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**Inadequate needle and syringe coverage among people who inject
psychoactive drugs across England and Wales**

Inadequate needle and syringe coverage among people who inject psychoactive drugs across England and Wales

Abstract

Needle and syringe (NS) provision is a proven intervention for reducing harms associated with injecting drug use, such as infections, but impact is coverage dependent. We characterised people who injected drugs (PWID) in England and Wales who had insufficient NS in the past month to meet their injecting requirements. This study utilised 2017-2019 data from the annual Unlinked Anonymous Monitoring (UAM) Survey of PWID recruited through services. Logistic regression was used to identify factors associated with inadequate NS coverage. Of 2,442 PWID surveyed who had injected in the past month, 34% reported inadequate NS coverage (or as high as 51% if including unsuccessful injections). Younger PWID (adjusted odds ratio: 2.05, 95% confidence interval: 1.23-3.41), those who began injecting in the past three years (1.52, 1.10-2.08), those who injected more frequently (12.58, 8.53-18.57), and those who reported sharing injecting equipment (1.31, 1.08-1.59) had greater odds of having inadequate NS coverage. Fewer PWID with inadequate NS coverage were currently prescribed Opioid Substitution Treatment (OST; 0.60, 0.49-0.73). Given the poor reported coverage of NS provision in England and Wales, there is urgent need to address inequity in accessing sufficient NS and increase coverage among this vulnerable group to reduce injecting-related harms.

Keywords: Needle-Exchange Programmes, Injecting Drug Use, Harm Reduction

Declarations of Interest

The authors report no conflicts of interest.

Introduction

People who inject drugs (PWID) are vulnerable to a wide range of poor health outcomes. Healthcare and harm reduction services can be difficult for this group to engage with, despite high rates of blood-borne viruses (BBVs), soft tissue infections, overdose, and other health hazards associated with injecting psychoactive drugs (Motavalli, et al., 2021). Needle and syringe programmes (NSP) have been available in England since the mid-1980s, when they were introduced in response to the emerging HIV/AIDS epidemic, in an effort to limit transmission of BBVs among the PWID population (Jones, et al., 2008). NSP provide sterile injecting equipment and advice, in an effort to reduce the reuse and sharing of injecting equipment and the risk of injection related harms (Hope, et al., 2014).

There is ample evidence that, in combination with opioid substitution treatment (OST), provision of needles and syringes (NS) reduces BBV infections and associated risk behaviours, but their impact is coverage-dependent (Fernandes et al., 2017; Palmateer et al, 2022; Platt et al., 2016; Platt et al., 2018). Additionally, contact with NSP provides the opportunity to engage with PWID who do not routinely access other health services and give harm reduction advice, offer testing and vaccination, provide treatment, and referrals for specialist support (Public Health England, 2020a).

Guidance from the National Institute for Health and Care Excellence (NICE) recommends extending and increasing the provision of sterile injecting equipment to ensure PWID have sufficient sterile needles and syringes for every injection (National Institute for Health and Care Excellence (NICE), 2014). However, the estimated coverage of needle and syringe provision remains insufficient, with just 33 NS provided per PWID per year globally in 2017, far from the recommended target of at least 200 NS per PWID per year by 2020, and 300 NS per PWID per year by 2030 recommended by the World Health Organization to achieve hepatitis C virus

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3 (HCV) elimination by 2030 (World Health Organization, 2021). In Scotland, an average of just
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5 47 needles were supplied per PWID between 2020-2021: a decrease from 53 the previous year
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7 (Public Health Scotland, 2021). In Wales, NS coverage is also suboptimal, with 80 syringes
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9 provided per PWID in 2020-2021 (Public Health Wales, 2021). In North West England, the
10
11 Integrated Monitoring System reported an average of 181 needles provided by services across
12
13 Cheshire and Merseyside per PWID per year (Whitfield & Reed, 2021). There remains no
14
15 reliable national estimate available for England (European Monitoring Centre for Drugs and
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17 Drug Addiction (EMCDDA), 2022).
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22 While rates of HIV in the injecting population have remained relatively low in the UK
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24 (Croxford, et al., 2022), more than half of PWID have been exposed to HCV and chronic
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26 prevalence of HCV infection among recent initiates to injecting has remained stable around
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28 28% over the past ten years, despite the introduction of direct-acting antivirals in 2015 (Public
29
30 Health England, 2020b). Furthermore, cases of serious bacterial infections associated with
31
32 injecting drugs, including invasive Group A *streptococcus* (iGAS) and *Staphylococcus aureus*,
33
34 continue to be a public health issue (Public Health England, 2020c). Improving access to sterile
35
36 injecting equipment to PWID at highest risk of having inadequate NS coverage would reduce
37
38 the need for sharing and reusing, and therefore lower the risk of infection.
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43 Coverage of NS provision can be measured using two approaches. Population-level measures
44
45 are widely used for coverage monitoring and are based on the total amount of NS provided in
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47 relation to the estimated size of the whole PWID population, i.e., the number of NS distributed
48
49 per PWID (Public Health England, 2017; World Health Organisation, 2021). Alternatively,
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51 individual-level measures present coverage of adequate NS among PWID, based on the NS
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53 received by individuals in relation to their personal requirements, i.e., the number of NS a
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55 PWID has available per injection (Bluthenthal et al., 2007).
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3 In this study, we characterise PWID who report inadequate NS coverage at the individual level,
4 describing their demographics, social factors, risk behaviours, and uptake of health care
5 services compared with those who have adequate NS provision. We also investigate factors
6 associated with inadequate coverage of NS to focus future actions. This national data is
7 particularly important given recent changes to funding and harm reduction provision in the UK
8 (Department of Health and Social Care, 2021).
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Methods

This study utilised data from the UK Health Security Agency's (UKHSA) Unlinked Anonymous Monitoring (UAM) Survey of PWID. More detailed methodology has been published previously (Public Health England, 2020c). Briefly, this annual survey recruits people who have ever injected psychoactive drugs via a range of specialist drug and alcohol services (e.g., services that provide treatment and harm reduction) across England, Wales, and Northern Ireland. Participants are asked to give a dried blood spot sample and self-complete a short questionnaire on their demographic and social factors, and risk behaviours. Those who provide consent and then participate are offered an acknowledgement (a retail voucher). Dried blood spot samples are tested for HIV, hepatitis B and C, and are linked with a unique identifier to the respondent's questionnaire data. All results are anonymous and cannot be traced back to the individual participant. The UAM Survey has ethics approval from London Research Ethics Committee (98/2/051) and UKHSA.

The data used were from three survey waves: 2017, 2018 and 2019. The survey questionnaire is regularly reviewed, and all data items needed for this analysis have been collected since 2017. Data for 2020 were not included as public health measures introduced in response to the COVID-19 pandemic limited face-to-face contact between PWID and drug and alcohol services, thus negatively affecting recruitment to the UAM Survey. Data from Northern Ireland were excluded due to small sample size. Any questionnaires received by respondents in 2018 or 2019 who indicated by self-report that they had already taken part in the survey earlier in the three-year period (N=153) were excluded (i.e., the analysis only used someone's first participation during the three-year period). Analyses were restricted to participants reporting injecting drugs within the past month (28 days), for the purposes of calculating NS coverage. This calculation used four questions asked in the survey: '*How many times do you visit a needle exchange in a typical month?*', '*How many needles do you typically collect during each visit?*',

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3 *‘In the last month, on how many days have you injected drugs?’*, and *‘On the last full day that*
4 *you injected, how many times did you inject drugs?’*. NS coverage was calculated as the
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6 proportion of ‘needles required’ (injections per day x days injected per month) divided by
7
8 ‘needles collected’ (needles collected per visit x visits per month). PWID who collected 100%
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10 or more of the needles required were categorised as having ‘adequate’ NS coverage, whereas
11
12 those collecting less than 100% of their required needles were categorised as having
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14 ‘inadequate’ NS coverage. To calculate NS coverage including unsuccessful injection attempts,
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16 i.e., more than one insertion being needed to access a vein preceding a successful injection,
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18 answers to the question *‘Last time you injected how many times did you insert a needle before*
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20 *getting a ‘hit’?’*, which were limited to ‘1’, ‘2’ ‘3’ or ‘4+’, were multiplied (1, 2, 3 or 4x) by
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22 the number of times the participant injected on the last day they injected drugs.
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29 All statistical analyses were performed using STATA v17. Firstly, descriptive analyses were
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31 carried out, presenting differences between those with inadequate and adequate NS coverage.
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33 Differences between groups were compared using χ^2 tests for categorical variables, and a
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35 Mann-Whitney U test for continuous variables. Univariable analyses were then conducted to
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37 identify factors associated with inadequate NS coverage, and a multivariate model was created
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39 with variables that best predicted inadequate NS coverage using a backward stepwise
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41 methodology, adjusted for potential confounders including gender, age, region and year of
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43 survey (statistical significance $p < 0.05$).
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48 Only questionnaires with answers to all questions used to calculate NS coverage were included
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50 in the dataset. To test whether this sample was representative of PWID participants, χ^2 tests
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52 and 2-sample t-tests were used to compare the proportion of PWID within key variable
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54 subgroups included in the analysis with the proportion who were not.
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Results

Of the 2,442 PWID included in the analyses, 34% reported inadequate NS coverage. This proportion remained similar throughout the three survey years ($p=0.468$; Table 1). When the participants reporting previous participation within the period were included ($N=153$), the difference in NS coverage by year remained nonsignificant ($p=0.568$). The median coverage among PWID with inadequate NS was 48% (IQR: 19%-71%), while among PWID with adequate NS, median coverage was 250% (IQR: 150%-500%). The median number of needles collected per month was 48 (interquartile range [IQR]: 20-100), with PWID with inadequate NS coverage collecting fewer needles per month (median: 30 needles [IQR: 10-60]), than PWID with adequate NS coverage (median: 76 needles per month [IQR: 30-150; $p<0.001$]). Survey participants reported injecting a median of 28 times per month (IQR: 8-84), with those with inadequate NS coverage reporting injecting more frequently (median: 72 times per month [IQR: 36-112]), than those with adequate NS coverage (median: 21 times per month [IQR: 6-56]).

Around three quarters (74%) of respondents were male, and there was no significant difference in NS coverage by gender ($p=0.310$; Table 2). Those with inadequate NS coverage were slightly younger (median: 38 years [IQR: 32-44]) (39 years [IQR: 34-45]; $p=0.016$) and a higher proportion initiated injecting within the past three years than among those with adequate NS coverage ($p=0.001$; Table 2). There was no significant regional difference in NS coverage, aside from the West Midlands, which had the highest proportion of PWID with inadequate NS coverage compared with the rest of England and Wales (40%, $p=0.033$; Figure 1).

In descriptive analysis, a higher proportion of PWID who reported using powder cocaine, either by injecting or non-injecting, in the past month had inadequate NS coverage ($p=0.021$; $p=0.017$ respectively; Table 2). People who injected powder cocaine collected more needles per month

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3 (median: 71 [IQR: 22-140]) than those who injected drugs other than powder cocaine (median:
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5 40 [IQR: 20-100] needles/month; $p<0.001$). Those injecting powder cocaine also reported
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7 injecting more frequently (median: 56 [IQR: 20-112] injections/month) than those who did not
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9 (median: 28 [IQR: 8-84] injections/month; $p<0.001$) and a higher proportion belonged to
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11 younger age groups ($p<0.001$) than PWID not reporting powder cocaine injection.
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15 Sharing of injecting equipment (including needles, syringes, containers, spoons and filters) in
16
17 the past month was more commonly reported among PWID with inadequate NS coverage than
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19 those with adequate NS coverage ($p=0.001$; $p<0.001$ respectively; Table 2). A lower proportion
20
21 of PWID with inadequate NS coverage reported having ever had a blood test for HCV or HIV
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23 ($p=0.008$; $p<0.001$ respectively), or to be currently prescribed OST ($p<0.001$; Table 2) than
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25 those with adequate NS coverage.
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29 After adjustment through multivariable analysis, factors associated with inadequate NS
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31 coverage were younger age, having recently started injecting, current OST prescription and
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33 sharing injecting equipment (Table 3). PWID aged under 25 years had more than twice the
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35 odds of having inadequate NS coverage than those aged 35 years and over (adjusted odds ratio
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37 [aOR]=2.18 [95% confidence interval (CI): 1.35-3.52], $p=0.001$). Those who had initiated
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39 injecting within the past three years had 46% greater odds of having inadequate NS coverage
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41 (aOR=1.46 [95% CI: 1.09-1.96], $p=0.012$). PWID who reported sharing injecting equipment
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43 had greater odds of inadequate NS coverage (aOR=1.46 [95% CI: 1.22-1.75], $p=<0.001$).
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45 Injecting and non-injecting use of powder cocaine did not significantly contribute to the
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47 multivariate analysis, so were dropped from the final model.
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53 More than half (56%) of all PWID surveyed reported more than one insertion of a needle before
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55 successfully accessing a vein on their last injection attempt. A greater proportion of PWID with
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57 inadequate NS coverage (60%) reported more than one needle insertion than those with
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3 adequate NS coverage (54%; $p=0.006$). When adjusted for number of needle insertions, the
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5 proportion of PWID with inadequate NS coverage rose to 51%.
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8 The dataset used for calculation of NS coverage included just 60% of the of the PWID who
9
10 had injected in the past month in the UAM dataset for the three-year period, due to missing
11
12 data for at least one data item needed to calculate coverage. Despite this, the data were broadly
13
14 demographically representative of the wider UAM dataset, except for PWID born outside of
15
16 the UK, who were underrepresented (4.8% of study dataset; 8.0% of UAM dataset; $p<0.001$;
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18 Supplementary Table 1).
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Discussion

This is the first study using data from a nationally reflective sample of PWID in contact with services for people who use drugs in the UK to investigate coverage of NS provision. We estimate that one-third (34%) of PWID in England and Wales report inadequate NS coverage. However, this could be as high as half (51%) of PWID if multiple needle insertions are taken into account, under the premise that sterile needles should be available for each injection attempt. These results are particularly concerning given the implications for BBV transmission and the risk of skin and soft tissue infections. We found that those with inadequate NS coverage tended to be younger, more recently initiated injecting, report more frequent sharing of injecting equipment, and not be currently prescribed OST than those with adequate NS. This highlights particular vulnerability among this subgroup of PWID and indicates a need for targeted harm reduction interventions.

Population-level measures of NS coverage are used for international programme monitoring and guidance, but they may mask inequity in distribution or accessibility between groups of PWID (O’Keefe et al., 2019). Australia, for example, has among the highest population-level NS coverage worldwide (Larney et al., 2017), however individual NS coverage remains insufficient for 20-37% of PWID (Iversen et al., 2012). Our findings are similar to those of Bryant, Paquette and Wilson (2012), where despite a median NS coverage of 150% among all PWID recruited in New South Wales, coverage was inadequate for the requirements of 37% of individuals. Population-level and individual-level coverage monitoring can be used to complement one another, as incorporating individual-level coverage monitoring allows identification of factors that put groups at higher risk of inadequate NS, and the more focused monitoring of requirement and risk among these groups (O’Keefe et al., 2019). There remains no national-level, high-quality population-level monitoring system for injecting equipment provision or coverage across the UK; although systems are in place to monitor NS provision in

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3 Scotland, Wales and a small number of locally driven initiatives in England (Public Health
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5 Scotland, 2020; Public Health Wales, 2021; Whitfield & Reed, 2021).
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9 A multitude of interacting structural and individual factors can prevent service users receiving
10
11 adequate NS coverage beyond simply offering sufficient equipment (Strathdee & Vlahov,
12
13 2001). Structural and social barriers to accessing healthcare services include housing status,
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15 incarceration, location, while psychosocial barriers include social stigma and perceived bias,
16
17 mistrust of the health care system, and fear of criminalisation (Motavalli, et al., 2021). The
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19 effects of these barriers are often compounded by intersectional health inequalities determined
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21 by gender, housing status, mental and physical health, sexuality, sex work, first language,
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23 ethnicity, and socioeconomic status (Gibson & Hutton, 2021; Nambiar, Stoové, & Dietze,
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25 2014; Wood, et al., 2005). This study identified demographic factors and social determinants,
26
27 including younger age and recent initiation to injecting drugs, to be associated with adequate
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29 NS coverage (Table 2; Table 3).
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35 Younger PWID, and recent initiates to injecting drugs, may be less aware of available services
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37 and may have less knowledge and experience of safe injecting practices (Grund, et al., 2009).
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39 Higher rates of risky injecting behaviours, including assisted injecting, and BBV infection have
40
41 been reported among young PWID and those recently initiating injecting (Cheng et al., 2016;
42
43 Ghiasvand et al., 2018). While use of cocaine in the past month was not found to be a significant
44
45 predictor of inadequate NS in our study after adjustment, injection of stimulants, such as
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47 cocaine, is known to be associated with a higher injection frequency, and so a higher needle
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49 requirement, due to the shorter half-life of this drug class (Tyndall, et al., 2003). Injection of
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51 crack and powder cocaine have increased in the UK over the past decade, with higher rates of
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53 stimulant injection reported among young people (Public Health England, 2020a; Harm
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55 Reduction International, 2020). Young PWID and recent initiates to injecting are therefore
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57 particularly important groups for harm reduction interventions to engage. If stimulant
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59 injection
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3 rates continue to rise, NS provision and access must meet the increased requirement to maintain
4 sufficient coverage. This is particularly important given the context of the recent and, in some
5 cases, ongoing HIV outbreaks among PWID found to be associated with increases in stimulant
6 injection in Europe (Arendt, et al., 2019; Croxford, et al., 2022; European Monitoring Centre
7 for Drugs and Drug Addiction (EMCDDA) & European Centre for Disease Prevention and
8 Control (ECDC), 2011; Giese, et al., 2015; McAuley, et al., 2019), and the high prevalence of
9 HCV and skin and soft-tissue infection among PWID in the UK (Public Health England,
10 2020a).

11
12 We found that inadequate NS coverage was associated with sharing injecting equipment.
13
14 Though this association is unsurprising, it is of concern due to the associated risk of acquiring
15 and transmitting bacterial infections and BBVs, particularly in the context of the recent
16 outbreaks mentioned above. Around 20% of PWID in England, Wales and Northern Ireland
17 report direct sharing of needles or syringes, while 37% report sharing any injecting equipment
18 including filters, spoons and containers, and these practices have not declined in the last decade
19 (Public Health England, 2020a). Reducing the need for sharing and reusing injecting equipment
20 by ensuring sufficient accessible NS and so adequate coverage, including provision of low
21 dead-space syringes (LDSS), is critical, and while harm reduction approaches that combine
22 equipment provision and BBV testing are most beneficial, NS provision is among the most
23 cost-effective interventions available (Sweeney, et al., 2019; Wilson, et al., 2015).

24
25 There was some indication that PWID with inadequate NS coverage were less engaged by
26 healthcare services than those with adequate NS coverage, as they had lower odds of being
27 currently prescribed OST (Table 3), and a smaller proportion had ever had blood tests for HIV
28 or HCV, though other measures of engagement with healthcare (such as naloxone carriage,
29 recent BBV testing, and vaccination) did not reach statistical significance (Table 2). These
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3 findings have further implications for harm reduction and health outcomes at an individual
4 level, as well as for limiting the spread of communicable disease across populations.
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8 Since the data were collected for this study (2017-2019), many of the issues described here
9 have been exacerbated by the ongoing coronavirus disease (COVID-19) pandemic. In 2020,
10 26% of PWID surveyed reported difficulties in accessing equipment for the safe use or
11 injection of drugs. In addition, 15% reported injecting more frequently than in 2019, and those
12 reporting injecting any form of cocaine in the past month rose from 17% in 2019 to 25%
13 (Croxford, et al., 2021). Some PWID reported that changes in their drug usage were the product
14 of increased social isolation and worsened mental health resulting from lockdown restrictions
15 (Kesten, et al., 2021). Many drug and alcohol services were not able to open and see clients
16 face-to-face during the UK national lockdown, and as a result, NS provision declined by almost
17 one third in England, and by around 26% in Wales (Public Health Wales, 2021; Whitfield, et
18 al., 2020). The effects of these barriers are compounded by other effects of the pandemic,
19 including increased rates of homelessness and unstable housing, and reduced access to
20 healthcare services (Public Health England, 2020d).
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39 There are a number of limitations to our study. Participants in the UAM Survey are, by
40 recruitment design, engaged in the range services offered to people who use drugs; this survey
41 does not capture people who are not currently in contact with any services and may not have
42 any access to injecting equipment. Moreover, the calculation of NS coverage used here does
43 not account for the number of needles picked up for others, received from others via secondary
44 distribution, or the extent of stockpiling equipment, which has been shown to increase the
45 proportion of PWID with adequate NS by up to 8% (McCormack et al., 2016). Since 2020, the
46 UAM Survey has also asked participants where they most often source their injecting
47 equipment. It will be useful in future analyses to determine whether PWID collecting fewer
48 needles from services are more likely to source them elsewhere, and where from.
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3 Additionally, it was not possible to investigate the relationship between current infection by
4 individual BBV and inadequate NS coverage due to the sample size. The data presented in this
5 study must be caveated by the simple approach for estimating NS coverage calculation, based
6 on participants' answers to '*On the last full day that you injected, how many times did you*
7 *inject drugs?*' multiplied by the number of days they reported injecting in the last month. This
8 assumed that the last day injected was representative of an average day.
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11 Some potentially important structural factors were not collected as part of this study. For
12 example, PWID living in rural locations may face more barriers to receiving adequate NS
13 coverage than PWID in urban areas, as local services may be harder to access, requiring long-
14 distance travel (Harm Reduction International, 2020). While we were able to separate and
15 compare the questionnaire data from PWID across regions, smaller geographical breakdowns,
16 necessary to understand rural versus urban coverage, were not possible due to small sample
17 sizes.
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19
20 There is significant variation in the provision of drug services by local authorities across the
21 UK, with facilities provided by a network of different charities and organisations (Department
22 of Health and Social Care, 2021). Funding for drug services has decreased by 26% in the last
23 five years and, due to this, there has been a shift away from specialist services and towards
24 pharmacy-based distribution of injecting equipment. This may improve accessibility to needles
25 and syringes for some PWID, but will reduce access to the plethora of other harm reduction
26 interventions that specialist drug and alcohol services can provide (Harm Reduction
27 International, 2020). Among specialist services, there is support for an increasingly peer-led
28 approach, to capitalise on and appropriately value the experience of PWID, to help minimise
29 some of the stresses associated with using services, such as stigma and mistrust (Henderson,
30 Madden, & Kelsall, 2017). The COVID-19 pandemic has also driven a push towards online
31 procurement systems for injecting equipment, which can now be ordered by service users or
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3 peers for free postal delivery (Exchange Supplies, 2021). There are concerns regarding the
4 accessibility of these services to PWID who may be less able to access the internet or have
5 limited literacy, but online services may hold promise for improving reach to younger PWID
6 (Genz, et al., 2015). NS should be available from a variety of sources, including outreach,
7 traditional NSP services, pharmacy and online distribution, to cater to a varied population of
8 PWID (Craine et al., 2010).
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12 In 2021, following an independent review of drug use in the UK by Professor Dame Carol
13 Black (Department of Health and Social Care, 2021), the government announced its 10-year
14 drug strategy to tackle harmful drug use (UK Government, 2021). Promisingly, this included
15 substantial investment in drug and alcohol services; however, identifying those most at risk for
16 targeted intervention will be vital to ensuring these resources are utilised to their fullest
17 potential (O’Keefe et al., 2019). The UAM Survey provides a sentinel approach by capturing
18 individual-level NS coverage among the PWID recruited while attending the network of drug
19 services which participate, but there is also a need for a national population-level NS
20 monitoring system to gain a more complete understanding of the extent of NS provision across
21 the UK. Provision of NS should be tailored in response to local needs and regularly reviewed
22 to optimise accessibility, and form part of a more holistic and interdisciplinary approach to the
23 complex and varied needs of PWID, such as that laid out by the partnership between NHS
24 Wales, Public Health Wales, and the South Wales Police and Crime Commissioner (Welsh
25 Government, 2011; Smith & Metcalfe, 2020). Future research should focus on effective ways
26 to reduce barriers to accessing adequate NS among high-risk PWID.
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31 In conclusion, this study demonstrates the need for a targeted approach to increasing NS
32 coverage among those particularly vulnerable, characterised here by younger age and recent
33 initiation of injecting, to reduce harms associated with injecting psychoactive drugs. PWID
34 represent an often marginalised population, disproportionately affected by infectious diseases
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3 and the challenges of service access. Harms have been exacerbated by the COVID-19
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5 pandemic, which, since this study, has likely reduced access to NS even further. Given recent
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7 disease outbreaks among PWID, in combination with the significant proportion of PWID
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9 reporting inadequate NS coverage described here, it seems inevitable that further outbreaks are
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11 imminent. It is therefore critical to improve NS coverage monitoring nationally, increase access
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13 to safe injecting equipment to those in high-risk groups, and to capitalise on opportunities for
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15 harm reduction and interventions.
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Table 1. NS coverage by year of UAM Survey: England and Wales, 2017-2019

	2017		2018		2019		Total	
	n	%	n	%	n	%	N	%
Inadequate NS	287	35%	278	33%	269	35%	834	34%
Adequate NS	537	65%	576	68%	495	65%	1,608	66%
Total	824		854		764		2,442	

Any surveys indicating that the participant already took part within the 3-year study period were dropped from the dataset (N=153)

Figure 1: Map of inadequate needle and syringe coverage among people currently injecting drugs by region: England and Wales, 2017-2019

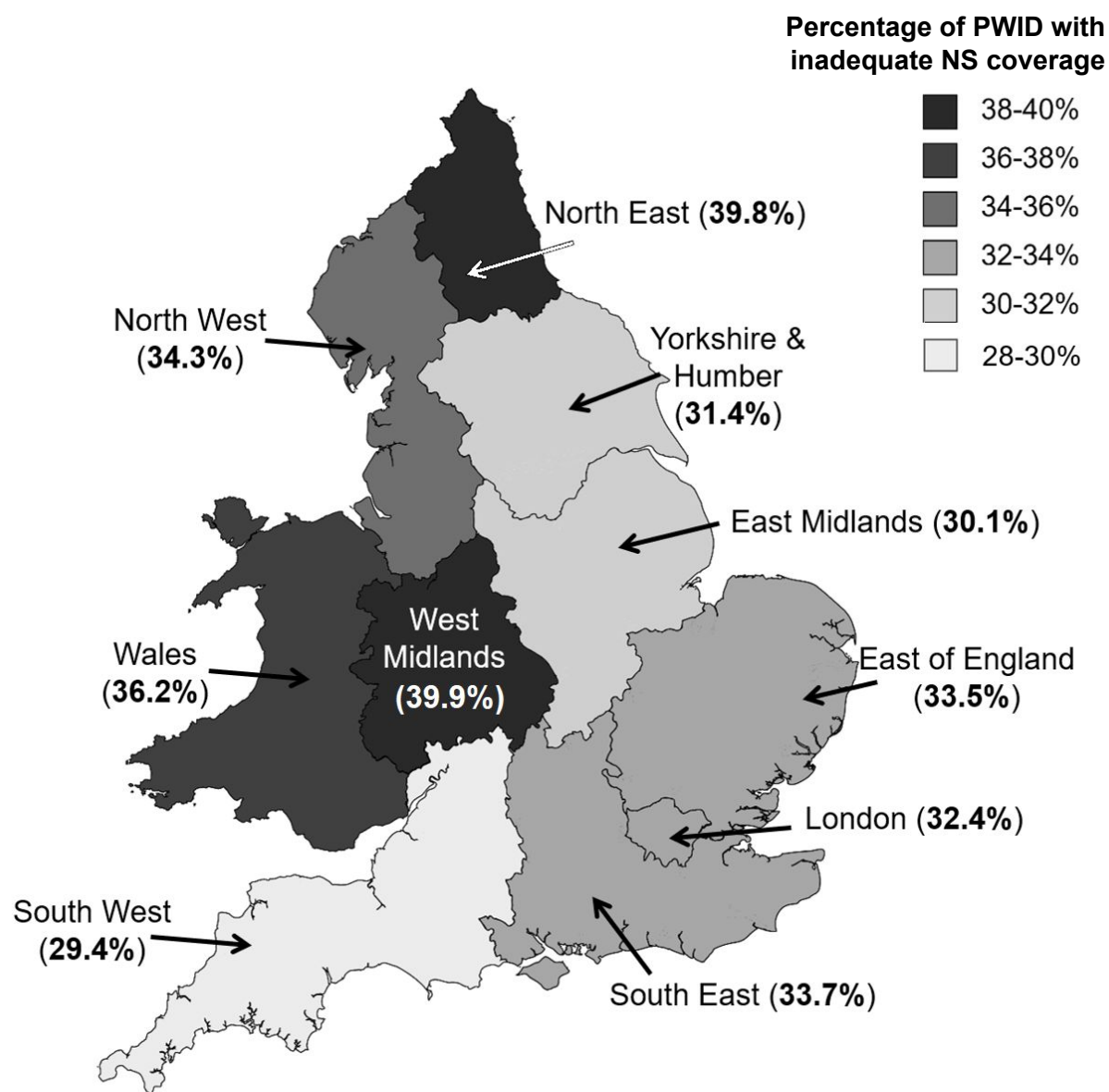


Table 2. Summary of NS coverage among people currently injecting drugs by demographic factors, social determinants and risk behaviours: England and Wales, 2017-2019 (N=2,442)

		Inadequate NS		Adequate NS		P-value ^a
		n	%	n	%	
<i>Demographic factors</i>						
Gender	Male	602	72%	1,192	74 %	0.310
	Female	230	28%	413	26%	
Median age (IQR)		38 (32-44)		39 (34-45)		0.016^b
Region (England and Wales)	East of England	55	6.6%	109	6.8%	0.152
	London	81	9.7%	169	11%	
	South East	116	14%	228	14%	
	South West	69	8.3%	166	10%	
	West Midlands	109	13%	164	10%	
	North West	91	11%	174	11%	
	Yorkshire & Humber	61	7.3%	133	8.3%	
	East Midlands	80	10%	186	12%	
	North East	97	12%	147	9.1%	
	Wales	75	9.0%	132	8.2%	
Born in UK	No	46	5.6%	70	4.4%	0.193
	Yes	774	94%	1,517	96%	
<i>Social determinants</i>						
Transactional Sex	Never	693	87%	1,352	87%	0.858
	Yes, but not last year	50	6.3%	105	6.7%	
	Yes, in last year	57	7.1%	105	6.7%	
Currently Homeless	No	387	60%	813	64%	0.112
	Yes	257	40%	461	36 %	
Ever been in prison	No	256	32%	446	28%	0.115
	Yes	562	69%	1,135	72%	
Recent initiate to injecting ^c	No	712	88%	1,468	92%	0.001
	Yes	100	12%	127	8.0%	
<i>Risk behaviours</i>						
Drug injected past 4 weeks	No heroin	54	6.6%	101	6.3%	0.810
	Heroin	765	93%	1,492	94%	
	No crack cocaine	342	42%	688	43%	0.501
	Crack cocaine	477	58%	905	57%	
	No powder cocaine	690	84%	1,396	88%	0.021
	Powder cocaine	129	16%	197	12%	
	No speed (Amphetamine)	717	88%	1,381	87%	0.555
	Speed (Amphetamine)	102	12%	212	13%	
Non injecting drug used past 4 weeks	No heroin	382	53%	742	54%	0.739
	Heroin	335	47%	631	46%	
Non injecting drug used past 4 weeks	No crack cocaine	276	39%	584	43%	0.075
	Crack cocaine	441	62%	789	58%	
	No powder cocaine	523	73%	1,066	78%	0.017
	Powder cocaine	194	27%	307	22%	

Table 2 continued next page

Table 2 continued

Non injecting drug used past 4 weeks (cont.)	No speed (Amphetamine)	632	88%	1,237	90%	0.169
	Speed (Amphetamine)	85	12%	136	9.9%	
	No other	392	84%	748	83%	0.665
	Other	74	16%	151	17%	
Poly drug use	1 drug	275	34%	591	37%	0.213
	2 drugs	424	52%	790	50%	
	3+ drugs	212	13%	120	15%	
Equipment sharing ^d	No	486	59 %	1,076	68%	<0.001
	Yes	334	41%	514	32%	
<i>Uptake of healthcare services</i>						
Engaged in healthcare services ^e	No	115	14 %	199	13%	0.314
	Yes	683	86%	1,342	87%	
Ever had blood test for HCV	No	110	14%	156	9.9%	0.008
	Yes	708	87%	1,424	90%	
Recent HCV test ^f	No	409	50%	777	49%	0.702
	Yes	409	50%	803	51%	
Ever had blood test for HIV	No	172	21%	237	15 %	<0.001
	Yes	633	79%	1,318	85%	
Recent HIV test ^f	No	468	58%	896	58%	0.810
	Yes	337	42%	659	42%	
Currently prescribed OST	No	264	32%	343	21%	<0.001
	Yes	567	68%	1,261	79%	
Carry Naloxone	No	278	35%	495	32%	0.111
	Yes	522	65%	1,076	69%	
Vaccinated against HBV ^g	No	131	17%	230	16%	0.299
	Yes	620	83%	1,233	84%	
<i>Infection</i>						
Current BBV infection ^d	Negative (all)	485	58%	895	56%	0.252
	Positive (1+)	346	42%	705	44%	
Aware of current HIV status	No	57	11%	136	12%	0.440
	Yes	458	89%	960	88%	
Aware of current HCV status	No	250	48%	510	47%	0.514
	Yes	267	52%	584	53%	
Symptoms of injection-site infection in the past year	No	386	53%	770	52%	0.790
	Yes	343	47%	701	48%	

IQR=interquartile range; HCV=hepatitis C virus; HBV=hepatitis B virus; OST= Opioid Substitution Treatment.

N.B. Percentage totals may not sum to 100% due to rounding

a χ^2 test

b Mann-Whitney U-test

c People who began injecting in the last three years

d Sharing of needles, syringes, mixing containers or filters among those who had last injected in the four weeks preceding survey participation

e Reported visit to general practice (GP), pharmacy, accident and emergency (A&E) or sexual health services in the last year

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3 f Current or previous year
4 g At least one dose
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Table 3. Factors associated with inadequate NS coverage among people currently injecting drugs: England and Wales, 2017-2019 (N=2,442)

		Inadequate NS		Unadjusted Odds Ratio			Adjusted Odds Ratio		
		n	%	OR	95% CI	p-value	aOR	95% CI	p-value
Survey year*†	2017	287	35%	1.00	-		1.00	-	
	2018	278	33%	0.90	0.74-1.11		0.93	0.75-1.15	0.487
	2019	269	35%	1.02	0.83-1.25	0.895	1.03	0.83-1.28	0.779
<i>Demographic factors</i>									
Gender*†	Male	602	34%	1.00	-		1.00	-	
	Female	230	36%	1.10	0.91-1.33	0.310	1.04	0.86-1.27	0.677
Age group*†	Under 25	43	53%	1.00	-		1.00	-	
	25-34	244	37%	0.51	0.32-0.82		0.53	0.33-0.87	0.012
	35 and over	538	32%	0.42	0.27-0.65	<0.001	0.46	0.28-0.74	0.001
Region (England and Wales)*†	East of England	55	34%	1.00	-		1.00	-	
	London	81	32%	0.95	0.63-1.44		0.97	0.63-1.50	0.882
	South East	116	34%	1.01	0.68-1.50		0.95	0.63-1.43	0.823
	South West	69	29%	0.82	0.54-1.27		0.75	0.49-1.17	0.202
	West Midlands	109	40%	1.32	0.88-1.98		1.32	0.87-2.00	0.197
	North West	91	34%	1.04	0.69-1.57		1.02	0.66-1.57	0.926
	Yorkshire & Humber	61	31%	0.91	0.58-1.42		0.97	0.61-1.54	0.904
	East Midlands	80	30%	0.85	0.56-1.29		0.80	0.52-1.23	0.516
	North East	97	40%	1.31	0.86-1.98		1.12	0.72-1.73	0.615
Wales	75	36%	1.13	0.73-1.73	0.313	1.03	0.66-1.62	0.897	
Born in UK	No	46	40%	1.00	-			-	
	Yes	774	34%	0.78	0.53-1.14	0.193		-	
<i>Social determinants</i>									
Transactional sex	Never	693	34%	1.00	-			-	
	Yes, but not last year	50	32%	0.93	0.66-1.32			-	
	Yes, in last year	57	35%	1.06	0.76-1.48	0.945		-	
Currently homeless	No	387	32%	1.00	-			-	
	Yes	257	36%	1.17	0.11-0.96	0.112		-	

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Table 3 continued

Ever been in prison	No	256	37%	1.00	-		
	Yes	562	33%	0.86	0.72-1.04	0.115	
Recent initiate to injecting*†a	No	712	33%	1.00	-		1.00 -
	Yes	100	44%	1.62	1.23-2.14	<0.001	1.46 1.09-2.00 0.012
<i>Risk behaviours</i>							
Drug injected past 4 weeks	No heroin	54	35%	1.00	-		
	Heroin	765	34%	0.96	0.68-1.35	0.810	
	No crack cocaine	342	33%	1.00	-		
	Crack cocaine	477	35%	1.06	0.89-1.26	0.501	
	No powder cocaine*	690	33%	1.00	-		
	Powder cocaine*	129	40%	1.32	1.04-1.68	0.021	N.S.
	No speed (Amphetamine)	717	34%	1.00	-		
	Speed (Amphetamine)	102	33%	0.93	0.72-1.19	0.555	
	No other drug	785	34%	1.00	-		
	Other drug	34	38%	1.21	0.78-1.87	0.389	
Non injecting drug used past 4 weeks	No heroin	382	34%	1.00	-		
	Heroin	335	35%	1.03	0.86-1.24	0.739	
	No crack cocaine	276	32%	1.00	-		
	Crack cocaine	441	36%	1.18	0.98-1.42	0.075	
	No powder cocaine*	523	33%	1.00	-		
	Powder cocaine*	194	39%	1.29	1.05-1.59	0.017	N.S.
	No Speed (Amphetamine)	632	34%	1.00	-		
Speed (Amphetamine)	85	39%	1.22	0.92-1.63	0.169		
Poly drug use	No other drug	392	34%	1.00	-		
	Other drug	74	33%	0.94	0.69-1.27	0.665	
	1 drug	275	32%	1.00	-		
Equipment sharing*†c	2 drugs	424	35%	1.15	0.96-1.34		
	3+ drugs	120	36%	1.22	0.93-1.59	0.091	
Equipment sharing*†c	No	486	31%	1.00	-		1.00 -
	Yes	334	39%	1.44	1.21-1.71	<0.001	1.46 1.22-1.75 <0.001

Table 3 continued next page

Table 3 continued

<i>Uptake of healthcare services</i>									
Engaged in broader healthcare services ^b	No	32	37%	1.00	-				
	Yes	802	34%	0.89	0.57-1.38	0.599			
Currently prescribed	No	264	43%	1.00	-		1.00		
	Yes	567	31%	0.58	0.48-0.71	<0.001	0.60	0.49-0.73	<0.001
<i>Infection</i>									
Current BBV infection ^d	Negative (all)	539	35%	1.00	-				
	Positive (1+)	208	31%	0.91	0.76-1.07	0.252			
Aware of current HIV status	No	57	30%	1.00	-				
	Yes	458	32%	1.14	0.82-1.58	0.440			
Aware of current HCV status	No	250	33%	1.00	-				
	Yes	267	31%	0.93	0.76-1.15	0.51			
Injection-site infection in past year	No	386	33%	1.00	-				
	Yes	343	33%	0.98	0.81-1.17	0.790			

BBV=blood-borne virus; HCV=hepatitis C virus; HBV=hepatitis B virus; OST= Opioid Substitution Treatment.

N.B. Percentage totals may not sum to 100% due to rounding.

* Variable included in initial multivariate modelling analysis

† Variable included in final multivariate model

a People who began injecting in the last three years

b Reported visit to general practice (GP), pharmacy, accident and emergency (A&E) or sexual health services in the last year, offered a HIV or HCV test this year or last year, or currently prescribed opioid substitution therapy (OST)

c Sharing of needles/syringes, mixing containers or filters among those who had last injected in the four weeks preceding survey participation.

d Variable combining all current HIV, HCV, HBV result

Supplementary Table 1: Comparison of people included in the NS provision dataset with those recruited to the UAM in 2017-2019 not included (N=4,079)

		NS Provision Data		Remaining UAM Data		<i>P</i> -value ^a
		n	%	n	%	
Total		2,442	60%	1,637	40%	
Gender	Male	1,794	74%	1,189	73%	0.729
	Female	643	26%	437	27%	
Age group	Under 25	81	3.3%	39	2.5%	0.188
	25-34	665	27%	422	27%	
	35 and over	1,681	69%	1,134	71%	
London region	Rest of England and Wales	2,192	90%	1,456	89%	0.404
	London	250	10%	181	11%	
Born in UK	No	116	4.8%	126	8.0%	<0.001
	Yes	2,291	95%	1,459	92%	
Transactional Sex	Never	2,045	87%	1,279	84%	0.130
	Yes, but not last year	155	6.6%	121	8.0%	
	Yes, in last year	162	6.9%	117	7.7%	
Currently Homeless	No	1,200	63%	732	60%	0.135
	Yes	718	37%	490	40%	
Ever been in prison	No	702	29%	454	29%	0.975
	Yes	1,697	71%	1,095	71%	
Recent initiate to injecting ^b	No	2,180	91%	1,375	89%	0.109
	Yes	227	9.4%	170	11%	
Drug injected past 4 weeks	Heroin	2,257	94%	1,453	92%	0.095
	Crack cocaine	1,382	57%	882	56%	0.406
	Powder cocaine	326	14%	229	15%	0.365
	Speed	314	13%	216	14%	0.532
	Other	89	3.7%	67	4.3%	0.371

N.B. Percentage totals may not sum to 100% due to rounding.

a χ^2 test

b People who began injecting in the past three years