

Antimicrobial Stewardship and Prescribing Policy

Division: Trust-Wide Document No: CG-222

Specific staff groups to whom this policy <u>directly</u> applies	Likely frequency of use	Other staff who may need to be familiar with policy
Prescribers Pharmacists Nursing staff Infection Specialists	Very high	All clinical staff

Main Author(s):	Christine Sluman, Lead Antimicrobial Pharmacist Professor Alasdair Macgowan, Consultant Medical Microbiologist and NBT Antimicrobial Stewardship Lead
Consultation:	NBT Antimicrobial Stewardship Group
Approval Authority (Committee/ Group/ Lead Clinician):	NBT Drug and Therapeutics Committee
Executive Lead (Trust-Wide only):	Mr Tim Whittlestone
Date of Approval:	13 August 2022
Next Review Due:	1 st July 2025
Version:	3
KEYWORDS:	Antimicrobial, antibiotic, stewardship
Summary of changes since the previous version	Move to new template Updated restricted antimicrobial list Expanded information on individual responsibilities Update to information on prescribing in penicillin allergy Updated requirement for pharmacists to confirm with clinical team or medical notes before crossing through prescriptions at the end of specified duration

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

	<p>Removal of reference to “antibiotic duration policy” sticker (no longer in use)</p> <p>Addition of escalation processes for resolving queries</p> <p>Expansion of responsibilities around documentation</p> <p>Update to Antimicrobial Stewardship Group membership, roles and responsibilities as per Terms of Reference</p>
--	--

1. Executive summary

1.1. The inappropriate use of antimicrobials is associated with:

- Increased selection of drug-resistant organisms
- Changes to the normal bowel flora leading to super-infection with organisms such as *Clostridium difficile* and *Candida* species.
- Increased risks of drug-related adverse effects
- Increased costs
- Increased length of stay

An Antimicrobial Stewardship Programme is a key component in the reduction of healthcare associated infections and antimicrobial resistance.

- 1.2. This policy provides standards for and informs all staff of their responsibilities in the safe, effective and appropriate prescribing of antimicrobials (antibacterials, antifungals and antivirals) within the Trust. It also provides information on the Trust’s Antimicrobial Stewardship management systems and reporting.
- 1.3. This policy must be read in conjunction with the NBT Antimicrobial Guidelines which provide greater detail on prescribing of individual antimicrobials for treatment and prophylaxis purposes and include advice on managing patients with renal impairment and penicillin allergy.
- 1.4. Antimicrobial treatment should not be started unless there is clinical or microbiological evidence of infection. If a serious life-threatening infection is suspected then treatment must be commenced urgently in line with current national guidance.
- 1.5. Empirical antimicrobial prescribing for treatment or surgical prophylaxis must be in accordance with the Trust Antimicrobial Guidelines unless there is a clear clinical reason. The reason for any departure from the empirical guidelines must be clearly documented in the medical notes.
- 1.6. Antimicrobial treatment must be reviewed within 48-72 hours and a decision based on clinical and microbiological considerations made and clearly documented in the medical notes.
- 1.7. Patients on parenteral therapy must be reviewed daily and considered for oral step-down within 24 hours of meeting oral switch criteria where appropriate.
- 1.8. The indication for an antimicrobial must be clearly documented on both the patient’s medicine chart and in the medical notes.
- 1.9. A duration or review date must be clearly documented on both the patient’s medicine chart and in the medical notes along with the prescriber’s name and contact details. Courses of greater than 7 days must be discussed with an Infection Specialist unless in line with the NBT Antimicrobial Guidelines recommendation for duration.

- 1.10. Antimicrobials on the Trust “restricted antimicrobial” list must only be prescribed after consultation with an Infection Specialist unless prescribed according to the NBT Antimicrobial Guidelines.
- 1.11. All healthcare professionals must query antimicrobial prescriptions that do not meet the standards in this policy or have incomplete information.

Contents

1. Executive summary	2
2. Purpose of the policy.....	4
3. Scope of the Policy	4
4. Definition of terms	4
5. Roles and responsibilities	5
6. Procedures.....	7
7. Organisation of the Trust’s Antimicrobial Stewardship Activities	15
8. Monitoring effectiveness	17
9. Associated policies/documents	18
10. References	18

2. Purpose of the policy

To provide standards for and inform all staff of their responsibilities in the safe, effective and appropriate prescribing of antimicrobials (antibacterials, antifungals and antivirals) within the Trust.

Evidence clearly demonstrates that the inappropriate use of antimicrobials is associated with:

- Increased selection of drug-resistant organisms – including Carbapenemase producing Enterobacterales (CPE), Methicillin-resistant Staphylococcus aureus (MRSA), Vancomycin Resistant Enterococci (VRE) and other resistant organisms
- Changes to the normal bowel flora leading to super-infection with organisms such as Clostridium difficile and Candida species
- Increased risks of drug-related adverse effects
- Increased costs
- Increased length of stay

An Antimicrobial Stewardship Programme is a key component in the reduction of Healthcare Associated Infections (HCAI) and antimicrobial resistance. The Department of Health's guidance: Antibiotic stewardship 'Start Smart –Then Focus' ¹ provides an outline of evidence-based antimicrobial stewardship in the secondary care setting.

3. Scope of the Policy

Trust-wide, all patient groups

4. Definition of terms

4.1. Definitions

Antimicrobial prophylaxis for surgery refers to the use of antimicrobials to prevent surgical site infection

Antimicrobial therapy refers to the treatment of infection with antibacterial, antifungal or antiviral medication.

Empirical antimicrobial therapy refers to the treatment of infection when the causative organism(s) is/are unknown.

Infection Specialist refers to a medical microbiologist or virologist or infectious diseases clinician

4.2. Abbreviations

ASG: Antimicrobial Stewardship Group

BNF: British National Formulary

BNSSG: Bristol, North Somerset, South Gloucestershire

CNS: Central Nervous System

CPE: Carbapenemase producing Enterobacterales

CRP: C Reactive Protein

ESBL: Extended Spectrum Beta-Lactamase

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

GP: General Practitioner

HCAI: Healthcare Associated Infection

IV: Intravenous

MC&S: Microscopy, Culture and Sensitivities

MDR: Multi-Drug Resistant

MRSA: Methicillin Resistant *Staphylococcus aureus*

OPAT: Outpatient Parenteral Antimicrobial Therapy

TDM: Therapeutic Drug Monitoring

VRE: Vancomycin Resistant Enterococci

WCC: White Cell Count

5. Roles and responsibilities

5.1. Prescribers

- Prescribe antimicrobials according to the standards provided within this policy.
- Query antimicrobial prescriptions that do not meet the standards provided within this policy or have incomplete information.
- Ensure patients are counselled on important safety information for individual antimicrobials as advised by the British National Formulary.

5.2. Infection Specialists

- Provide expert leadership and advice, in conjunction with the antimicrobial pharmacist, on the use of antimicrobials and the management of specific patients and infections, including those not specified in the Trust Antimicrobial Guidelines.
- Work closely with the Antimicrobial Stewardship Group (ASG) to support antimicrobial stewardship throughout the Trust.
- Be integrally involved in the development of antimicrobial prescribing guidelines and audits.
- In conjunction with the antimicrobial pharmacist, provide regular multidisciplinary ward-focused antimicrobial stewardship, clinical input and prescription review.
- Provide education and training to other healthcare professionals regarding antimicrobial stewardship.
- Provide expert advice on therapeutic drug monitoring (TDM) of antimicrobials and liaise with the laboratory to provide this in an efficient and effective way.
- Provide antimicrobial resistance data, as needed, on which to base guideline decisions.

5.3. Antimicrobial Pharmacist

- Provide leadership and advice, in conjunction with the Infection Specialists, on the use of antimicrobials and the management of specific patients and infections, including those not specified in the Trust Antimicrobial Guidelines.

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

- In conjunction with the Trust lead for Antimicrobial Stewardship, support antimicrobial stewardship throughout the Trust.
- Approve the use and monitor the prescribing of antimicrobials designated as 'restricted antimicrobials' within the Trust.
- In conjunction with the Infection Specialists, provide regular multidisciplinary ward-focused antimicrobial stewardship, clinical input and prescription review.
- Work with clinical pharmacists to embed review and monitoring of antimicrobial prescriptions into regular clinical pharmacy service provision.
- Co-ordinate reporting and auditing of antimicrobial prescribing, usage trends and adherence to this policy within the Trust.
- Assist with timely acquisition of novel or off license agents when recommended by Consultant Medical Microbiologists.
- Ensure timely communication to Infection Specialists when pharmaceutical supply issues impact on availability of antimicrobials.

5.4. Nurses and Midwives

- Confirm allergy status prior to administration of all antimicrobials.
- Query with the appropriate clinical team any antimicrobial prescriptions that do not meet the standards in this policy or have incomplete information. Document in the medical notes any queries which are not immediately resolved. Contact the ward pharmacist if further advice or support is needed.
- Urgently query unclear prescriptions with the prescriber, including those which they consider to be erroneous or dangerous (for example penicillin prescribed in patient with a documented penicillin allergy)
- Start all antimicrobial courses promptly. For some life-threatening indications, such as sepsis, ensure that the first dose of antimicrobial is administered urgently in line with current national guidance.
- Prevent missed doses. If an antimicrobial is not available on the ward, make it an urgent priority to obtain a supply from pharmacy so that the dose is not missed. Contact the on-call pharmacist when an antimicrobial is not available out of hours. 'Drug Unavailable' is not a valid reason for an antimicrobial dose to be missed.
- For antimicrobials with a specified duration (stop date), do not administer antimicrobials beyond this. If there is no duration documented, or the duration has passed, to urgently query with the appropriate clinical team before the next dose is given.
- If a review date is specified and has passed, to urgently query with the appropriate clinical team. Do not omit a dose without confirming with the clinical team.

5.5. Ward Pharmacists

- Confirm allergy status prior to screening antimicrobial prescriptions
- Query with the appropriate clinical team any antimicrobial prescriptions that do not meet the standards in this policy or have incomplete information. Document in the medical notes any

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

queries which are not immediately resolved. If the problem cannot be resolved after discussion with a Registrar or Consultant, escalate to the Antimicrobial Pharmacist or Infection Specialists for further advice and support.

- Regularly review prescriptions for patients on antimicrobials that require therapeutic drug monitoring (TDM) to ensure appropriate monitoring is taking place and that levels are being acted upon.
- Provide advice prescribers on dosing and TDM of gentamicin, amikacin, vancomycin and teicoplanin in line with the Trust Antimicrobial Guidelines. In complex cases it may be necessary to refer the patient to the Antimicrobial Pharmacist, or Infection Specialists.
- Provide advice to clinical teams on other monitoring parameters required for individual antimicrobials, as directed in the British National Formulary or Summary of Product Characteristics.
- Ensure patients are counselled on important safety information for individual antimicrobials as advised by the British National Formulary.
- For non-ward stock, ensure that an adequate supply of antimicrobial is available to ensure that doses are not missed.

6. Procedures

6.1. Prescribing antimicrobials

6.1.1. Initiating antimicrobials

- When initiating antimicrobials, a clear clinical case definition must be recorded along with associated evidence of infection.
- The decision to start antimicrobial therapy must be documented along with the indication or provisional diagnosis in medical records (this must include clear identification of prescriber and contact details). The indication must also be recorded on the prescription chart.
- NBT Antimicrobial Guidelines must be followed unless there is a clear clinical reason. Any deviation must be recorded in the medical notes. Consult with an Infection Specialist if guideline choice is contraindicated or patient does not respond to therapy. A list of antimicrobials approved for use in BNSSG can be found on the BNSSG formulary website.
- All allergies must be recorded on all prescription charts and anaesthetic record. The nature of the allergy/reaction must also be stated. Patients with a history of allergies should be assessed and the allergy label removed where it is not correct.
- In severe sepsis or life-threatening infections treatment must be started urgently in line with current national guidance.
- For patients with less severe infection, it is only necessary to cover the expected pathogens. Broad spectrum agents are sometimes not as potent as narrow-spectrum agents against certain pathogens.
- Appropriate specimens should be obtained for MC&S, ideally before commencing antimicrobial therapy, however do not delay starting treatment in patients with severe sepsis or life-threatening infections
- Parenteral therapy must only be used in patients who are severely unwell, unable to tolerate oral therapy or when oral antimicrobials would not provide adequate coverage or tissue

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

penetration. Patients on parenteral therapy must be reviewed daily and considered for oral step-down where appropriate.

- Prescribers must consider the risks of infection with multidrug resistant pathogens. Risks are increased by previous healthcare exposure, previous antimicrobial therapy, prolonged hospital stay, previous infection/colonisation with an MDR pathogen, travel to some countries outside the UK. In such cases, discussion with an Infection Specialist is advised.
- A range of resistant bacteria will be encountered clinically, i.e., MRSA, VRE, ESBL producing Enterobacterales, carbapenem resistant Gram-negative rods and others. Treatment should be discussed with an Infection Specialist.
- Antimicrobials on the Trust “restricted antimicrobial” list must only be prescribed after discussion with an Infection Specialist or in line with the Trust Antimicrobial Guidelines. Prescribers must tick the “micro approved” box on the prescription chart and document in the medical notes when a discussion has taken place.
- A duration or review date must be documented on the prescription chart and in the medical notes when antimicrobials are prescribed.

6.2. Continuing antimicrobials

- **START SMART, THEN FOCUS.** Review therapy after 48-72 hours when culture results are available and document the decision in the medical notes. There are 5 options following review:
 - **STOP** antimicrobial therapy if no clinical evidence of infection
 - **SWITCH** therapy from intravenous to oral (following IV to oral switch guidelines)
 - **CHANGE** antimicrobials ideally to a narrower spectrum, or broader if required, depending on culture and sensitivity results. Prescribers should discuss with an Infection Specialist when necessary
 - **CONTINUE** and document next review date or duration for IV and oral antimicrobials
 - **DISCHARGE** patient with parenteral antimicrobials with the Outpatient Parenteral Antimicrobial Therapy (OPAT) or Hospital at Home services (after discussion with an Infection Specialist)
- Microbiology results must be reviewed daily and therapy de-escalated as appropriate.
- Patients on parenteral therapy must be reviewed daily and considered for oral step-down within 24 hours of meeting oral switch criteria where appropriate. The rationale for continuing with parenteral antimicrobials must be recorded in the notes.
- Many indications can be treated with 5 days of therapy. Treatment beyond 7 days is not normally necessary. Courses of greater than 7 days must be discussed with an Infection Specialist unless in line with NBT Antimicrobial Guideline advice for duration. Rationale for continuing beyond 7 days must be clearly documented in the medical notes.
- Prescribers must ensure duration/review dates on the prescription chart are updated in line with any changes.

6.3. Clinical evaluation

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

6.3.1. General factors

Before selecting an antibacterial you must first consider two factors – the patient and the known or likely causative organism. Factors related to the patient are:

- Previous or recent antimicrobial therapy
- Recent hospital admission and duration, duration of current admission
- Risk of or known colonisation with multi-resistant organisms
- History of allergy or adverse effects
- Renal and hepatic function/known renal or hepatic impairment
- Presence of co-morbidities or conditions which may contraindicate the use of specific antimicrobial(s)
- Resistance to infection (i.e. whether immunocompromised)
- Ability to tolerate medications via the oral route
- Severity of illness
- Ethnic origin
- Age and sex
- Pregnancy and breast feeding
- Recent travel

The known or likely organism and its antibacterial susceptibility, in association with the above factors will suggest one or more antimicrobials, the final choice depending on the microbiological, pharmacological and toxicological properties.

The site, type and severity of infection will impact on the dose, route and duration of antimicrobial therapy.

6.3.2. Antimicrobial allergy

- Many patients claim to be allergic to an antimicrobial and a significant proportion of these are incorrectly labelled as “allergic” either on the basis of symptoms reflecting drug side effects (i.e. nausea or diarrhoea) or disease symptoms (cough). Incorrect labelling as allergic may have significant adverse effects on future antimicrobial therapy leading to less effective or more toxic antimicrobial therapy. A thorough, reliable history (from patient, family or GP) is paramount in identifying those with true allergy.
- Patients with a reported antimicrobial allergy must have this clearly documented on all prescription charts and in the medical notes. The exact nature of the allergy must also be recorded. Every effort must be made by nursing and pharmacy staff to establish the allergy status before supplying or administering an antimicrobial, in particular penicillin.
- Patients with a history of an antimicrobial allergy should be assessed and the allergy label removed where it is not correct. If an allergy label is removed, prescribers must ensure all prescription charts are updated, and that the information is clearly communicated to the patient and GP on discharge.

- Patients with a history of type 1 immediate hypersensitivity reactions (anaphylactoid) within 4 hours of penicillin administration must not receive a penicillin, cephalosporin or other beta-lactam antibiotic. Discuss alternative antibiotic treatment with an Infection Specialist if advice is not given in the Trust Antimicrobial Guidelines.
- Further information on prescribing in penicillin allergy is given in the Trust Antimicrobial Guidelines.
- Prescribers must always check which class an antimicrobial agent belongs to before prescribing in a patient with an antimicrobial allergy.

6.3.3. Specific factors

When confronted with a patient who may have infection, the following steps may be useful in establishing a clinical diagnosis of infection.

- Confirm there is a high probability of infection as evidenced by fever, rigors, changes in blood parameters (CRP, WBC, lactate, etc.)
- Establish a primary site of infection by initial history, physical examination and laboratory tests (blood count, chest X-ray, urine analysis). If there is an obvious focus of infection – pneumonia, pyelonephritis, cellulitis, wound infection – then therapy should be directed against the likely organisms causing that infection.
- Further evaluation will depend on establishing in the history:
 - Community vs hospital acquired infection
 - Prior or current medications
 - Recent surgery or procedures
 - Underlying diseases: heart valve disease, splenectomy, intra-abdominal pathology, IVDU, immunosuppression
 - Travel history

6.3.4. Physical examination:

- Skin, IV sites, rash, jaundice, wound infection, ulcers
- Head, ear, sinus infection
- Heart, new murmurs
- Lungs
- Abdomen/rectal/pelvic/abdominal scars, rectal and pelvic examination
- Arms/legs, cellulitis
- CNS, confusion, photophobia, neck stiffness, etc.

6.4. Surgical Prophylaxis

- Prophylactic antimicrobials have an important part to play in the prevention of post-operative wound and deep site infections. The key principle is to have a high concentration of the

antimicrobial (s) in the relevant tissues at the time of operation, when bacteria may contaminate the tissues.

- Surgery may be classified as:
 - Clean
 - Clean-contaminated
 - Contaminated
- Whether antimicrobials are required and the course length depends on the classification of the surgical procedure and if any prosthetic material is being implanted. For most clean-contaminated procedures, this requires only a single dose of the antimicrobial(s) within 60 minutes prior to surgical incision or tourniquet inflation. If surgery is prolonged (over 6 hours) or there is significant intraoperative blood loss (>1.5 litres), a further dose of intra-operative antimicrobial(s) may be needed.
- Timing of administration of prophylaxis is important to ensure that there are maximum tissue levels at the time of first incision. Oral and intramuscular antimicrobials must be given one hour pre-operatively and IV antimicrobials given so that the infusion or dose has just been completed at the time of incision.
- Where deep seated prosthetic joint infection is suspected, prophylaxis should be delayed until an appropriate number of deep specimens have been taken for microbiology and histology.
- All surgical prophylaxis antimicrobial prescribing must be in accordance with the Trust Antimicrobial Guidelines unless there is a clear clinical reason. The reason for any departure from the empirical guidelines must be clearly documented in the medical notes.

6.5. Monitoring and follow up of patients with infection

- Hospital inpatients on antimicrobial therapy must be regularly reviewed (more frequently for more severely ill patients).
- Resolution of clinical symptoms and signs must be followed as well as relevant blood parameters (CRP, peripheral WBC, renal function) and serial diagnostic imaging if needed.
- Patients on parenteral therapy must be reviewed daily and considered for oral step-down within 24 hours of meeting oral switch criteria where appropriate.
- Patients who are not responding to therapy by 48-72 hours should be discussed with an Infection Specialist.
- Patients on gentamicin, amikacin, vancomycin and teicoplanin must have TDM performed in line with the Trust Antimicrobial Guidelines or as directed by an Infection Specialist.
- Some antimicrobials may require specific monitoring to be undertaken. Further information is available in the British National Formulary or Summary of Product Characteristics, or discuss with a Pharmacist or Infection Specialist.

6.6. Restricted antimicrobials

- Those antimicrobials listed below are restricted and must only be prescribed after discussion with an Infection Specialist or in line with the Trust Antimicrobial Guidelines.

- Prescribers must tick the “micro approved” box on the prescription chart and document in the medical notes when a discussion has taken place.
- Many of these antimicrobials are not held as ward stock and are available from pharmacy on a named patient basis only after confirmation that they have been approved by an Infection Specialist.
- Some restricted antimicrobials are held as ward stock to facilitate administration in specific indications detailed in the Trust Antimicrobial Guidelines. Use of these antimicrobials for indications outside of these guidelines requires prior approval by an Infection Specialist.
- Some restricted antimicrobials also require an electronic BlueTeq form to be completed prior to use – these are indicated below. Prior registration to the BlueTeq system is required – contact Pharmacy to facilitate this.

Agent	Additional info
Amikacin	
Amphotericin (IV)	
Anidulafungin	
Aztreonam	
Benzylpenicillin	
Caspofungin	
Cefazolin	
Cefiderocol	BlueTeq form required
Cefotaxime	
Ceftaroline	
Ceftazidime	
Ceftazidime / avibactam	BlueTeq form required
Ceftolozane / tazobactam	
Ceftriaxone	
Cefuroxime	
Chloramphenicol IV	
Ciprofloxacin IV	
Co-amoxiclav IV	
Colistin IV	
Dalbavancin	
Dapsone	
Daptomycin	
Ertapenem	
Erythromycin (IV and oral)	
Fidaxomicin	
Fluconazole IV	
Flucytosine	
Fosfomycin	
Gentamicin (nebulised)	
Isavuconazole	BlueTeq form required
Itraconazole	

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

Levofloxacin	
Linezolid	
Meropenem	
Micafungin	
Moxifloxacin	
Piperacillin / tazobactam	
Posaconazole	
Pristinamycin	
Remdesivir	BlueTeq form required
Rifampicin IV	
Rifaximin	
Streptomycin	
Temocillin	
Tigecycline	
Tobramycin (IV and nebulised)	
Voriconazole	

6.7. Documentation

- The clinical indication, duration or review date, route and dose must be clearly documented in the patient's medical notes and on the prescription chart.
- Reasons for any deviations from the Trust Antimicrobial Guidelines must be clearly documented in the medical notes.
- Antimicrobial treatment must be reviewed within 48-72 hours and a decision based on clinical and microbiological considerations must be made and clearly documented in the medical notes.
- Patients on parenteral therapy must be reviewed daily and considered for oral step-down within 24 hours of meeting oral switch criteria where appropriate. The rationale for continuing with parenteral antimicrobials must be documented in the notes.
- Courses of greater than 7 days must be discussed with an Infection Specialist unless in line with NBT Antimicrobial Guideline advice for duration. Rationale for continuing beyond 7 days must be clearly documented in the medical notes.
- Prescribers must ensure indication, duration/review dates on the prescription chart are updated in line with any changes.
- Prescribers must tick the "micro approved" box on the prescription chart and document in the medical notes when agreement to use a restricted antimicrobial has been made with an Infection Specialist.
- Allergies must be recorded on the prescription chart and anaesthetic record. The nature of the reaction must also be stated.

6.8. Therapeutic Drug Monitoring

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

- Vancomycin, teicoplanin, amikacin and gentamicin concentrations must be checked at appropriate intervals as outlined in the Trust Antimicrobial Guidelines. Dose/dosage interval must be adjusted according to concentrations or as advised by an Infection Specialist.
- Gentamicin, vancomycin and amikacin are potentially nephrotoxic and may not be appropriate for patients with acute kidney injury or those with chronic renal impairment. Please discuss with an Infection Specialist if concerned.
- Gentamicin or amikacin must not be used for more than 7 days without discussion with an Infection Specialist.

6.9. Antimicrobial duration

- Failure to specify course lengths can lead to unnecessarily long courses being administered to patients. This inappropriate usage of antimicrobials has adverse consequences which compromise the efficacy of therapy for individuals and the organisation. These include:
 - Increased selection of drug-resistant organisms – including CPE, MRSA, VRE and other resistant organisms
 - Changes to the normal bowel flora leading to super-infection with organisms such as *Clostridium difficile* and *Candida* species
 - Increased risks of drug-related adverse effects
 - Increased costs
 - Increased length of stay
- Suggested durations for a range of conditions are detailed in the Trust Antimicrobial Guidelines.
- Prescribers must specify a duration or review date in the medical notes and on the prescription chart when prescribing an antimicrobial.
- Once a “review” date is reached the prescriber must state the intended duration or new review date on the prescription chart and in the medical notes. Nursing staff must not omit a dose for antimicrobials with a “review” date without confirming with a member of the clinical team.
- For antimicrobials with a specified duration (stop date), nurses should not administer antimicrobials beyond this. If there is no duration documented, or the duration has passed, to urgently query with the clinical team before the next dose is given. Pharmacists may cross through the prescription to prevent any more doses being given after confirming with the clinical team or medical notes that this is the intention. The pharmacist must document this action in the medical notes.
- If a pharmacist encounters an antimicrobial prescription without a specified duration or review date they will contact the clinical team to confirm a course length and add this to the prescription. This discussion must be documented in the medical notes, including who it was discussed with and contact details.
- If a member of the clinical team is unavailable, then as a minimum the pharmacist will make an entry in the medical notes requesting a review, as well as asking the nursing team to confirm with the clinical team prior to the next dose being given.

- If there is still no course length after 5 days, the pharmacist should escalate to the Registrar or Consultant responsible for the patient. If this does not resolve the problem, further escalate to the Antimicrobial Pharmacist or Infection Specialists for advice.
- The following conditions are excluded from the above: infective endocarditis, deep bone and/or joint infection, pleural infections, *Clostridium difficile* associated diarrhoea, tuberculosis.

7. Organisation of the Trust's Antimicrobial Stewardship Activities

7.1. Trust Antimicrobial Stewardship Group

Antimicrobial stewardship at NBT is developed and implemented by the Antimicrobial Stewardship Group (ASG). This is a sub-group of the Drugs and Therapeutics Committee.

The group's membership includes:

- Consultant in Infection (Chair)
- Antimicrobial Pharmacist
- Consultant Microbiologist – Speciality Lead or Deputy
- Consultant in Acute Medicine
- Consultant Physician
- Consultant Surgeon
- Consultant ICU anaesthetist
- Lead Consultant Microbiologist for Mandatory Surveillance Performance
- Senior Pharmacy Manager
- Representative of BNSSG ICB
- Consultant Neurosurgeon
- Consultant Orthopaedic Surgeon
- Consultant Neonatologist
- Emergency Department Representative

The key roles and responsibilities of the Antimicrobial Stewardship Group are to:

- Produce and deliver an effective hospital-wide policy to promote the effective, safe and cost-effective prescribing of antimicrobials.
- Reduce inappropriate prescribing of antimicrobials.
- Promote the education of all staff in the use of antimicrobials.
- Develop and maintain the NBT antimicrobial policies and guidelines.
- Create and oversee an antimicrobial audit programme. To review audit findings and identify appropriate actions.
- Review antimicrobial consumption data and identify actions to address undesirable trends.
- Identify actions to address non-compliance with the antimicrobial prescribing guidelines
- Implement national antimicrobial policies and initiatives
- Ensure a mechanism is in place for dissemination of information such as audit findings and required actions to their divisions

7.2. Training

- The Department of Health document "Start Smart – then Focus" (2015) states:
'There should be mandatory core training in prudent antibiotic use for doctors, pharmacists and nurses in addition to an introductory session on each induction

This document can only be guaranteed to be the current adopted version if opened directly from the NBT intranet.

programme. Post-registration, this training should be repeated by all such staff every three years and should specifically cover those antibiotics that are linked to CDI'.

- Details of training for nurses, pharmacists and doctors are under continuing review and development.
- All prescribers will be provided with teaching on prescribing of antimicrobials at annual Trust induction by the Antimicrobial Pharmacist and/or Consultant in Infection.
- All pharmacists will receive an induction with the Antimicrobial Pharmacist where antimicrobial stewardship will be covered.
- Additional lectures/teaching sessions will be provided to medical staff as part of the junior doctor training programme and when required to nursing staff and pharmacists.
- A mandatory antimicrobial stewardship training programme to be completed every three years is not currently in place in NBT, but will be reviewed.

8. Monitoring effectiveness

What will be monitored	Monitoring/ Audit method	Monitoring responsibility (<i>individual/group/ committee</i>)	Frequency of monitoring	Reporting arrangements (<i>committee/group the monitoring results are presented to</i>)	How will actions be taken to ensure improvements and learning where the monitoring has identified deficiencies
<ul style="list-style-type: none"> • Indication for antimicrobials recorded on prescription chart and in patient medical notes. • Length of course or review date recorded on prescription chart and in patient medical notes. • Compliance with 	<ul style="list-style-type: none"> • Antibiotic point prevalence audits 	<ul style="list-style-type: none"> • Lead Antimicrobial Pharmacist • Trust Antimicrobial Stewardship Lead • Antimicrobial Stewardship Group 	<ul style="list-style-type: none"> • Biannual 	<ul style="list-style-type: none"> • Director of Infection Prevention and Control • Control of Infection Committee • Drugs and Therapeutic Committee • Antimicrobial Stewardship Group 	<ul style="list-style-type: none"> • Development of an action plan • Dissemination of audit results and action plan to Divisional Clinical Governance Leads • Feedback to prescribers
<ul style="list-style-type: none"> • Adherence to other components of this policy to be audited as determined in the annual Trust Antimicrobial Stewardship Action Plan. 	<ul style="list-style-type: none"> • Ad-hoc audit 	<ul style="list-style-type: none"> • Lead Antimicrobial Pharmacist • Trust Antimicrobial Stewardship Lead • Antimicrobial Stewardship Group 	<ul style="list-style-type: none"> • As determined in the annual Trust Antimicrobial Stewardship Action Plan. 	<ul style="list-style-type: none"> • Director of Infection Prevention and Control • Control of Infection Committee • Drugs and Therapeutic Committee • Antimicrobial Stewardship Group 	<ul style="list-style-type: none"> • Development of an action plan • Dissemination of audit results and action plan to Divisional Clinical Governance Leads • Feedback to prescribers
<ul style="list-style-type: none"> • Review of antimicrobial prescribing trends 	<ul style="list-style-type: none"> • Regular review of antimicrobial consumption data 	<ul style="list-style-type: none"> • Lead Antimicrobial Pharmacist 	<ul style="list-style-type: none"> • Monthly 	<ul style="list-style-type: none"> • Trust Antimicrobial Stewardship Lead • Drugs and Therapeutic Committee • Antimicrobial Stewardship Group 	<ul style="list-style-type: none"> • Development of an action plan

9. Associated policies/documents

This policy must be read in conjunction with the NBT Antimicrobial Guidelines which provide greater detail on prescribing of individual antimicrobials for treatment and prophylaxis purposes and include advice on managing patients with renal impairment and penicillin allergy.

10. References

1. Department of Health Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI). Antimicrobial Stewardship: "Start Smart – Then Focus". Antimicrobial Stewardship Toolkit for English Hospitals 2015. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/417032/Start_Smart_Then_Focus_FINAL.PDF Accessed 23/06/2022