5.2 Bacterial infection

Guidelines

- BNSSG Primary Care Antimicrobial Guidelines click here
- NBT antibiotic guidelines click here (NB Only available via Trust intranet)
- App available for digital devices (RxGuidelines)
- UHB antibiotic guidelines click here (NB Only available via Trust intranet) App available for digital devices (Microguide)
- WAHT see local guidance App available for digital devices (RxGuidelines)
- BNSSG Guidelines for the management of bronchiectasis

Please note that the colours used in this chapter refer to the formulary Traffic Light Status, please see local Trust Guidance for information on restrictions on use which may also use a Traffic light colour system.

Antimicrobial stewardship

Antimicrobial stewardship is an organisational or healthcare-system-wide approach to promoting and monitoring judicious use of antimicrobial drugs to preserve their future effectiveness.

The approach to prescribing in line with the principles of antimicrobial stewardship recommended for primary care is as follows:

- Prescribe an antibiotic only if there is likely to be a clear clinical benefit.
- Consider a no, or delayed, antibiotic strategy for acute self-limiting upper respiratory tract infections.
- Limit prescribing over the phone to exceptional cases.
- Use simple generic antibiotics if possible. Avoid broad-spectrum antibiotics (for example, co-amoxiclav, quinolones and cephalosporins) if narrow-spectrum antibiotics remain effective because the former increase the risk of Clostridium difficile, methicillin-resistant Staphylococcus aureus (MRSA) and antibiotic-resistant urinary tract infections.
- Avoid widespread use of topical antibiotics (especially those that are also available as systemic preparations, such as fusidic acid).

For further information see the Royal College of General Practitioners TARGET Antibiotics toolkit

The approach to prescribing in line with the principles of antimicrobial stewardship recommended for secondary care is as follows:

- Do not start antibiotics without clinical evidence of bacterial infection.
- If there is evidence or suspicion of bacterial infection, use local guidelines to start prompt, effective antibiotic treatment.
- Document the following on the medicines chart and in the person's medical notes: clinical indication, duration or review date, route and dose.
- Obtain cultures – knowing the susceptibility of an infecting organism can lead to narrowing of broad-spectrum therapy, changing therapy to effectively treat resistant pathogens, and stopping antibiotics when cultures suggest an infection is unlikely.
- Prescribe single-dose antibiotics for surgical prophylaxis if antibiotics have been shown to be effective.
- Review the clinical diagnosis and the continuing need for antibiotics by 48 hours from the first antibiotic dose and make a clear plan of action – the 'Antimicrobial Prescribing Decision'. The 5 Antimicrobial Prescribing Decision options are: Stop, Switch IV (intravenous) to Oral, Change, Continue, and Outpatient Parenteral Antibiotic Therapy (OPAT). Clearly document the review and subsequent decision in the person's medical notes.

For further information see Public Health Guidance Start smart -then focus

(Taken from Infection prevention and control NICE quality standard 61)

Aminoglycosides

Amikacin (parenteral) (TLS Red)
- Secondary Care Restricted, see local guidelines

Gentamicin (parenteral) (TLS blue)
- Restricted, see local guidelines
**Gentamicin (nebulised)**
- TLS Red for management of acute infections
- Restricted, see local guidelines

**Gentamicin (nebulised)**
- Restricted, see local guidelines
- TLS Amber for chronic infections in non-CF bronchiectasis only. Click here for the SCP for nebulised Gentamicin. Generally a trial of eradication or maintenance of Colistimethate sodium would be considered first line in these patients. Progression between antibiotics would be dictated by tolerance or treatment failure (defined by decline in lung function or no change / increase in rate of exacerbations).

**Pristinamycin (oral, unlicensed) (TLS Red)**

**Tobramycin (parenteral) (TLS Red)**
- Secondary Care Restricted, see local guidelines

**Tobramycin (nebulised)**
- Restricted, see local guidelines
- TLS Red for the management of acute infections
- TLS Red for the management of chronic CF infections in accordance with the NHS England Clinical Commissioning Policy: Inhaled Therapy for Adults and Children with Cystic Fibrosis (A01/P/b)

**Tobramycin (nebulised)**
- Restricted, see local guidelines
- TLS Amber for chronic infections in non-CF bronchiectasis only. Click here for the SCP for nebulised Tobramycin. Generally a trial of eradication or maintenance of Colistimethate sodium would be considered first line in these patients. Progression between antibiotics would be dictated by tolerance or treatment failure (defined by decline in lung function or no change / increase in rate of exacerbations).

**Tobramycin (inhaled) (TLS Red)**
- Secondary Care Restricted, see local guidelines
- Tobi® Podhaler
- In accordance with NICE guidance TA 276 Colistimethate sodium and tobramycin dry powders for inhalation for treating pseudomonas lung infection in cystic fibrosis and
- the NHS England Clinical Commissioning Policy: Inhaled Therapy for Adults and Children with Cystic Fibrosis (A01/P/b)

**Bacterial Transpeptidation Inhibitors**

**Chloramphenicol (oral and parenteral) (TLS Red)**
- Secondary care restricted, see local guidelines.

**Carbapenems**

**Ertapenem (parenteral) (TLS Red)**
- Restricted, see local guidelines
- GPs may prescribe, but **only** on the recommendation of a medical microbiologist

**Meropenem (parenteral) (TLS Red)**
- Restricted, see local guidelines

**Cephalosporins**

**Cefalexin (oral) (TLS blue)**
- Restricted, see local guidelines

**Cefixime (oral) (TLS Blue)**
- Restricted, see local guidelines
Ceftriaxone (parenteral) (TLS Blue)
» Restricted, see local guidelines

Cefuroxime (parenteral) (TLS Red)
» Secondary Care Restricted, see local guidelines

Ceftazidime (parenteral) (TLS Red)
» Secondary Care Restricted, see local guidelines

Cefoxitin (parenteral, unlicensed) (TLS Red)
» Secondary Care Restricted, see local guidelines

Ceftolozane & Tazobactam (parenteral) (TLS Red)
» Secondary Care Restricted, see local guidelines

Diaminopyrimidines
Recommended: (TLS Green)

Trimethoprim (oral)
Alternatives:
Co-trimoxazole (oral) (TLS Blue)
Co-trimoxazole (parenteral) (TLS Red)
» Secondary care restricted, see local guidelines.

Fusidates
Sodium fusidate (oral) (TLS Blue)
» Restricted, see local guidelines.

Glycopeptide antibacterials

Teicoplanin (parenteral) (TLS Red)
» Secondary care restricted, see local guidelines.

Vancomycin (oral) (TLS Blue)
» For C Diff infection only, see local guidelines

Vancomycin (parenteral) (TLS Red)
» Secondary care restricted, see local guidelines.

Glycycycline antibacterials

Tigecycline (parenteral) (TLS Red)
» Secondary Care Restricted, see local guidelines

Lincosamide antibacterials

Clindamycin (oral) (TLS blue)
» Restricted, see local guidelines

Clindamycin (parenteral) (TLS Red)
» Secondary care restricted, see local guidelines.
Lipopeptide Antibacterials

**Daptomycin** (parenteral) (TLS Red)
- Secondary care restricted, see local guidelines.

Macrocyclic Antibacterials

**Fidaxomicin** (oral) (TLS Red)
- Secondary Care Restricted, see local guidelines.
- For patients who (1) have 1st episode of severe *C. diff* infection who are considered at high risk of recurrence: these include elderly patients with multiple co-morbidities who are receiving concomitant antibiotics, (2) have 1st episode of severe *C. diff* infection in patients unresponsive to first line therapy (i.e. vancomycin) and (3) Recurrent episodes of *C. diff* infection.
- See Public Health England ‘Updated guidance on the management and treatment of clostridium difficile infection,’ May 2013

Macrolides and Related drugs

**Recommended** (TLS Green)

**Clarithromycin** (oral) (TLS Green)
**Erythromycin** (oral) (TLS Green)
- for use in gut motility
- Alternatives:
  - **Erythromycin** (oral) (TLS Blue)
    - Restricted, see local guidelines.
  - **Azithromycin** (oral) (TLS Blue)
    - Restricted, see local guidelines.
  - **Clarithromycin** (parenteral) (TLS Red)
  - **Erythromycin** (parenteral) (TLS Red)
    - Secondary care restricted, see local guidelines. Not restricted for use in gut motility

Monocyclic Beta-Lactam Antibacterials

**Aztreonam** (nebulised) (TLS Red)
- Non-formulary
- See NHS England Clinical Commissioning Policy 16001/P. Use via NHSE IFR process

5-Nitroimidazole Derivatives

**Recommended** (TLS Green)

**Metronidazole** (oral and rectal)
- Alternative:
  - **Metronidazole** (parenteral) (TLS Red)
    - Secondary care restricted, see local guidelines.

Oxazolidinone antibacterials

**Linezolid** (oral and parenteral) (TLS Red)
- Secondary care restricted, see local guidelines.
Penicillins (Antipseudomonal)

Piperacillin/tazobactam (parenteral) (TLS Red)
- Secondary Care Restricted, see local guidelines

Penicillins (Beta-lactamase sensitive)

Recommended: (TLS Green)

Phenoxymethylpenicillin (oral)
Alternatives:
- Benzylpenicillin sodium (parenteral) (TLS Blue)
- Benzathine benzylpenicillin (parenteral, unlicensed) (TLS Red)
  - Secondary care Restricted - refer to local guidance
- Procaine benzylpenicillin (parenteral, unlicensed) (TLS Red)
  - Secondary care Restricted - refer to local guidance

Penicillins (Broad-Spectrum)

Recommended: (TLS Green)

Amoxicillin (oral)
Alternatives:
- Amoxicillin (parenteral) (TLS blue)
- Co-amoxiclav (oral) (TLS blue)
- Co-amoxiclav (parenteral) (TLS Red)
  - Secondary Care Restricted, see local guidelines

Penicillins (Mecillinam-type)

Pivmecillinam hydrochloride (oral) (TLS Blue)
- Restricted, see local guidelines

Penicillins (Penicillinase-Resistant)

Recommended: (TLS Green)

Flucloxacillin (oral)
Alternative: (TLS Blue)
- Flucloxacillin (parenteral)
- Temocillin (parenteral) (TLS Red)
  - Secondary Care Restricted, see local guidelines

Phosphonic Acid Antibacterials

Fosfomycin (oral & parenteral) (TLS Green)
- For patients at high risk of resistance, with type 1 penicillin allergy
- Restricted, see local guidelines.
**Fosfomycin** (oral & parenteral) (TLS Amber specialist recommendation, no SCP)
- Restricted, see local guidelines.

**Polymixin Antibacterials**

**Vancomycin** (oral) (TLS Blue)
- For *C Diff* infection only, see local guidelines

**Vancomycin** (parenteral) (TLS Red)
- Secondary care restricted, see local guidelines.

**Colistimethate sodium** (injection to be used via nebuliser)
- TLS Red for management of acute infections.

**Colistimethate sodium** (injection to be used via nebuliser)
- TLS Amber for chronic infections in non-CF bronchiectasis only. Click here for the [SCP for nebulised Colistimethate sodium](https://www.nhs.uk/services/primary-care/primary-care-guidance/specialist-consultant-practice-standard-collistimethate-sodium-inhalation/).
- Progression between antibiotics would be dictated by tolerance or treatment failure (defined by decline in lung function or no change / increase in rate of exacerbations).
- **Colomycin** injection can be used for nebulisation
- Nebulisation of colistimethate should take place in a well ventilated room. The output from the nebuliser may be vented to the open air or a filter may be fitted. Usually jet or ultrasonic nebulisers are preferred for colistimethate inhalation to ensure the particles are of a suitable diameter.
- Click here for [NBT information on nebulised antibiotics at home](https://www.nhs.uk/services/primary-care/primary-care-guidance/specialist-consultant-practice-standard-collistimethate-sodium-inhalation/).

**Colistimethate sodium** (parenteral) (TLS Red)
- Restricted in secondary care

**Colistimethate sodium** Dry Powder Inhaler (inhaled) (TLS Red)
- In accordance with [NICE guidance TA276](https://guidance.nice.org.uk/TA276)
- Colistimethate sodium and tobramycin dry powders for inhalation for treating pseudomonas lung infection in cystic fibrosis and
- And also for use in patients with non-Cystic Fibrosis bronchiectasis when colistimethate sodium is indicated, but the patient does not tolerate it in its nebulised form, or are unable to comply with the process of reconstitution and nebulisation of colistimethate despite appropriate training and support.

**Quinolones**

**Recommended:** (TLS Green)

**Ciprofloxacin** (oral) Restricted, see local guidelines.

**Alternatives:**
- **Ciprofloxacin** (parenteral) (TLS Red)
  - Secondary care restricted, see local guidelines.
- **Moxifloxacin** (oral) (TLS Blue)
  - Restricted, see local guidelines.
- **Ofloxacin** (oral) (TLS Blue)
  - Restricted, see local guidelines.
- **Ofloxacin** (parenteral) (TLS Red)
  - Secondary care restricted, see local guidelines.
- **Levofloxacin** (oral) (TLS Blue)
  - Restricted, see local guidelines.
- **Levofloxacin** (parenteral) (TLS Red)
  - Secondary care restricted, see local guidelines.
- **Rifaximin** (oral) (TLS Amber- encephalopathy, TLS Red *C diff* infection)
Secondary care restricted except hepatic encephalopathy, refractory C.Diff infection
» As per NICE TA 337 Rifaximin for preventing episodes of overt hepatic encephalopathy (SCP click here)

### Tetracyclines and related drugs

**Recommended: (TLS Green)**

**Doxycycline** (oral)

**Lymecycline** (oral)

**Oxytetracycline** (oral)

Alternative: (TLS Amber specialist recommendation no shared care)

**Minocycline** (oral)

» Restricted, see local guidelines
» Non-formulary for the treatment of acne.

Specific Indications:

**Demeclocycline hydrochloride** (oral) (TLS Blue)

» Used in the treatment of hyponatraemia resulting from SIADH

**Tigecycline** (parenteral) (TLS Red)

» Secondary Care Restricted, see local guidelines

### 5.2.5 Tuberculosis

**Antimycobacterials**

**Dapsone** (oral) (TLS Red)

» Secondary care restricted, see local guidelines.

**Bedaquiline** (oral) TLS Red

» see NHS England Policy F04/P/a Bedaquiline and Delamanid for defined patients with MDR-TB and XDR-TB

**Delamanid** (oral) TLS Red

» see NHS England Policy F04/P/a Bedaquiline and Delamanid for defined patients with MDR-TB and XDR-TB

**Rifampicin** (oral)

» for joint infections (TLS Amber no shared care, specialist recommendation)
» See Prescribing Guidance

**Rifampicin** (oral)

» For the treatment of Tuberculosis (TLS Red)

**Rifampicin** (parenteral) (TLS Red)

» Secondary care restricted, see local guidelines.

**Rifampicin, isoniazid, pyrazinamide & ethambutol (Voractiv®)** (Oral) (TLS Red)

**Rifampicin, isoniazid & pyrazinamide (Rifater®)** (oral) (TLS Red)

**Rifampicin & isoniazid (Rifinah®)** (oral) (TLS Red)

**Ethambutol hydrochloride** (oral) (TLS Red)

**Isoniazid** (oral) (TLS Red)

**Pyrazinamide** (oral, unlicensed) (TLS Red)
Rifabutin (oral) (TLS Red)
Streptomycin (parenteral, unlicensed) (TLS Red)
  ▸ Secondary care restricted, see local guidelines.

5.2.6 Urinary tract infections

Recommended: (TLS Green)

Nitrofurantoin (oral)

Alternative:

Methenamine (oral) (TLS blue)
  ▸ TLS blue for prophylaxis of urinary tract infections in patients for whom trimethoprim or nitrofurantoin is unsuitable (due to allergy, resistance or insufficient renal function for nitrofurantoin) Suitable for patients with mild to moderate renal impairment (10-45ml/min)
  ▸ See recurrent UTIs in women guidance

Last updated by: Emily Knight on 11-08-2017 13:50