

# Antimicrobial Guide and Management of Common Infections in Primary Care

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Strategies to Optimise Prescribing of Antimicrobials in Primary Care

2018



*Antimicrobial resistance poses a catastrophic threat. If we don't act now, any one of us could go into hospital in 20 years for minor surgery and die because of an ordinary infection that can't be treated by antibiotics. And routine operations like hip replacements or organ transplants could be deadly because of the risk of infection.*

Professor Dame Sally Davies, Chief Medical Officer, March 2013

**IMPORTANT**

This guide provides a summary of antimicrobial use in primary care for healthcare professionals. Interactions between antimicrobials and other drugs or underlying medical conditions are not generally considered but cautions in pregnancy have been highlighted. The information provided can be used to guide clinical practice, but it is not intended replace clinical judgement. Please refer to the summary of product characteristics for a particular drug for more detailed information. <http://www.medicines.org.uk>

If this is a printed or downloaded copy of the antimicrobial guideline it may not be the current version. Refer to the Pan Mersey APC website for the most up to date version:

<https://www.panmerseyapc.nhs.uk/formulary/anti-infective-therapy/>

Up to date information is also available from the Pan Mersey APC formulary:

<http://formulary.panmerseyapc.nhs.uk/chaptersSub.asp?FormularySectionID=27>

**This guideline is a joint initiative between:**

Aintree University Hospitals NHS Foundation Trust

Alder Hey Children's NHS Foundation Trust

Bridgewater Community Healthcare NHS Foundation Trust

Liverpool Community Health NHS Trust

Liverpool Heart and Chest NHS Foundation Trust

Liverpool Women's NHS Foundation Trust

Mersey Care NHS Foundation Trust

NHS Halton CCG

NHS Knowsley CCG

NHS Liverpool CCG

NHS South Sefton CCG

NHS Southport and Formby CCG

NHS St Helens CCG

NHS Warrington CCG

NHS West Lancashire CCG

NHS Wirral CCG

North West Boroughs Healthcare NHS Foundation Trust

Royal Liverpool and Broadgreen University Hospitals NHS Trust

Southport and Ormskirk Hospital NHS Trust

St Helens and Knowsley Teaching Hospitals NHS Trust

Warrington and Halton Hospitals NHS Foundation Trust

## Introduction

The 'Antimicrobial Guide and Management of Common Infections in Primary Care' guideline has been designed with three aims in mind:

- To encourage the rational and evidence-based use of antibiotics.
- To minimise the emergence of bacterial resistance.
- To provide a simple, pragmatic approach to the management of common infections in primary care.

**Antimicrobials should only be prescribed when there is proven or strongly suspected bacterial infection** and in all cases, the benefit of administering the medicine should be considered in relation to the risk involved. This is particularly important during pregnancy, when breastfeeding, using drugs in children and the elderly, and considering documented allergies to antimicrobials previously prescribed. These guidelines are not based on costs. **Some of the recommendations in this guideline are unsuitable for pregnant women (unless otherwise stated). Please refer to BNF for alternative antimicrobials in pregnancy.**

Management of an infection will not always mean prescribing an antimicrobial drug. Prescribers using this guide will have the best chance of using the most effective strategy first. This edition of the guide has been reviewed by the Pan-Mersey Antimicrobial Steering Group with input from both primary and secondary care practitioners.

### Things you can do to make a difference

- Prescribe an antibiotic only when there is likely to be clear clinical benefit, giving alternative, non-antibiotic self-care advice, where appropriate.
- Consider using a back-up (delayed), post-dated prescription where this has been shown to be effective.
- Reduce the risk of antimicrobial resistance by avoiding unnecessary use of broad spectrum antimicrobials such as cephalosporins, quinolones, clindamycin and co-amoxiclav.
- Always check previous positive microbiology results prior to starting antibiotics. The empirical regimes in this guideline cover most organisms, however, if the patient has a history of multi-resistant organisms not covered by this guideline, please contact a microbiologist.
- Limit prescribing for uncomplicated cystitis to three days in non-pregnant, otherwise fit women under 65 years of age.
- Avoid widespread use of topical antibiotics, especially in those agents also available systemically; in most cases, topical use should be limited.
- Don't prescribe antibiotics over the telephone, other than in exceptional cases.
- Don't list antibiotics on your repeat prescribing system, other than in exceptional cases.
- Using patient information leaflets can reduce antibiotic use. See [▼ useful references](#)

This Antimicrobial Guide aims to produce rational prescribing by the individual practitioner for their patients and is based upon advice contained in the Public Health England publication, Management of Infection Guidance for Primary Care, November 2017.

The British National Formulary (BNF) and Summary of product Characteristics provide additional information on the side effects and contraindications of all the drugs listed.

**Doses in this guideline are for adults unless otherwise stated.**

Refer to the [BNF for Children](#) for further information.

**Prescribing for children - adherence and palatability**

The choice of oral antibiotic should account for factors potentially affecting adherence such as dosing frequency and palatability or taste of formulation. Palatable oral drugs in a sensible regimen (up to 3 times a day) should be used where possible, and middle of the night dosing of oral antibiotics should be avoided whenever possible, especially following discharge.

Oral liquids which should be avoided due to poor palatability include:

- *Flucloxacillin oral liquid*: consider using oral cefalexin liquid if patient cannot swallow flucloxacillin capsules
- *Clindamycin oral liquid*: consider using an alternative. May need to discuss alternative with infectious disease or microbiology specialist.

**Useful References**

**National Institute for Health and Care Excellence**

[Antimicrobial prescribing guidelines](#)

Evidence-based antimicrobial prescribing information for all care settings focussed on bacterial infections and appropriate antibiotic use. Each guideline topic features a visual summary of the recommendations, a guideline and an evidence review.

**Public Health England**

[Management of infection guidance for primary care for consultation and local adaptation](#)

**RCGP TARGET Antibiotics Toolkit**

The toolkit has been developed by the RCGP, PHE and The Antimicrobial Stewardship in Primary Care (ASPIC) in collaboration with professional societies including GPs, pharmacists, microbiologists, clinicians, guidance developers and other stakeholders.

The aim of the [TARGET Antibiotics Toolkit](#) is to provide a central resource for clinicians and commissioners about safe, effective, appropriate and responsible antibiotic prescribing.

TARGET treating your infection (TYI) leaflets are designed to be shared with patients during the consultation and aim to facilitate communication between prescriber and patient and increase patient's confidence to self-care. The leaflets include information on illness duration, self-care advice, prevention advice and advice on when to re-consult.

**European Antibiotics Awareness Day**

A collection of campaign materials used for this awareness day each November is available from the

[European Centre for Disease Prevention and Control](#)

**World Antibiotic Awareness Week**

Campaign resource materials for this week each November are available from the [World Health Organisation](#)

## Laboratory sensitivity reports

Please note that these guidelines refer to empirical antibiotic choices, when no laboratory sensitivity results are available. When sensitivity results are already available it may be appropriate to prescribe alternative agents.

“**Help your Microbiology Department to help you**”. Including as much clinical information as possible on the sample request form will allow the most appropriate sensitivities to be reported e.g. type of urine sample, antimicrobials already tried, pregnancy, significant co-morbidities such as chronic kidney disease, allergies and the nature of allergies.

## Penicillin allergy

All medical and non-medical prescribers are reminded of the advice contained in the [BNF](#)

*“The most important side-effect of the penicillins is hypersensitivity which causes rashes and anaphylaxis and can be fatal. Allergic reactions to penicillins occur in 1–10% of exposed individuals; anaphylactic reactions occur in fewer than 0.05% of treated patients. Patients with a history of atopic allergy (e.g. asthma, eczema, hay fever) are at a higher risk of anaphylactic reactions to penicillins. Individuals with a history of anaphylaxis, urticaria, or rash immediately after penicillin administration are at risk of immediate hypersensitivity to a penicillin; these individuals should not receive a penicillin.*

*Individuals with a history of a minor rash (i.e. non-confluent, non-pruritic rash restricted to a small area of the body) or a rash that occurs more than 72 hours after penicillin administration are probably not allergic to penicillin and in these individuals a penicillin should not be withheld unnecessarily for serious infections; the possibility of an allergic reaction should, however, be borne in mind. Other beta-lactam antibiotics (including cephalosporins) can be used in these patients.*

*Patients who are allergic to one penicillin will be allergic to all because the hypersensitivity is related to the basic penicillin structure. Patients with a history of immediate hypersensitivity to penicillins may also react to the cephalosporins and other beta-lactam antibiotics, they should not receive these antibiotics. If a penicillin (or another beta-lactam antibiotic) is essential in an individual with immediate hypersensitivity to penicillin then specialist advice should be sought on hypersensitivity testing or using a beta-lactam antibiotic with a different structure to the penicillin that caused the hypersensitivity.”*

## Examples of penicillin, beta-lactam, and non-beta-lactam antibiotics

<b>Penicillin</b> <i>Contra-indicated in patients with true penicillin allergy</i>	<b>Beta-lactam</b> <i>Avoid if undefined or serious penicillin allergy. Use with caution in non-severe penicillin allergy and no alternative therapy.</i>	<b>Non-beta-lactam</b> <i>Considered safe in penicillin allergy</i>
Amoxicillin Benzylpenicillin Co-amoxiclav Flucloxacillin Phenoxymethylpenicillin Pivemecillinam	Carbapenems: ertapenem, imipenem Cephalosporins: cefaclor, cefalexin	Clindamycin Fosfomycin Macrolides: azithromycin, clarithromycin Metronidazole Nitrofurantoin Quinolones: ciprofloxacin, ofloxacin Rifampicin Tetracyclines: doxycycline, lymecycline Trimethoprim

## Advice on Prescribing in Pregnancy

The following advice was issued by Public Health England in November 2017:

*“In pregnancy, take specimens to inform treatment.*

*Where possible, avoid tetracyclines, aminoglycosides, quinolones, azithromycin (except in chlamydial infection), clarithromycin, and high dose metronidazole (2g stat), unless the benefits outweigh the risks.*

*Penicillins, cephalosporins, and erythromycin are safe in pregnancy. Short-term use of nitrofurantoin is not expected to cause foetal problems (theoretical risk of neonatal haemolysis). Trimethoprim is also unlikely to cause problems unless poor dietary folate intake or taking another folate antagonist.”*

Nitrofurantoin is contra-indicated at term.

## UK Teratology Information Service

- [☞ Maternal exposure](#)
- [☞ Use of Penicillins in Pregnancy](#)
- [☞ Use of Cephalosporins in Pregnancy](#)
- [☞ Use of Tetracycline in Pregnancy](#)
- [☞ Use of Quinolones in Pregnancy](#)
- [☞ Use of Aminoglycoside Antibiotics in Pregnancy](#)
- [☞ Use of Metronidazole in Pregnancy](#)
- [☞ Use of Nitrofurantoin in Pregnancy](#)
- [☞ Use of Trimethoprim in Pregnancy](#)

# ***Clostridium difficile* infection**

## **Risk assessment and reduction strategies**

*Clostridium difficile* can be present in the gut without causing illness. It is estimated that 66% of infants and 3% of healthy adults carry *Clostridium difficile*. In some circumstances, *Clostridium difficile* can produce toxins that cause *Clostridium difficile* infection [CDI]. The spectrum of CDI ranges from mild diarrhoea to severe colitis and toxic megacolon and can be life threatening.

### **Risk factors for CDI include**

- recent treatment with antibiotics (especially broad-spectrums)
- recent treatment with acid suppressants, particularly PPIs
- serious underlying disease with or without immunosuppression

Environmental contamination with *C. difficile* spores has been documented in healthcare establishments, including care homes, and can persist for many months, with carpets and soft furnishings acting as potential reservoirs for infection of a susceptible patient.

Recent experience in the care home sector locally has highlighted the continuing need for **ALL PRESCRIBERS** to be cautious when prescribing antibiotics or PPIs, **particularly for the elderly**.

Every opportunity should be taken to review patients on long-term PPIs and to step down and stop treatment if appropriate.

**Hand sanitiser gel containing alcohol is ineffective against *C. difficile* spores** Patients and staff should be mindful of the importance of effective hand hygiene and compliance with the 5 moments of hand hygiene.

Care homes have residents registered with various GP practices and so individual prescribers may be unaware that there have been cases of *C. difficile* in a specific home. Even when the staff of the home rigorously apply infection control procedures, it is still vital that ALL PRESCRIBERS continue to follow the advice in the current **Primary Care Antimicrobial Guide**.

Infection Prevention and Control Teams should remind care home providers to notify all GP's of outbreaks to ensure consistency of prescribing and provide training to ensure effective outbreak management. Advice on infection prevention and control of *C. difficile* can be obtained from your local community Infection Prevention and Control teams listed on page ix.

## **References**

Department of Health and Public Health England (2008)

[☞ \*Clostridium difficile\* infection: How to deal with the problem](#)

Public Health England (2014) [☞ \*Clostridium difficile\*: guidance, data and analysis](#)

Public Health England (2013) [☞ Updated guidance on the management and treatment of \*C. difficile\* infection](#)

World Health Organisation (2007) [☞ Infection Prevention and Control – My 5 Moments for Hand Hygiene](#)

# MRSA bacteraemia

## Risk assessment and reduction strategies

### Known risk factors for MRSA bacteraemia

- Invasive indwelling devices – such as indwelling urinary catheter
- Chronic illness – especially diabetes, renal dysfunction, impaired immunity
- Chronic skin conditions
- Wounds or non-intact skin
- Antimicrobial therapy especially 3rd generation cephalosporins and fluoroquinolones
- Age 65 years and over
- Previous hospitalisation in the last 12 weeks

## Screening for MRSA

Early identification of patients at risk of MRSA bacteraemia may prevent the patient from becoming septic and requiring hospital admission.

Follow your local Infection Prevention and Control procedures for screening patients.

## Suppression therapy (also known as decolonisation)

For patients known to have MRSA, suppression may be indicated. The purpose of suppression is to lower the burden of MRSA in the nose and on the skin in order to reduce the risk of bacteraemia or other severe infections and to reduce transmission.

MRSA can develop resistance to the products used for suppression. Therefore suppression therapy should only be used when there is a clear indication.

**Always follow your local Infection Prevention and Control procedures for suppression therapy.**

[☞ Wirral MRSA decolonisation and risk assessment tool](#)

[☞ Wirral MRSA policy](#)

## PVL producing *Staphylococcus aureus*

Panton – Valentin Leukocidin (PVL) is a toxin produced by some strains of *Staphylococcus aureus* (both MRSA and MSSA). Less than 2% of *Staphylococcus aureus* produce PVL in the UK. They can occasionally cause severe infections such as bacteraemia or necrotizing pneumonia. Young healthy people can be affected especially those living in communal settings or partaking in contact sports.

A history of recurrent boils or pus-producing skin infection is an indication of PVL. If you suspect PVL please take samples and specifically request PVL testing as not all laboratories routinely test for PVL. For further advice contact your Infection Prevention and Control Team or Microbiologist.

**FOR ADVICE ON MRSA SUPPRESSION PLEASE REFER TO YOUR LOCAL POLICY  
OR CONTACT YOUR LOCAL INFECTION PREVENTION AND CONTROL TEAM**

## Community Infection Prevention and Control Teams

CCG	Contact numbers	Website
Halton St Helens Warrington	Tel: 01744 457314 Fax: 01744 457327	<a href="https://www.sthelensccg.nhs.uk/your-health/infection-control/">https://www.sthelensccg.nhs.uk/your-health/infection-control/</a>
Knowsley	0151 676 5439 or 01925 664056	<a href="http://www.nwbh.nhs.uk/aboutus/Pages/Infection-Control.aspx">http://www.nwbh.nhs.uk/aboutus/Pages/Infection-Control.aspx</a>
Liverpool	0151 295 3036	<a href="https://www.merseycare.nhs.uk/are-you-a-carer/staying-well/infection-prevention-and-control-team/">https://www.merseycare.nhs.uk/are-you-a-carer/staying-well/infection-prevention-and-control-team/</a>
South Sefton Southport and Formby	0151 471 2447	<a href="https://www.merseycare.nhs.uk/are-you-a-carer/staying-well/infection-prevention-and-control-team/">https://www.merseycare.nhs.uk/are-you-a-carer/staying-well/infection-prevention-and-control-team/</a>
Wirral	0151 604 7750 <a href="mailto:ipc.wirralct@nhs.net">ipc.wirralct@nhs.net</a>	<a href="http://www.wirralct.nhs.uk/infection-prevention-and-control">http://www.wirralct.nhs.uk/infection-prevention-and-control</a>

### References

Public Health England (2014) [Staphylococcus aureus: guidance, data and analysis](#)

## Sampling guidance

### Liverpool Clinical Laboratories

[Liverpool Clinical Laboratories](#)

This sampling guidance is provided for reference and intended for users of Liverpool Clinical Laboratory services (does not include Wirral). There are differences with other laboratory services and you should follow local guidance. This guide may be adapted for local use.