills building session plus educational session	Incremental CUA	QALY	No
<b>Community</b>				
CDC ACDP (1999) (identified as non-gay MSM)	Distribution and discussion of flyers and condoms	Non-RCT	Unclear	No
Dahl et al. (1997)	Community-wide, social marketing	Non-RCT	Unclear	No
Elford et al. (2001)	Peer-led, HIV prevention conversations	Non-RCT	A reduction in the rate of HIV transmission; a reduction in UAI with status-unknown partners; an increase in HIV testing and reduction in needle sharing	No

Primary studies	Intervention	Study design	Outcomes reported in review	Included in previous briefing?
Flowers et al. (2002)	Gay men's task force: peer-led	Non-RCT	UAI with casual partners	No
Hoff et al (1997)	Community mobilisation, social support education, outreach	Non-RCT	Unclear	No
Honnen and Kleinke (1990)				
Kegeles et al. (1996)	Mpowerment project: Community-wide, peer-led	RCT	Any UAI	Yes for MSM
Kegeles et al. (2002)	Mpowerment replication of peer-led programme. Outreach, group and publicity campaign	Non-RCT	UAI with non-primary partner	No
Kelly et al. (1991)	Community-wide, peer-led	RCT	UAI, multiple partners, CU	Yes for MSM
Kelly et al. (1992)	Community-wide, peer-led			
Kelly et al. (1997)	Community wide, peer-led group leaders, distribution of literature	RCT	UAI, number of sexual partners, CU	Yes for MSM
Miller et al. (1998)	Peer education in hustler bars	Non-RCT	Unclear	No
Rosser (1991)	Grim reaper public AIDS campaign: fear-based campaign	Non-RCT	UAI (including no AI and consistent CU)	No
Shepherd et al. (1997)	Peer-education	Non-RCT	Unclear	No
St Lawrence (1994)				
Zimmerman et al. (1997)	Empowerment training of AIDS prevention and health care: peer outreach	Non-RCT	Number of sexual partners	No
Kahn & Haynes-Sanstad (1997) *	Peer leader	Cost effectiveness analysis	Cost per HIV infection averted	No
Kahn et al. (2001) *	Community mobilisation	Cost effectiveness analysis	Cost per HIV infection averted	No
Pinkerton et al. (1998) *	Peer leader	Cost utility analysis	QALY	No
Tao & Remafedi (1997) *	Risk reduction counselling, peer education, HIV testing	Cost utility analysis	QALY	No

Shaded areas denote reviews included in the original Evidence Briefing.

\*Cost-effective primary studies

**Table 7. Primary studies from review level evidence relevant to commercial sex workers**

Primary studies	Reviews					Intervention	Study design	Outcomes reported in review	Included in previous briefing?
	Herbst J.H. et al. (2005)	Albarracin et al. (2005)	Exner et al. (1997)	Oakley et al. (1994)	Ickovics and Yoshikawa (1998)				
<b>Individual</b>									
Corby et al. (1990)									
Pickering et al. (1993)									
<b>Group</b>									
Ngugi et al. (1988)									
<b>Community</b>									
Asamoah-Adu et al (1994)						Community-wide, peer-led	Not RCT	Behavioural (not specified in review)	Yes
Bhave et al. (1995)						Community-wide, peer-led	Quasi-experimental	Behavioural (not specified in review)	Yes
Corby et al. (1993)									
Corby and Woltiski (1996)									
Dorfman et al. (1992)									
Ford, Wirwan, Fajans (1996)									
Fox et al. (1993)									
Fritz and Schaffer (1992)									
Ford et al. (2002)						Unclear from review	Unclear from review	Behavioural (not specified in review)	No
Ford et al. (1999)						Unclear from review	Unclear from review	Behavioural (not specified in review)	No
Hunt et al. (1992)									
Miller et al. (1998)						Hustler bar project: community, peer-led	non-RCT	UAI	No
Leonard et al. (2000)						Prevention among male clients of CSWs	Unclear from review	Behavioural (not specified in review)	No
Singh, Malavyla (1994)									

Primary studies	Reviews					Intervention	Study design	Outcomes reported in review	Included in previous briefing?
	Herbst J.H. et al. (2005)	Albarracin et al. (2005)	Exner et al. (1997)	Oakley et al. (1994)	Ickovics & Yoshikawa (1998)				
van Emeijden et al. (1994)									
Visrutaratna et al. (1995)									
<b>Not Clear</b>									
Papaevangelou et al. (1988)						Education intervention to Greek CSWs	Unclear from review	Behavioural (not specified in review)	No
Van Griensven et al. (1998)						Targeted intervention	Unclear from review	Behavioural (not specified in review)	No
Walden et al. (1999)						Measuring behaviour change in CSWs and their potential clients	Unclear from review	Behavioural (not specified in review)	No

Shaded areas denote reviews included in the original Evidence Briefing.

**Table 8. Primary studies from review level evidence relevant to people with HIV**

Primary studies	Reviews					Intervention	Study design	Outcomes reported in review	Included in previous briefing?
	Herbst et al. (2005)	Mathews et al. (2002)	Albarracin et al. (2005)	Johnson et al. (2005)	Cohen et al. (2004)				
<b>Individual</b>									
Landis (1992)						Patient referral, interview with counsellor to discuss the process of notification	Unclear	Unclear	Yes PWHIV
Levy 1998 (trial ongoing)						Partner notification	RCT	Unclear	No
Patterson et al., (2003)						Cognitive behavioural intervention	Unclear	Behavioural	No
Rotheram-Borus et al., (2004)						Improving health, issues of disclosure etc	RCT	Behavioural	No
Richardson et al., (2004)						Prevention counselling	Non-RCT	Behavioural	No
Sorensen et al., (2003)						Case management	Non-RCT	Behavioural	No
Toomey et al. (1998)					✓	Partner notification	RCT	Condom use, number of sex partners, number of sexual encounters	No
Weinhardt et al. (1999)					✓	Counselling and testing (standard model), counselling without testing, discordant couple counselling	Meta-analysis	Condom use, number of sex partners, number of sexual encounters	No
Wykoff et al. (1991)					✓	Partner notification	Unclear	Condom use, number of sex partners, number of sexual encounters	No
<b>Group</b>									
Coates et al. (1989)						Stress reduction training with relaxation, health habit change, and stress management skills.	RCT	Number of sexual partners	Yes for PWHIV
Wolitski et al. (2005)						Peer-education	Non-RCT	Unclear	No
Cleary et al., (1995)						Counselling	Non-RCT	Unclear	No

Primary studies	Review					Intervention	Study design	Outcomes reported in review	Included in previous briefing?
	Herbst et al. (2005)	Mathews et al. (2002)	Albarracin et al. (2005)	Johnson et al. (2005)	Cohen et al. (2004)				
Kelly et al., (1993)						cognitive behavioural skills or support group		Behavioural	No
Rotheram-Borus et al., (2001)						HIV coping, disclosure - small group	RCT	Behavioural	No
Kalichman et al., (2001)						support group	Unclear	Unclear	No
<b>Community</b>									
Fogarty et al. (2001)						peer-based condom and contraceptive promotion	Unclear	Unclear	No

**Table 9. Primary studies from review level evidence relevant to African communities in the UK**

Primary studies	Reviews												
	Elwy (2002)	Albarracin (2005)	Wilson & Miller (2003)	Semaan et al. (2002)	Van Empelen et al. (2003)	Neumann (2002)	Mullen (2002)	Johnson B.T. (2003)	Pedlow & Carey (2003)	Kirby (2002)	Robin (2004)	Logan (2002)	Ickovics & Yoshikawa (1998)
<b>Individual</b>													
Belcher et al. (1998)													
Birkel et al. (1993)													
Boekeloo et al. (1999)													
DeLamater et al. (2000)													
Gillmore et al. (1997)													
Grinstead et al. (1999)													
Mansfield et al. (1993)													
Orr et al. (1996)													
Wagstaff et al. (1999)													
Kamb et al. (1998)													
<b>Group</b>													
Branson et al. (1998)													
Carey et al. (1997)													
Choi et al. (1996)													
Cohen et al. (1991)													
Cohen et al. (1992)													
Cohen, MacKinnon et al. (1992)													
Cottler et al. (1998)													
Dancy et al. (2000)													
DiClemente & Wingood (1995)													
Dushay et al (2001)													
Herek et al (1998b)													
Herek et al. (1998)													

Primary studies	Reviews												
	Elwy (2002)	Albarracin (2005)	Wilson & Miller (2003)	Semaan et al. (2002)	Van Empelen et al. (2003)	Neumann (2002)	Mullen (2002)	Johnson B.T. (2003)	Pedlow & Carey (2003)	Kirby (2002)	Robin (2004)	Logan (2002)	Ickovics & Yoshikawa (1998)
Hobfoll et al. (1994)													
Kalichman et al. (1996)													
Kalichman et al. (1997)													
Kalichman et al. (1999)													
Kelly et al. (1994)													
Malow et al. (1994)													
National Institute of Mental Health													
Nyamathi and Stein (1997)													
Nyamathi et al. (1994)													
Nyamathi et al. (1998)													
Nyamathi et al. (1998)													
O'Donnell et al. (1998)													
O'Leary et al. (1998)													
Schilling et al. (1991)													
Shain et al. (1999)													
Sikkema et al. (2000)													
Solomon and DeJong (1989)													
<b>Adolescents</b>													
Damond et al (1993)													
Fisher et al. (1998)													
Hewitt et al. (1998)													
Howard et al. (1990)													
Howard et al. (1992)													
Jemmott et al. (1992)													
Jemmott et al. (1998)													
Jemmott et al. (1999)													

Primary studies	Reviews												
	Elwy (2002)	Albarracin (2005)	Wilson & Miller (2003)	Semaan et al. (2002)	Van Empelen et al. (2003)	Neumann (2002)	Mullen (2002)	Johnson B.T. (2003)	Pedlow & Carey (2003)	Kirby (2002)	Robin (2004)	Logan (2002)	Ickovics & Yoshikawa (1998)
Kirby et al. (1997)													
Levy et al. (1995)													
O'Donnell et al. (1999)													
Schinke et al. (1990)													
Rotherham-Borus et al. (1997)													
Rotherham-Borus et al. (1998)													
St Lawrence et al. (1995)													
St Lawrence et al. (1999)													
Stanton et al. (1996)													
Stanton et al. (1997)													
Stanton et al. (2000)													
Stevenson et al. (1995)													
Sturdevant et al. (1998)													
Walter & Vaughan (1993)													
Weeks et al. (1995)													
Weeks et al. (1997)													
Workman et al. (1996)													
<b>Community</b>													
Deren et al. (1995)													
Flaskerud and Nyamathi (1990)													
Lauby et al. (2000)													
O'Donnell et al. (1995)													
Sellers et al. (1994)													
Solomon and DeJong (1989)													

Shaded areas denote reviews included in the original Evidence Briefing.

**Table 10. Primary studies from review level evidence relevant to voluntary counselling and testing**

Primary studies	Reviews*										Included in previous briefing?	
	Weinhart (2005)	Elwy (2002)	Vidanapathirana et al. (2005)	Albarracin et al. (2005)	Neumann (2002)	Cohen et al. (2004)	Pinkerton et al. (2002a)	Pinkerton et al. (2002b)	Semaan et al. (2002)	van Empelen et al. (2003)		
<b>MSM</b>												
Coates, Morin, McKusick (1987)												Yes
Colfax et al. (2002)												No
Fox, Odaka, Brookmeyer and Polk (1987)												Yes
Huggins et al. (1991)												Yes
McOwan (2002)												Yes MSM
Ostrow et al. (1989)												Yes
Schechter et al. (1988)												Yes
van Griensven et al. (1989)												Yes
Zapka et al. (1991)												Yes
Tao & Remafedi (1997) (CUA)												No
<b>Injecting drug users (IUDs)</b>												
Casadonte et al. (1990)												Yes
Cottler et al. (1998)												No
Gibson et al. (1998)												No
Kotranski et al. (1998)												No
Magura et al. (1990)												No
McCoy et al. (1998)												No
<b>Women and heterosexual couples</b>												
Allen, Seruflia et al. (1992a)												Yes
Allen, Tice et al. (1992b)												Yes
Amaro (2001)												Ethnic minority
Apanovitch (2003)												No
Flaskerud et al. (1997)												No
Kamenga et al. (1991)												Yes
Padian et al. (1993)												Yes

Primary studies	Reviews*										Included in previous briefing?
	Weinhart (2005)	Elwy (2002)	Vidanapathirana et al. (2005)	Albarracin et al. (2005)	Neumann (2002)	Cohen et al. (2004)	Pinkerton et al. (2002a)	Pinkerton et al. (2002b)	Semaan et al. (2002)	van Empelen et al. (2003)	
Roth et al. (2001)											No
Simpson (1998)											No
Simpson (1999)											No
<b>CSWs</b>											
Pickering et al. (1993)											Yes
Harcourt (1998)											No
<b>STI clinic attenders</b>											
Bentley et al. (1978)											No
George, Green and Murphy (1998)											No
Otten et al. (1993)											Yes
<b>Mixed population</b>											
Beck (1987)											No
Beck (1990)											No
Cleary et al. (1991)											Yes
Dwyer (1988)											No
Joshi (1988)											No
Maayan (1989)											No
Mills et al. (1986)											No
Tesoriero (1992)											No
Turner (1987)											No
VCT group (2000)											No
Wenger et al. (1991)											Yes
<b>Other</b>											
Deren, Beardsley, Coyle and Singer (1998) (IDU & crack users)											No
Jackson et al. (1997) (Mombasa truck workers)											No
Poulin (1997)											No
Robles et al. (1998) (out of treatment IDU)											No

Primary studies	Reviews*										Included in previous briefing?
	Weinhart (2005)	Elwy (2002)	Vidanapathirana et al. (2005)	Albarracin et al. (2005)	Neumann (2002)	Cohen et al. (2004)	Pinkerton et al. (2002a)	Pinkerton et al. (2002b)	Semaan et al. (2002)	van Empelen et al. (2003)	
Wenger et al. (1992) (college students)											Yes
Kamb et al. (1998)											No
Weinhardt et al. (1999)											No

\* The VCT studies from the original Evidence Briefing were too numerous to include here. For details of the original VCT studies please refer to Ellis et al. (2003).

**Table 11. Primary studies from review level evidence included in cost-effectiveness reviews**

Primary studies	Reviews						Intervention	Outcomes reported
	Cohen et al. (2004)	Pinkerton et al. (2002a)	Pinkerton et al. (2002b)	Pinkerton & Holtgrave (2002)	Johnson-Mascotti et al. (2003)	Farnham et al. (2002)		
<b>Individual</b>								
Kamb et al. (1998)	✓						Counselling and testing (standard model)	
O'Donnell et al. (1998)	✓						Videos in STD clinics	
Toomey et al. (1998)	✓						Partner notification	Condom use, number of sex partners, number of sexual encounters
Weinhardt et al. (1999)	✓						Counselling and testing (standard model), counseling without testing, discordant couple counselling	Condom use, number of sex partners, number of sexual encounters
Wykoff et al. (1991)	✓						Partner notification	Condom use, number of sex partners, number of sexual encounters
<b>Group</b>								
Coyle et al. (1999)	✓						School-based education, multiple sessions	
Kalichman et al. (1995)					✓		Risk education, skills training, self-management and problem solving training	Number of safe sex conversations with partner, unprotected sex, condom use
Kelly et al. (1994)	✓						Group counselling (multiple sessions)	
Kelly et al. (1996)					✓		Cognitive behavioural skills training	number of partners, unprotected sex
Otto-Salaj et al. (2001)					✓		Cognitive behavioural skills training	Unprotected sex, condom use, number of sexual partners
Shain et al. (1999)	✓						Group counselling (multiple sessions)	
St Lawrence et al. (1995)	✓						Group counseling for youth	

Primary studies	Reviews						Intervention	Outcomes reported
	Cohen et al. (2004)	Pinkerton et al. (2002a)	Pinkerton et al. (2002b)	Pinkerton & Holtgrave (2002)	Johnson-Mascotti et al. (2003)	Farnham et al. (2002)		
Susser et al. (1998)					✓		Cognitive behavioural skills training	Vaginal Episode Equivalent sexual risk index
Wang et al. (2000)	✓						School-based education, multiple sessions	
Weinhardt et al. (1998)					✓		Sexual assertiveness skills training, HIV/AIDS information, HIV risk behaviour feedback	Behavioural intentions, HIV risk behaviour, HIV preventative behaviour
<b>Community/social network</b>								
Cohen et al. (1999)	✓			✓			Condom social marketing	
Kegeles et al. (1996)	✓						Community mobilisation (Mpowerment Project)	
Kelly et al. (1992)	✓						Opinion leader programme	
Lauby et al. (2000)	✓						Community mobilisation	
Sikkema et al. (2000)	✓						Street outreach	
Wendell et al. (2003)	✓						Street outreach	
<b>Structural</b>								
Dubois-Arber et al. (1997)	✓						Mass media campaign	
O'Donnell et al. (1999)	✓						Youth supervision programme	
<b>Group</b>								
Holtgrave & Kelly (1996) *	✓		✓				Cognitive-behavioural intervention	cost per QALY saved
Holtgrave & Kelly (1997) *			✓	✓			Cognitive-behavioural intervention	cost per QALY saved
Johnson-Mascotti et al. (2000)			✓	✓			Educational session plus peer leader training	cost per QALY saved
Pinkerton et al. (1997) *			✓	✓			Safer sex skills building session plus educational session	cost per QALY saved
Pinkerton et al. (2000) *			✓	✓			Workshop focusing on knowledge, attitudes and behaviour	cost per QALY saved

Primary studies	Reviews						Intervention	Outcomes reported
	Cohen et al. (2004)	Pinkerton et al. (2002a)	Pinkerton et al. (2002b)	Pinkerton & Holtgrave (2002)	Johnson-Mascotti et al. (2003)	Farnham et al. (2002)		
Pinkerton et al. (2001) *			✓				Cognitive-behavioural intervention	cost per QALY saved
Pinkerton et al. (2002) *			✓				7-session small group intervention	cost per QALY saved
<b>Community/social network</b>								
Bedimo et al. (2002) *	✓	✓	✓	✓			Condom distribution	cost per QALY saved
Kahn & Haynes-Sanstad (1997) *		✓	✓				Peer leader	Cost per infection averted
Kahn et al. (2001) *	✓	✓		✓			Community mobilisation	Cost per infection averted
Moses et al. (1991)				✓			Free condoms and health education to promote condom use	Cost per infection averted
Norton et al. (1998) *			✓				Basic outreach and intervention services	Annual cost
Pinkerton et al. (1998) *	✓	✓	✓	✓			Peer leader	cost per QALY saved
Pinkerton et al. (2000) *			✓				Basic outreach and intervention services	HIV infections averted
Tao & Remafedi (1997) *		✓	✓	✓			Risk reduction counselling, peer education, HIV testing	cost per QALY saved
<b>Counseling/Testing</b>								
Holtgrave et al. (1993)						✓	HIV counseling, testing, referral and partner notification	Benefit-cost ratio
Varghese et al. (1999)						✓	HIV counseling, testing, referral and partner notification	Cost per infection averted
Gelles (1993)						✓	Direct screening and assumed behaviour change of blood donors	Cost per infection averted
Kahn et al. (1992)						✓	HIV CT of IDUs.	Cost per infection averted
Owens et al. (1995)						✓	HIV CT of surgeons.	Cost per year of life saved
LaCroix & Russon (1996)						✓	HIV CT of hospital patients	Cost-benefit ratio
Owens et al. (1996)						✓	HIV CT of hospital patients	Cost per year of life saved

Primary studies	Reviews						Intervention	Outcomes reported
	Cohen et al. (2004)	Pinkerton et al. (2002a)	Pinkerton et al. (2002b)	Pinkerton & Holtgrave (2002)	Johnson-Mascotti et al. (2003)	Farnham et al. (2002)		
Brandeau et al. (1993)						✓	HIV CT of women of childbearing age	Cost-benefit ratio
Brandeau and Owens (1994)						✓	HIV CT of women of childbearing age plus relapse	Cost-benefit ratio
Cleary et al. (1987)						✓	HIV CT for couples obtaining marriage licences	Cost per infection averted
McKay & Phillips (1991)						✓	HIV CT for couples obtaining marriage licences	Cost per infection averted
Weinstein et al. (1989)						✓	HIV CT for couples obtaining marriage licences	cost per QALY saved

**Table 12: Theory-based interventions**

Primary studies	Theoretical interventions														
	SLT	SAM	DI	CBT	ARRM	RP	ET	HBM	ME/I	PST	PM	SI	TRA/SLT**	M	
<b>MSM</b>															
Kelly et al. (1989)															●*0x
Kelly et al. (1991)			●*X■												
Kelly et al. (1992)			■												
Kelly et al. (1997)			●*X■												
Choi et al. (1996)															*X\$
Kegeles et al. (1996)			*■												
Peterson et al. (1996)															●*0x\$
Roffman et al. (1996)						*									
Zimmerman et al. (1997)							*								
Roffman et al. (1998)															*
Goldbaum et al (1999) unpublished															*
Elford et al. (2001)			*X												
Flowers et al. (2002)			*												
Picciano et al. (2001)									*X						
Kegeles et al. (2002)			*X												
Gold & Rosenthal (1995)						*									
Gold & Rosenthal (1998)						*									
Stall et al. (1999) (MSM substance users)															*X
Imrie et al. (2001)															*
Dilley et al. (2002)															*
Shoptaw et al. (in press) (MSM meth users)						*									
Miller et al. (1995)						*0									
Miller et al. (1998)						X									
Toro-Alfonso et al (2002)								*							
Amirkhanian et al. (2003)															*
<b>PWHIV</b>															
Kelly et al. (1993)				*x†											
Butler et al., (2003)															□
Rorheram-Borus et al 2001a		□†													
Rorheram-Borus et al 2001b		□†													
Rorheram-Borus et al (in press)		□													
Kalichman (2000)				◆											
Kalichman (2001)				†											
<b>BMEG/Africans</b>															
Herek et al. (1998)													§		
DiClemente & Wingood (1995)													§		
Howard et al. (1990)												▲			

Primary studies	Theoretical interventions														
	SLT	SAM	DI	CBT	ARRM	RP	ET	HBM	ME/I	PST	PM	SI	TRA/ SLT **	M	
Howard M. (1992)												▲			
Jemmott et al. (1992) (young people)													\$◆▲		
Jemmott et al. (1998) (young people)				\$▲											
Kalichman et al. (1996) (women)													\$		
Kalichman et al. (1997)				◆											
Kalichman et al. (1993) (women)													\$		
Kalichman et al. (1999)									◆						
Kirby et al. (1991) (young people)														▲	
Kirby et al. (1997) (young people)														▲	
Magura et al. (1994) (adolescents)										▲					
O'Donnell et al (1995) (women)													\$◆		
O'Donnell et al (1999) (young people)														▲	
Shain et al. (1999) (women)													\$		
Stanton et al. (1996) (young people)											▲				
Stanton et al. (1997) (young people)											▲				
Stanton et al. (1998)					◆										
Stanton et al. (2000)													\$		
Stevenson et al. (1995)													\$		
St Lawrence et al. (1995) (young people)														◆▲	
St Lawrence et al. (1999) (young people)														▲	
Sturdevant et al. (1998)													\$		
Walter et al. (1993) (young people)														▲	
Coyle et al. (1999) (young people)														▲	
Weeks et al. (1995) (young people)														▲	
Levy et al (1995) (young people)														▲	
Weeks et al. (1997) (young people)														▲	
Boyer et al. (1997) (young people)														◆▲	
Eisen et al. (1990)														▲	
<b>Drug users</b>															
Baker et al (1994)									◆						
Baker et al (1993)														○	

Primary studies	Theoretical interventions														
	SLT	SAM	DI	CBT	ARRM	RP	ET	HBM	ME/I	PST	PM	SI	TRA/ SLT **	M	
Gibson et al., (1999a)										○					
Gibson et al., (1999b)										○					
O'Neill et al., (1996)														○	
Malow et al. (1994)					◆										
Margolin et al., (2003)					†										
El-bassel et al (1995)														○	
El-bassel et al (1997)														○	
Magura (1995)										○					
Marlow et al., (1994)					○										
McCoy et al., (1998)														○	
McCusker et al., (1992)														○	
Sorensen et al (1994a)														○	
Sorensen et al (1994b)														○	
Collins et al., (1999)														○	
Jamner et al., (1997)														○	
Rietmeijer et al., (1996)														○	
<b>CSWs</b>															
Miller et al. (1998)			*												
Hanenberg et al., (1994)			⌘												
Ngugi et al., (1996)			⌘												
<b>Other populations/mixed</b>															
Santelli et al., (1995)	⌘														
CDC (1999)														⌘	

**SLT** - Social Learning Theory; **SAM** - Social Action Model; **DI** - Diffusion of innovations; **CBT** - Cognitive Behavioural Therapy; **ARRM** - AIDS risk-reduction Method; **RP** - Relapse Prevention; **ET** - Empowerment Theory; **HBM** - Health Belief Model; **ME/I** - Motivational Enhancement/Interviewing; **PST** - problem solving therapy; **TRA** - theory of reasoned action; **PM** - protection Motivation; **SI** - social influence; **M** - multiple therapies used.

## Reviews

\* - Herbst et al. (2005)

0 - Johnson et al. (2002)

x - Johnson et al. (2005)

\$ - Wilson and Miller (2003)

◆ - Elwy et al (2002)

▲ - Robin et al. (2004)

• - Johnson et al. (2003)

○ - Van Empelen et al. (2003)

▣ - Elkavich et al. (2005)

◆ - Kelly et al. (2002)

† - Woltiski et al. (2005)

⌘ - Ross et al. (2002)

Pedlow & Carey (2003) (21 of 22 studies underpinned by theory, almost all by more than one theory)



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