

Control and Use of Antimicrobials

Issue Date	Review Date	Version
January 2021	January 2026	5.0

Purpose

Antibiotic Use and Control Policy, covering:

- Correct use of antimicrobials
- Governance arrangements for the use of antimicrobials
- Support and assistance at UHP in the use of antimicrobials

Who should read this document?

These guidelines are applicable to all staff, to include Ministry of Defence (MOD) personnel; contractors, those employed on a fixed term contract, honorary contract, agency or locum staff, and students affiliated to educational establishments and volunteers.

Key Messages

Antimicrobials are drugs that can kill or inhibit the growth of microorganisms, and are used to treat infections. Antimicrobial stewardship is required because the misuse of antimicrobials contributes to antimicrobial resistance and can result in these important drugs becoming clinically ineffective. Correct use of antibiotics optimises patient outcome from infection, can save lives and reduce healthcare costs. Incorrect use can cause harm, due to adverse drug reactions, healthcare associated infections and antimicrobial resistance.

Core accountabilities

Owner	Dr Rosie Fok, Consultant Medical Microbiologist
Review	Antibiotic Steering Group 21 st January 2021
Ratification	Medical Director
Dissemination	Trust wide
Compliance	<ol style="list-style-type: none"> 1. The Health and Social Care Act 2008: code of practice on the prevention and control of infections and related guidance 2. UK 5-year action plan for antimicrobial resistance 2019 - 2024 3. Department of Health "Start Smart then – Then Focus" Guidance for Antimicrobial Stewardship in Hospitals (England). March 2015 4. Public Health England Framework of actions to contain carbapenemase-producing Enterobacterales September 2020

Links to other policies and procedures

1. Trust antibiotic guidelines (webpage and electronic App)
2. UHP Antimicrobial Steering Group terms of reference v4.0
3. Trust pathology handbook online (webpage)

Version History

1	May 2014	New guideline
2	December 2015	Annual review
3	November 2016	Annual review

4	June 2017	Modifications regarding policy ownership and principles of prescribing. Changes to available guidance due to guideline retirement. Note ASG reporting to the Quality and Safety Group.
4.1	December 2017	Reformatted to Trust Policy template and definitions added (v4.1).
4.2	August 2020	Extended to September 2021
5	January 2021	Full review in line with current national guidance; edited for clarity

The Trust is committed to creating a fully inclusive and accessible service. Making equality and diversity an integral part of the business will enable us to enhance the services we deliver and better meet the needs of patients and staff. We will treat people with dignity and respect, promote equality and diversity and eliminate all forms of discrimination, regardless of (but not limited to) age, disability, gender reassignment, race, religion or belief, sex, sexual orientation, marriage/civil partnership and pregnancy/maternity.

An electronic version of this document is available on Trust Documents on StaffNET. Larger text, Braille and Audio versions can be made available upon request.

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1 Introduction

1.1 Antimicrobial agents represent some of the most important and effective available drugs but we are entering an era of rapid antimicrobial resistance dissemination and minimal new drug development.

1.2 About 20% of the antimicrobial prescribing to humans takes place in hospitals⁶ and up to 50% of this use is unnecessary. As with all drugs, antimicrobials may cause adverse reactions of varying severity. The use of antimicrobials impacts the normal bacterial flora, leads to the selection of resistant organisms and may precipitate antibiotic associated diarrhoea/*C. difficile* disease.

1.3 Inappropriate use of antimicrobials has a public health impact in addition to the risks to the individual recipient. Selection for antimicrobial resistance (AMR) has effects at a population level (either locally within the hospital environment, or more broadly in the community as whole). Infections with antimicrobial resistant organisms are more complex to manage, in both hospital and community settings.

1.4 To preserve the effectiveness of our antimicrobials, reduce adverse effects and minimise healthcare infections, antimicrobials should be used carefully. The Trust must have in place a programme of antimicrobial stewardship^{1,2,3,4}.

2 Purpose

2.1 The purpose of this policy is to provide a framework to ensure that antimicrobials are used appropriately and prudently within University Hospitals Plymouth NHS Trust (referred to as the Trust). This will be overseen by the Antimicrobial Steering Group (ASG).

2.2 The framework is intended and designed to optimise effective treatment of infections, improve patient outcomes and minimise the risk of healthcare-associated infections and adverse drug events.

2.3 The framework enables the Trust to comply with the requirements of the Health and Social Care Act 2015¹ and the requirements for registration with the Care Quality Commission.

3 Definitions

AMR – Antimicrobial resistance – Occurs when the microorganisms that cause disease (including bacteria, viruses, fungi and parasites) cease to be affected by the drugs we use to kill them and treat the disease.

AMS – Antimicrobial stewardship - A key component of a multifaceted approach to improve the safety and quality of patient care whilst preventing the emergence of AMR. Good antimicrobial stewardship involves selecting an appropriate drug and optimising its dose and duration to cure an infection while minimising toxicity and conditions for selection of resistant microbes. Good AMS includes a review of the continuing need for antibiotics following clinical diagnosis and documented actions to stop, continue or change antimicrobial treatment.

Antibiotics - substances produced by a microorganism that inhibit or kill other microorganisms

Antimicrobials - any substance (natural or synthetic) with antibacterial, antifungal, antiviral, antiprotozoal properties

Beta-lactam – group of antibacterial agents which have a beta-lactam ring in their molecular structure; includes penicillins, cephalosporins and carbapenem antibiotics

ASG – Antimicrobial Steering group

CPE – Carbapenemase producing Enterobacterales – bacteria within the Enterobacterales order which can make enzymes capable of breakdown antimicrobials from the carbapenem class, resulting in resistance to these agents

CRE/O – Carbapenem resistant Enterobacterales/Organisms – bacteria which are resistant to carbapenem class of antimicrobials

DDD - Defined Daily Doses - the assumed average maintenance dose per day for an antimicrobial used for its main indication in adults, as defined by the World Health Organisation

ESBL - Extended-spectrum beta-lactamases - enzymes produced by certain bacteria, which break down multiple classes of beta-lactams, causing these antibiotics not to work

Finalised Antimicrobial prescription – Antimicrobial prescription written after documented clinical review at 48-72 hours after starting an Initial Antimicrobial prescription, taking into account the clinical response and investigation results and including a documented duration or review date.

Initial Antimicrobial prescription – empirical antimicrobial prescription started on suspicion of infection and continued for up to 72 hours pending clinical review and investigation results. This may need to be extended if key investigations are still outstanding and a Finalised antimicrobial prescription cannot be made. Rationale to extend an Initial Antimicrobial prescription must be documented in the medical notes

IV – intravenous (route of drug delivery)

MDR - Multi Drug Resistant pathogens – pathogens resistant to more than two classes of antimicrobial usually used to treat the infections they cause

Microorganism – bacteria, viruses, fungi and parasites

NICE - National Institute for Health and Care Excellence

Pathogen – microorganism capable of causing disease/infection

PIMS - Patient Information and Management System, e.g. SALUS

Service line champion – senior clinical member of staff, representing the service line at ASG

4 Duties

4.1 The Antimicrobial Stewardship (AMS) Team will facilitate continuous improvement in appropriate antimicrobial prescribing and oversee implementation of the Antimicrobial Steering Group's (ASG) annual programme. Core components of these efforts will be a programme of audit and feedback, surveillance of local antimicrobial resistance epidemiology, local rates of antimicrobial consumption and development of antimicrobial use guidelines.

4.2 Antimicrobial stewardship is the responsibility of all healthcare staff.

4.2.1 The board level champion (medical director) will promote appropriate antimicrobial prescribing across the organisation.

4.2.2 Clinical microbiologists will support the trust AMS programme by ensuring the microbiology laboratory provides clinically relevant diagnostic services, contributing to infection management guideline development and being members of the ASG. They will provide clinical advice on patient management and selection of antimicrobials.

4.2.3 All service lines with significant use of systemic antimicrobials will have a named Antimicrobial champion. This will be a senior clinical lead within the service line, preferably a Consultant or Senior Nurse/Allied Health Professional. These service line champions will be members of the ASG and be responsible for overseeing application of this Trust policy and dissemination of key AMS information within their service line.

4.2.4 All prescribers must comply with this Trust policy when initiating, reviewing or continuing an antimicrobial prescription. The AMS team will ensure that all prescribers receive induction and regular update training on appropriate use of antimicrobials.

4.2.5 All pharmacists must encourage compliance with this Trust policy for antimicrobial prescriptions, and ensure the safe and timely supply of antimicrobial agents. They must escalate any issues with antimicrobial prescriptions to the prescribing team.

4.2.6 All nursing staff administering antimicrobial agents must comply with this Trust policy, and ensure the timely and safe administration of these critical medicines. They must escalate any issues with antimicrobial prescriptions to the prescribing team.

4.2.7 All clinical staff must ensure the timely collection and submission to the microbiology laboratory of relevant specimens for culture and investigation, e.g. urine samples in patients being treated for suspected urinary tract infection.

4.3 All policies and guidelines within the Trust that involve the usage of antimicrobials will be tabled at the ASG for review. This will include, but not be limited to:

4.3.1 Patient Group Directions (PGD) for the supply of antimicrobials. These will have a named Microbiologist, in accordance with NICE Medicines practice guideline MPG2 Patient Group Directions (2017)⁷.

4.3.2 Service line clinical guidelines. Where these involve the use of antimicrobial agents as treatment or prophylaxis, these will be reviewed by a microbiologist and presented to the ASG.

5 Control and Use of Antimicrobials

5.1 All antimicrobial prescribing in the Trust must be appropriate. The UK Advisory Committee on Antimicrobial Prescribing, Resistance and Healthcare Associated Infection (APRHAI)⁸ defines inappropriate prescribing as:

- Prescribing an antibiotic for a patient in the absence of (documented) evidence of bacterial infection.
- Prescribing a critical broad-spectrum antibiotic (piperacillin-tazobactam or carbapenems in secondary care; co-amoxiclav, cephalosporins and quinolones in primary care) to patients in the absence of a (documented) rationale.
- Continuing an antibiotic prescription beyond the course length recommended in local or national guidelines, in the absence of a (documented) rationale.

5.2 The Trust expects prescribers to have regard to the diagnosis (or presumed diagnosis) of infection, evidence of clinical effectiveness, likely benefits, safety, cost (in comparison with alternative choices), and propensity for the emergence of resistance. Antimicrobials should be used in the most appropriate way: this implies that the choice, route, dose, frequency and duration of administration have been carefully chosen.

5.3 The Trust's Principles of Antimicrobial Prescribing are:

- Antimicrobials should not be started in the absence of clinical evidence of infection.
- Antimicrobials should only be used when they are considered likely to be of benefit and effective.
- In the face of severe or life threatening infection, appropriate empirical antimicrobial treatment, as detailed in the UHP Antimicrobial Treatment Guidelines, must be started promptly and within 60 minutes of suspicion of the presence of sepsis or life-threatening infection.
- Appropriate samples for microbiological investigation should be taken prior to starting antimicrobials where this is safe and practicable. In sepsis or life-threatening infection, blood cultures should be taken before the first dose of antimicrobials or as soon as possible. Guidance on appropriate samples is included in the Trust Antimicrobial Guidance and on specimen collection within the Trust Pathology handbook online.
- Selection of empirical antimicrobials must consider the likelihood that the infection is due to a drug resistant pathogen e.g. ESBL, MRSA, CRO or other MDR. Prescribers should use all available information systems to identify prior

colonisation and recent culture results and modify treatment regimens to cover MDR infections where appropriate.

- Clinical advice on antimicrobial selection is available via the on-call microbiology service.
- Targeted antimicrobial therapy should always be used in preference to empirical, wherever possible: broad spectrum antimicrobials cause collateral clinical and ecological damage and are often not as effective as narrow spectrum agents. Regular review of clinical progress and investigation results allows de-escalation of antimicrobial therapy.
- Prescribers must document the reason for starting an antibiotic in the clinical notes and include the indication on the drug chart (paper or electronic). The rationale for any deviation from Trust antimicrobial guidelines should be clearly documented. This should include details of any allergies or prior reactions that lead to use of second-line agents.
- When selecting antimicrobials the likelihood that the patient is allergic to the drug must be considered before prescribing. In addition to the patient history, other available information should be used e.g. medical records, PIMS etc. In line with NICE guidance on drug allergies⁸, patients with a history of allergy should be assessed and the allergy label removed where it is not correct. In general second line antibiotics used in those with a suspected allergy are less effective than a first line agent.
- Intravenous administration of antibiotics is only required where the optimal treatment is only available via the IV route, where the patient is severely ill or unable to absorb from or tolerate the enteral route. Rationale for continuation of any IV antimicrobial agent greater than 72 hours must be clearly documented in the medical notes.
- All patients on an initial antimicrobial prescription, and unstable patients with infection, should have a daily review of their antimicrobial therapy documented in the medical notes. This review should include the updated indication for antimicrobials, the ongoing appropriateness of antimicrobial treatment, the suitability of the route and relevant investigation results (including microbiology cultures).
- Antimicrobial therapy should be discontinued as soon as it is no longer of clinical benefit to the patient, e.g. diagnosis of infection disproved, or clinical syndrome resolved.
- When the clinical diagnosis of infection is clear and the patient is stable and clinically responding to antimicrobial treatment, the finalised antimicrobial prescription and intended length of treatment course should be clearly documented. If a specified course length cannot be made at this time, then the date of the next intended antimicrobial review must be documented.
- Surgical antimicrobial prophylaxis must follow national guidance on best practice³; for the majority of indications there is no role for post-procedural prophylaxis. Trust antimicrobial guidance covers situations where extended surgical antimicrobial prophylaxis is indicated.

5.4 Elements required to control the use of antimicrobials and promote appropriate prescribing include³:

5.4.1 A formulary of antimicrobials.

This is a list of antimicrobials approved for use within the Trust. Treatment guidelines indicate that certain antimicrobials are subject to restrictions i.e. may only be prescribed by Consultants or according to pre agreed treatment protocols. The formulary is reviewed periodically by the Antimicrobial Steering Group and new additions to the formulary submitted for approval by the Medicines Governance Committee.

5.4.2 Trust guidelines on antimicrobial use.

These are available via the electronic guidelines platform webpage accessible via link from StaffNET homepage. The guidelines are also available via a free smartphone App: Trust specific content can be downloaded then is available to users offline. App users must allow notifications to ensure they are using the most up to date version of the guidance.

Guidelines are, where appropriate, evidence based or according to national approved guidelines. Guidelines should be followed where appropriate, but where guidelines do not exist Senior or Microbiological advice may be required. Areas for guideline development should be highlighted to the ASG by the service line Antimicrobial Champions.

Antibiotic Guidelines are reviewed no less frequently than biennially or as appropriate by the Antimicrobial Steering Group.

5.4.3 A programme of education on the appropriate use of antimicrobials.

This will be agreed as part of the annual antimicrobial stewardship programme in cooperation with Microbiology, Pharmacy, and Learning and Development.

AMS content is included in the Trust priority e-learning induction package and annual updates for all prescribers, nurses and pharmacists.

5.4.4 Surveillance and monitoring of antimicrobial use.

This should preferably be based on Defined Daily Doses (DDD) of antimicrobial drugs or a locally developed and verified alternative. This surveillance will be based on a combination of central and ward audit data and reviewed by the Antimicrobial Steering Group on a regular basis. There will be regular ward rounds by a ward based team of Clinical Microbiologist and the Antibiotic Pharmacist.

5.4.5 Programme of audits.

These will be agreed annually by the Antimicrobial Steering Group against Trust guidelines or other appropriate standards, and will form part of the annual antimicrobial stewardship programme.

6 Overall Responsibility for the Document

The Antimicrobial Steering Group is responsible for developing, implementing and reviewing this policy.

7 Consultation and Ratification

The design and process of review and revision of this policy will comply with The Development and Management of Formal Documents.

The review period for this document is set as default of five years from the date it was last ratified, or earlier if developments within or external to the Trust indicate the need for a significant revision to the procedures described.

This document will be reviewed by the group and ratified by the Director.

Non-significant amendments to this document may be made, under delegated authority from the Director, by the nominated owner. These must be ratified by the Director.

Significant reviews and revisions to this document will include a consultation with named groups, or grades across the Trust. For non-significant amendments, informal consultation will be restricted to named groups, or grades who are directly affected by the proposed changes.

8 Dissemination and Implementation

Following approval and ratification, this policy will be published in the Trust's formal documents library and all staff will be notified through the Trust's normal notification process, currently the 'Vital Signs' electronic newsletter.

Document control arrangements will be in accordance with The Development and Management of Formal Documents.

The document owner will be responsible for agreeing the training requirements associated with the newly ratified document with the named Director and for working with the Trust's training function, if required, to arrange for the required training to be delivered.

9 Monitoring Compliance and Effectiveness

9.1 Trust standards for antimicrobial prescribing are outlined in section 5 of this policy and in the Trust Antibiotic Guidelines

9.2 The Antimicrobial Stewardship Group will monitor compliance with the Antimicrobial policy. This will include reports from the programme of antimicrobial ward rounds, continuous audit of antimicrobial prescribing, and other audits in the group's annual programme or performed on an ad hoc basis.

9.3 Governance continuity will be maintained through reporting to the Quality and Safety Group, Medicines Governance Committee and the Infection Prevention and Control Sub-Committee.

10 References and Associated Documentation

1. Department of Health (2015). The Health and Social Care Act 2008: Code of Practice for the NHS on the prevention and control of healthcare associated infections and related guidance.
2. HM Government (2019). Tackling antimicrobial resistance 2019 – 2024. The UK's five-year national action plan.
3. Department of Health (2015). "Start Smart then – Then Focus" Guidance for Antimicrobial Stewardship in Hospitals (England).
4. Public Health England (2020) Framework of actions to contain carbapenemase-producing Enterobacterales
5. Specialist Advisory Committee on Antimicrobial Resistance (SACAR) (2007). Antimicrobial Framework. *Journal of Antimicrobial Chemotherapy* 2007; 60 Suppl. 1, i87–i90
6. Public Health England (2020). English Surveillance Programme for Antimicrobial Utilisation and Resistance (ESPAUR): Report 2019 to 2020
7. NICE Medicines Practice Guideline MPG2 (2017) Patient group directions <https://www.nice.org.uk/guidance/mpg2>
8. APRHAI Annual Report 2017. <https://www.gov.uk/government/publications/APRHAI-annual-reports>
9. NICE Clinical Guideline CG183 (2014) Drug allergy: diagnosis and management <https://www.nice.org.uk/guidance/CG183>

Core information			
Document Title	Control and Use of Antimicrobials		
Date Finalised	21 st January 2021		
Previous Documents			
Previous document in use?	Yes		
Action to retrieve old copies	Archived electronically by IPCT. Also held by the Trust Document Controller		
Dissemination Plan			
Recipient(s)	When	How	Responsibility
Trustwide			

Review Checklist		
Title	Is the title clear and unambiguous?	Yes
	Is it clear whether the document is a policy, procedure, protocol, framework, APN or SOP?	Yes
	Does the style & format comply?	Yes
Rationale	Are reasons for development of the document stated?	Yes
Development Process	Is the method described in brief?	Yes
	Are people involved in the development identified?	Yes
	Has a reasonable attempt has been made to ensure relevant expertise has been used?	Yes
	Is there evidence of consultation with stakeholders and users?	Yes
Content	Is the objective of the document clear?	Yes
	Is the target population clear and unambiguous?	Yes
	Are the intended outcomes described?	Yes
	Are the statements clear and unambiguous?	Yes
Evidence Base	Is the type of evidence to support the document identified explicitly?	Yes
	Are key references cited and in full?	Yes
	Are supporting documents referenced?	Yes
Approval	Does the document identify which committee/group will review it?	Yes
	If appropriate have the joint Human Resources/staff side committee (or equivalent) approved the document?	Yes
	Does the document identify which Executive Director will ratify it?	Yes
Dissemination & Implementation	Is there an outline/plan to identify how this will be done?	Yes
	Does the plan include the necessary training/support to ensure compliance?	Yes
Document	Does the document identify where it will be held?	Yes

Control	Have archiving arrangements for superseded documents been addressed?	Yes
Monitoring Compliance & Effectiveness	Are there measurable standards or KPIs to support the monitoring of compliance with and effectiveness of the document?	Yes
	Is there a plan to review or audit compliance with the document?	Yes
Review Date	Is the review date identified?	Yes
	Is the frequency of review identified? If so is it acceptable?	Yes
Overall Responsibility	Is it clear who will be responsible for co-ordinating the dissemination, implementation and review of the document?	Yes

Core Information	
Manager	Dr Rosie Fok
Directorate	Clinical Support Services
Date	21 st January 2021
Title	Control and Use of Antimicrobials
What are the aims, objectives & projected outcomes?	These guidelines have taken into considerations the cultural/religious and gender needs of patients
Scope of the assessment	
Collecting data	
Race	
Religion	
Disability	
Sex	
Gender Identity	
Sexual Orientation	
Age	
Socio-Economic	
Human Rights	
What are the overall trends/patterns in the above data?	

Involving and consulting stakeholders				
Internal involvement and consultation				
External involvement and consultation				
Impact Assessment				
Overall assessment and analysis of the evidence				
Action Plan				
Action	Owner	Risks	Completion Date	Progress update
Specific issues and data gaps that may need to be addressed through consultation or further research				