



Date published: 11 March, 2024

Date last updated: 11 March, 2024

Pharmacy undergraduate antimicrobial resistance/antimicrobial stewardship practice-based assessment framework for use by designated supervisors

NHS England Antimicrobial Resistance (AMR) Prevention Programme – Antimicrobial Prescribing and Medicines Optimisation (APMO) Workstream.

[Publication \(/publication\)](#)

Content

- [Development process](#)
- [Pharmacy undergraduate AMR/AMS practice-based assessment framework for use by designated supervisors](#)
- [Authors](#)

The indicative curriculum for antimicrobial resistance (AMR) has been developed by NHS England – Workforce, Education and Training (WT&E) Directorate, NHS England – Antimicrobial Prescribing and Medicines Optimisation (APMO) team, the national antimicrobial pharmacy education group (NAPEG) and the Pharmacy Schools Council.

The revised General Pharmaceutical Council (GPhC) standards for the Initial Education and Training of Pharmacists (IETP) integrate learning outcomes that demonstrate competency as an Independent Prescriber at the point of registration. They span the entire initial five years of training. Independent prescribing will not be incorporated into foundation training until the 2025/26 training year. The learning outcomes for training years 2021/22 – 2024/25 have been modified by the GPhC to reflect this.

To support the implementation of the IETPs, a number of priority subjects were identified by NHS England WT&E and Pharmacy Schools Council for the development of indicative curricula. Antimicrobial resistance was identified as one of these subjects. Indicative curricula are designed in the interest of an effective continuum of learning and training in practice across the 5 years of initial education and training.

These are additional resources to support the indicative curriculum in AMR to help guide the teaching content in both the MPharm and the Foundation Training Year to support effective initial education and training in England. This will support undergraduate pharmacy students and trainee pharmacists to successfully demonstrate the learning outcomes of the IETPs and RPS Prescribing Competencies that link to AMR. It is not compulsory to use but is there as a guide to support educators.

This assessment framework can be used by assessors for students on clinical placements in any setting and is to be used in association with the Antimicrobial Resistance (AMR) and Antimicrobial Stewardship (AMS) Pharmacy Undergraduate Indicative Curriculum for the Initial Education and Training Reform Programme.

[NHS England Workforce Training and Education – Initial Education and Training Reform Programme \(https://www.hee.nhs.uk/our-work/pharmacy/transforming-pharmacy-education-training/initial-education-training-pharmacists-reform-programme\)](https://www.hee.nhs.uk/our-work/pharmacy/transforming-pharmacy-education-training/initial-education-training-pharmacists-reform-programme).

Development process

The following practice-based assessment recommendations were developed by the education and training portfolio leads of the NHS England Antimicrobial Prescribing and Medicines Optimisation (APMO) workstream and presented to the National AMS Pharmacy Education Group (NAPEG). The group refined these recommendations and added extra recommendations to produce the final assessment recommendations.

This group includes educators of antimicrobial stewardship for undergraduate pharmacy students and trainee pharmacists in the United Kingdom (UK) including representation from:

- Academics at Schools of Pharmacy (SOPs)
- British Pharmaceutical Students Association (BPSA)
- British Society for Antimicrobial Chemotherapy (BSAC)
- NHS England (AMS and Infection Prevention and Control representatives)
- NHS Scotland

- Royal Pharmaceutical Society Expert Advisory Group on AMS (RPSEAG)
- United Kingdom Health Security Agency (UKHSA)
- Specialist antimicrobial pharmacists
- United Kingdom Clinical Pharmacy Association (UKCPA)

Pharmacy undergraduate AMR/AMS practice-based assessment

framework for use by designated supervisors

Domain	Theoretical assessment	Practical assessment
<p>Infection prevention and control</p> <p>Competency statement</p> <p>All newly qualified pharmacists must understand the core knowledge underpinning infection prevention and control and use this knowledge appropriately to prevent the spread of infection by applying the principles of the national infection prevention and control manual.</p> <p>Key themes:</p> <ul style="list-style-type: none"> • Micro-organisms • Colonisation vs infection • Infection transmission • Screening • Standard precautions • PPE 	<ul style="list-style-type: none"> • Describe the chain of infection and how this can be broken with different IPC interventions • Describe the routes of transmission for infections and what precautions can prevent these. 	<ul style="list-style-type: none"> • Use the correct hand washing technique for healthcare environments • Use appropriate standard precautions when handling specimens e.g. urine for pregnancy testing • Demonstrate the ability to handle sterile products in an aseptic manner • Discuss the risk of C. difficile infection with a patient prescribed a broad-spectrum antibiotic • Carry out an IPC risk assessment of their working environment, with reference to the national IPC manual for England, and escalate any concerns appropriately • Conduct an IPC audit, intervention and re-audit using quality improvement methodology.

Domain	Theoretical assessment	Practical assessment
<ul style="list-style-type: none">• Healthcare associated infections• IPC policies and procedures		

Domain	Theoretical assessment	Practical assessment
<p>Antimicrobials and antimicrobial resistance</p> <p>Competency statement</p> <p>All newly qualified pharmacists need to understand the core knowledge underpinning the action of antibiotics and the concept of antimicrobial resistance; and use this knowledge to help prevent antimicrobial resistance.</p> <p>Key themes:</p> <ul style="list-style-type: none"> • Classes of antimicrobials • Spectrum of activity • Broad vs narrow spectrum • Intrinsic vs acquired resistance • Consequences of resistance to population and individual • One Health concept 	<ul style="list-style-type: none"> • Describe the factors that contribute to emergence of resistance • Describe why a One Health approach to AMR is important • Describe how you would ask patients to dispose of any left-over antimicrobials e.g. liquid once they have completed the prescribed course. 	<ul style="list-style-type: none"> • For 5 different antibiotic prescriptions, discuss • the antibiotic class and spectrum of activity, • what infection they are likely to be treating according to local antibiotic guidance (or national NICE guidance where local not available), • whether this is first or second line on guidance and why second line antibiotics might be needed for this infection. • Discuss resistance mechanisms for this antibiotic and resistance risk factors for this infection.

Domain	Theoretical assessment	Practical assessment

Domain	Theoretical assessment	Practical assessment
<p>Antimicrobial prescribing and stewardship</p> <p>Competency statement</p> <p>All newly qualified pharmacists need to demonstrate knowledge of how infections are diagnosed and managed and use this knowledge appropriately to manage patients with infections including the appropriate use of antimicrobial agents.</p> <p>Key themes:</p> <ul style="list-style-type: none"> • Appropriate use of antimicrobials • Sepsis • Clinical decision tools • Diagnostic criteria • Antimicrobial prescribing guidance national vs local • Antimicrobial prescribing 	<ul style="list-style-type: none"> • Be able to score an example case for NEWS2 • Be able to describe a clinical decision tool for antimicrobial prescribing and correctly use it in a case study of their design. • Be able to describe the principles of therapeutic drug monitoring and identify 2 antibiotics that require TDM and why. • Describe how to review a patient on antibiotics using the START SMART then focus algorithm and when it would be appropriate to choose 	<ul style="list-style-type: none"> • For 5 different antibiotic prescriptions identify and discuss possible interactions and side effects with patients and/or carers. • For 5 different antibiotic prescriptions discuss with the patient/carer why it is important to take the antimicrobial as directed and complete the prescribed course. • Discuss penicillin allergy with a patient/carer that has this documented to determine if this is an accurate diagnosis, if not discuss de-labelling with the patient's doctor.

Domain	Theoretical assessment	Practical assessment
<p>empirical vs targeted</p> <ul style="list-style-type: none"> • Antimicrobial prescribing and patient factors • Antibiotic post-prescription review • Antibiotic side effects • Antibiotic interactions • Antibiotic allergies • PK-PD principles of antibiotics and TDM • IV to oral switch • Prescribing for surgical prophylaxis • Prescribing for common infections. 	<p>each of the 5 post-prescription review decisions and where this should be documented.</p> <ul style="list-style-type: none"> • Discuss the difference between empirical and targeted antibiotic therapy, (based on microbiology results) explaining when each is preferred and why. • Discuss the difference between prophylactic and treatment course of antimicrobials and when prophylaxis is needed. • Describe the principle and significance of infection source control, 	

Domain	Theoretical assessment	Practical assessment
	<p>providing an example.</p> <ul style="list-style-type: none">• Access the National Antimicrobial Prescribing and Stewardship competency framework and discuss similarities and differences with the pharmacy undergraduate curricula.	

Domain	Theoretical assessment	Practical assessment
<p>Vaccine uptake</p> <p>Competency statement</p> <p>All newly qualified pharmacists need to demonstrate knowledge of the importance of vaccines for reducing antimicrobial resistance and use this knowledge appropriately to promote vaccination.</p> <p>Key themes:</p> <ul style="list-style-type: none"> • National and local immunisation programmes • Clinical risk groups • Staff vaccination requirements • General principles of immunisation • Risks and benefits of vaccination • Controversies or 	<ul style="list-style-type: none"> • Explain the general principles of immunisation including the need for boosters and observing intervals between doses. • Discuss national and local immunisation programmes and the diseases for which vaccines are currently available. 	<ul style="list-style-type: none"> • Participate in the delivery of vaccine programmes including seasonal flu. • Discuss the benefits and risks of appropriate vaccinations with patients in at least 3 different clinical risk groups. • Promote a vaccination programme using national and /or local resources for staff or service users eg flu, COVID-19, zoster, MMR etc addressing misconceptions with an awareness of cultural sensitivity in that setting.

Domain	Theoretical assessment	Practical assessment
misconceptions and how to 'myth bust' <ul style="list-style-type: none">• Awareness of cultural sensitivities		

Domain	Theoretical assessment	Practical assessment
<p>Person-centred care</p> <p>Competency statement</p> <p>All newly qualified pharmacists must seek out, integrate and value as a partner the input and engagement of the patient /carer in designing and implementing care.</p> <p>Key themes:</p> <ul style="list-style-type: none"> • Shared care decision making • Delayed antibiotic prescribing • Safety netting advice • Education and support using appropriate resources • Counselling on antimicrobial use and antimicrobial resistance • Public health campaigns • Health inequalities 	<ul style="list-style-type: none"> • Explain principle of delayed (back-up) prescribing and circumstances when this strategy can be considered. 	<ul style="list-style-type: none"> • Discuss with at least 5 different patients self-care advice and safety netting for common infections including the use of appropriate patient leaflets (e.g. TARGET) and/or patient decision-making guides (e.g. NICE). • Actively participate in promoting AMS messaging during World AMR Awareness Week and actively support sign up to Antibiotic Guardian pledge amongst patients and co-workers. • Identify any inequity in access to infection management services or unmet need for patient educational materials for your local patient population showing how you have engaged with patients/public/stakeholders and public health information on health inequalities.

Domain	Theoretical assessment	Practical assessment

Domain	Theoretical assessment	Practical assessment
<p>Interprofessional collaborative practice</p> <p>Competency statement</p> <p>All newly qualified pharmacists need to understand how different professions collaborate in relation to how they contribute to antimicrobial stewardship and quality improvement.</p> <p>Key themes:</p> <ul style="list-style-type: none"> • Awareness of roles in different teams across systems • Collaborative effective communication • Trusting relationships • Prescribing etiquette • Governance • Benchmarking • Quality improvement • National initiatives 	<ul style="list-style-type: none"> • Outline the advantages of a multi-disciplinary team approach to management of infection • Describe prescribing etiquette and how it impacts on AMS and patient safety. 	<ul style="list-style-type: none"> • Actively contribute to national/local action plan in place to improve quality of care for patients with infection e.g. CQUIN, QOF, PQS, local incentive schemes • Access AMS benchmarking data for your organisation or ICB and identify areas for improvement. <ul style="list-style-type: none"> · Undertake a Quality Improvement project in one of these areas for AMS with other healthcare professionals, patients and identified stakeholders including audit, intervention and re-audit. • Attend local and system wide AMS meetings to feed back Quality Improvement project results.

Domain	Theoretical assessment	Practical assessment

Authors

- Kieran Hand, AMR National Clinical Lead for Pharmacy and Prescribing, NHS England
- Naomi Fleming, Regional Antimicrobial Stewardship Lead East of England, NHS England; UKCPA; BSAC
- Esther Taborn, IPC Improvement Lead, NHS England
- Diane Ashiru-Oredope, Lead Pharmacist, HCAI, Fungal, AMR, AMU and Sepsis Division, UKHSA
- Gill Damant, Regional Antimicrobial Stewardship Lead North West, NHS England
- Sandra Martin, Associate Professor in Pharmacy Practice, University of Bradford; UKCPA
- Sally Tipping, Education Officer/Events secretary, British Society of Antimicrobial Chemotherapy (BSAC)
- Katherine Shemilt, Senior Lecturer in Clinical Pharmacy, Liverpool John Moores University
- David Allison, Reader in Pharmacy Education Division of Pharmacy and Optometry, University of Manchester
- Roger Harrison, Senior Lecturer in Public Health, University of Manchester
- Antonella Tonna, Senior Lecturer in Clinical Pharmacy School of Pharmacy and Life Sciences, Robert Gordon University
- Kathryn Bullen, MPharm Programme Leader, University of Sunderland

Publications reference: PRN00969ii

Date published: 11 March, 2024

Date last updated: 11 March, 2024

[▲ Back to top](#)