



# ANTIMICROBIAL PRESCRIBING GUIDELINES IN GENERAL PRACTICE

Stoke-on-Trent CCG

North Staffordshire CCG

Cannock Chase CCG

East Staffordshire CCG

South East Staffordshire & Seisdon CCG

Stafford & Surrounds CCG

North Staffordshire  
Combined Healthcare NHS Trust

Staffordshire and Stoke-on-Trent  
Partnership NHS Trust

## 2016

Version 1.0 (final)  
North Staffordshire APC Chair  
approval – 18th August 2016

South Staffordshire APG Chair  
approval – 19th August 2016

Review date July 2018



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## MAIN CHANGES AND AMENDMENTS TO THE ANTIMICROBIAL GUIDELINES 2016

Please refer to the main document for full details.

### Changes from North Staffordshire Antimicrobial Guideline 2014

#### General notes

- Updated to reflect new Staffordshire-wide Antimicrobial Guidelines.
- Additional section on identification and management of sepsis in Primary Care

#### Acute cough in children (duration < 3 weeks).

Additional comment to state antibiotics not generally recommended.

#### Pneumonia.

CRB-65 score in pneumonia - advice now included. CRB-65=2 included to say patients need hospital admission.

#### Pharyngitis/Sore Throat/Tonsillitis.

Additional diagnostic information included and link to FeverPain scoring tool.

#### Eye infections.

Removal of the use of chloramphenicol drops PLUS ointment. This has been checked with Consultant Ophthalmologist who does not use combination treatment.

#### Dental Abscesses.

Patients should be referred to dentist for treatment of suspected dental abscesses. All recommended antibiotic options removed.

#### Diverticular disease.

Treatment choice amended as per CKS. To now treat with just co-amoxiclav and not a combination of co-amoxiclav plus metronidazole.

#### UTI section.

Nitrofurantoin 100mg MR every 12 hours for 3 days or 50mg every 6 hours for 3 days

Or Trimethoprim 200mg every 12 hours for 3 days as per PHE guidelines in non-pregnant women <65 years old. Use of MR 100mg 12 hourly recommended (note this preparation can sometimes encounter manufacturing problems).

*Elderly patients are defined as 65 years and over* – stressed in a new section that urine dipsticks are not a reliable marker for infection in the elderly and that asymptomatic bacteriuria is common. Treatment remains as for women under 65 years as above i.e. 3 days.

*UTI in men* – same as female recommendation but for 7 days.

*UTI in pregnancy* – addition of amoxicillin as well as existing cefalexin as a treatment option.

*Recurrent UTI* – removal of the treatment options for recurrent UTI/prophylaxis. Stressing that prophylaxis should only be started following specialist advice. Addition of methenamine hippurate (Hipprex) as a treatment option for recurrent UTI.

*UTI in catheterised patients* – changed to chronic/permanently catheterised patients where removal of the catheter is not possible as this situation is the most commonly encountered situation in Primary Care.

*UTI multi-resistant gram-negative organism* section reviewed and summarised.

*Upper UTI* – length of treatment changed to 7 days in adults, if no response in 24 hours patient is treated in secondary care.

#### Epididymo-orchitis.

Treatment changed to ciprofloxacin first line from doxycycline.

#### Chlamydia.

Treatment in pregnancy changed from erythromycin to azithromycin on advice of GUM Consultant, recommendation fully checked with UKMI and CKS.

#### Facial cellulitis.

Penicillin allergy treatment removed and to seek advice from microbiology.

#### Treatment of bites.

Co-amoxiclav course lengthened to 7 days from 5 days and treatment course in penicillin allergy also lengthened to 7 days and more information added that was present in South Staffs guidelines on tetanus-prone wounds.

#### Chickenpox.

Advice not to prescribe/recommend ibuprofen to children with chickenpox added, increased concerns regarding necrotizing soft-tissue infections.

Threadworm in pregnancy and breast feeding, new advice for hygiene and physical egg removal added to replace piperazine that was recommended now piperazine (Pripsen) is now longer available.

Appendix 1 – tables giving children's doses of antibiotic removed, Working Party felt this dated the guidelines should dose changes occur and a referral to the cBNF was best in each clinical situation.

Appendix 2 – useful contact numbers updated to include both North Staffs and South Staffs contacts.

Working Party membership details updated.

## **Amendments from South Staffordshire Antimicrobial Guideline 2013**

### General notes

- Updated to reflect new Staffordshire-wide Antimicrobial Guidelines.
- Additional section on identification and management of sepsis in Primary Care

### New clinical sections

- Treatment of acute cough in children (duration < 3 weeks)
- Infective Exacerbation of Bronchiectasis (excluding patients with Cystic Fibrosis)
- Whooping Cough (Pertussis)
- Conjunctivitis
- Diverticular disease
- Upper urinary tract infection
- Mastitis

### Meningitis and meningococcal disease.

Cefotaxime included as an alternative to benzylpenicillin (as recommended by Public Health England guidance)

### Acute Bronchitis.

If antibiotics clinically indicated to treat as COPD management (rather than having separate antibiotic recommendations as in previous South Staffordshire guidelines).

### Acute Exacerbations of COPD.

Doxycycline stated as first-line choice with amoxicillin or clarithromycin as second line choices.

### Pneumonia.

Updated information on CRB-65 to predict severity of community acquired pneumonia in adults.

### Pharyngitis/Sore Throat/Tonsillitis.

Additional diagnostic information included and link to FeverPain scoring tool. In allergy to penicillin – clarithromycin course now 5 days not 7 days.

### Sinusitis.

If treatment required, antibiotic choice changed - doxycycline and clarithromycin replace previous amoxicillin and doxycycline.

### Acute Otitis Media.

Additional diagnostic information added. Co-amoxiclav for treatment failures removed.

### Dental Abscesses.

Patients should be referred to dentist for treatment of suspected dental abscesses. All recommended antibiotic options removed.

Eradication of Helicobacter pylori.

Treatment options removed and advice to refer to current BNF for appropriate regimens.

Clostridium difficile-infection (CDI).

Additional table for use in assessing the clinical severity of patients with C.difficile.

Urinary Tract Infections.

Additional diagnostic information and revised treatment groups.

*Non-pregnant women < 65 years old*

Empirical treatment now recommended as:

Nitrofurantoin 100mg MR every 12 hours for 3 days or 50mg every 6 hours for 3 days or Trimethoprim 200mg every 12 hours for 3 days

This is in-line with PHE recommendations. Additional nitrofurantoin precaution information included.

*Elderly patients (aged 65 years and over)*

Treat as non-pregnant women under 65 years but additional diagnostic guidance included to avoid using urine dipsticks alone in diagnosing UTI's.

*In men*

Added consider prostatitis & send pre-treatment MSU. Treatment as for women but 7 days course and consider review.

*Children*

Additional diagnostic information and treatment recommendations included.

*Pregnant Patients*

Additional information on sending MSU prior to treatment and due to risks of asymptomatic bacteriuria in pregnancy, a repeat MSU should be performed 7 days after completion of anti-bacterials as a test of cure.

*Recurrent UTI infection, non-pregnant*

Guidance now states that long-term antibiotics should ONLY be started by specialist.

*Chronic/permanently catheterised patients*

Updated diagnostic information.

*Multi-resistant Gram-Negative Organisms*

Additional information included on antibiotics which may be recommended by microbiology on individual patient basis.

Facial cellulitis.

Treatment recommendation changed to co-amoxiclav in-line with PHE guidance.

Fungal nail infection.

Updated information on self-management and appropriate use of systemic treatments. Additional information on terbinafine hepatotoxicity.

Chickenpox in children.

Aciclovir not recommended for use in children with chickenpox. Additional information on the risks of using ibuprofen during chickenpox due to potential adverse skin effects.

Influenza.

Information on treatment and prophylaxis removed and advice to use PHE resources in pandemic influenza outbreak.

Threadworm.

Piperazine removed as no longer available.

Additional information on managing threadworm in pregnancy and breast-feeding.

The following sections have been removed. Please refer to the latest BNF or cBNF for further information.

- Common & important drug interactions
- Antibiotics in pregnancy
- Anti-infective agents and breast-feeding

Useful contact numbers updated to include both North Staffs and South Staffs contacts.

Working Party membership details updated.

## GENERAL NOTES

The guideline is intended for use by prescribers in GP practices, Out of Hours Care in Primary Care, Staffordshire and Stoke-on-Trent Partnership NHS Trust, Combined Healthcare and other organisations in the Local Health Economy who prescribe antibiotics outside of Secondary Care. These guidelines are designed to supplement the BNF and cBNF. If you have more specific queries outside of the scope of the guidelines, please refer to the BNF/cBNF. The guidelines are reviewed throughout every two years based on clinical evidence and local resistance data. The guidelines are for empirical therapy. It may be necessary to alter therapy following microbiological investigations if the patient is still symptomatic. However, in all cases it is important to remember to treat the patient not the laboratory results.

**Please note, the recommendations are for guidance only and will be updated as resistance patterns change. The doses quoted are usual adult oral doses unless specified otherwise. For newborns and up to the age of 18, prescribers are referred to the latest edition of the British National Formulary for Children on line (cBNF). Please also note that *all* doses given in this guideline are taken from the most current BNF and cBNF at the time of writing the guideline. Prescribers are advised to refer to the most current BNF and cBNF to verify doses if necessary.**

**In cases where a patient is immunocompromised, presents with an infection, and treatment fails please consider referral to a specialist on an individually assessed basis.**

These notes have been prepared jointly by Consultant Microbiologists of University Hospital of North Midlands NHS Trust (UHNM), Burton Hospitals NHS Foundation Trust (BHFT), CCG Medicines Optimisation Prescribing Advisers (Pharmacists), Infection Prevention and Control Leads for Staffordshire and Stoke-on-Trent, School Nurse Leads, Clinical Director for Dental Service and Dental Service Leads and the Antimicrobial Pharmacists in acute trusts. It has also been consulted on amongst GPs and nurses in primary care and at UHNM and BHFT. Public Health England (formerly the Health Protection Agency) has also produced an evidence-based document entitled "Management of Infection Guidance for Primary Care". This has been used as a template for adoption locally.

It is available on: <https://www.gov.uk/government/publications/managing-common-infections-guidance-for-primary-care>

These guidelines aim to limit the use of broad spectrum antibiotics such as cephalosporins, quinolones and co-amoxiclav as they are more prone to select for resistance and increase the risk of *Clostridium difficile* infections<sup>1, 2</sup>.

Generic antibiotics are preferred to brand name prescriptions on the grounds of cost.

The Standing Medical Advisory Committee<sup>1</sup> and the Department of Health<sup>3</sup> have issued recommendations to reduce the incidence of antibiotic resistance:

- No prescribing of antibiotics for simple coughs and colds
- No prescribing of antibiotics for viral sore throats

- Limit prescribing for uncomplicated cystitis to 3 days in otherwise fit women
- Limit prescribing of antibiotics over the telephone to exceptional circumstances

It is good practice to document all prescriptions for antimicrobial therapy in medical notes and within the community to document in the patient handheld records, including the indication for treatment, symptoms, drug, dose and route of administration. If a drug chart is used, a stop/review date should be clearly documented.

*Delayed prescriptions:*

Antibiotic side effects are common so patients can be given a prescription with the instructions to only have it dispensed if symptoms worsen in next 48 hours and not to have it dispensed if symptoms improve.

*Antibiotic Resistance:*

Antibiotic resistance makes infectious diseases more difficult to treat and prevent.

This can:

- Increase the length and severity of illness experienced by individuals,
- Contribute to the spread of disease,
- Lead to the use of alternative drugs with lesser known safety profiles,
- Increase the financial costs of treatment and care.

Therefore, the increasing prevalence of antibiotic resistance is a major cause for concern and has led to the development of national and international strategies that aim to address the problem.

**Note with reference to antibiotic prescribing:**

- *Simvastatin contraindicated in combination with clarithromycin and restricted to simvastatin  $\leq 20$  mg in patients taking amlodipine (see current BNF for other interactions).*
- *Avoid alcohol with metronidazole*

## Identification and management of sepsis in Primary care<sup>4</sup>

Sepsis is a medical emergency. It is essential that sepsis is recognised early for the patient to reach hospital soon enough to avoid serious complications or death. In Primary Care, the lack of laboratory services limits our ability to distinguish between sepsis, severe sepsis and septic shock in many cases.

Evaluate use of Early Warning Scores (such as MEWS). Sepsis screening should be done as a two-part process; screening for Systemic Inflammatory Response Syndrome (SIRS) followed by, where sepsis is identified, screening for Red Flag Sepsis.

Diagnose Red Flag Sepsis if ANY ONE of the following are present:

- Systolic BP <90mmHg (or >40mmHg fall from baseline)\*
- Heart rate >130 per minute
- Oxygen saturations <91%
- Respiratory rate >25 per minute
- Responds only to voice or pain/ unresponsive
- Lactate >2.0mmol/ done as a Point Of Care Test (not yet widely available)

\*Values are guides. Interpret observations in the context of the normal physiology for the patient.

Action for patients with Red Flag Sepsis

- Transfer patient immediately to hospital
- Initiate high flow oxygen therapy where possible.
- If there is a delay in transfer, initiate IV antibiotics and fluids if possible.

See link to General Practice Sepsis Screening and Action Tool:

<http://sepsistrust.org/wp-content/uploads/2015/08/1409322477GPScreening2014Final.pdf>

## MENINGITIS AND MENINGOCOCCAL DISEASE

### Meningococcal Disease Treatment<sup>5</sup>

#### Pre-admission management

Primary care healthcare professionals should transfer children and young people with suspected bacterial meningitis or suspected meningococcal septicaemia to secondary care as an emergency by telephoning 999.

#### *Suspected bacterial meningitis:*

NICE recommends that children and young people with suspected bacterial meningitis **without non-blanching rash** should be transferred directly to secondary care **without** giving parenteral antibiotics.

<http://guidance.nice.org.uk/CG102/NICEGuidance/pdf/English>

If urgent transfer to hospital is not possible (for example remote locations or adverse weather conditions), antibiotics should be administered to children and young people with suspected bacterial meningitis.

#### *Suspected meningococcal disease:*

For suspected meningococcal disease (meningitis **with non-blanching rash** or **meningococcal septicaemia**) parenteral antibiotics (intramuscular benzylpenicillin) should be given at the earliest opportunity, either in primary or secondary care.

However - urgent transfer to hospital should not be delayed in order to give the parenteral antibiotics.

GPs should carry **benzylpenicillin** for injection.

**Benzylpenicillin dose** by IM injection when meningococcal infections suspected:

Adult and child aged 10 years or over 1.2g

Child aged 1 to 9 years 600mg

Child aged under 1 year 300mg

Adverse effects from benzylpenicillin are unusual. Anaphylactic reactions are rare. It is more likely if there is a history of immediate allergic reactions (such as difficulty in breathing, collapse, generalised itchy rash) after previous penicillin administration.

Withhold benzylpenicillin only in children and young people who have a clear history of anaphylaxis after a previous dose; a history of a rash following penicillin is not a contraindication.

If immediate penicillin allergy is suspected, the GP's priority is to arrange immediate transfer to hospital, ensuring the receiving team are aware of the possibility.

**Cefotaxime** injection may be used as an alternative in penicillin allergy. GPs do not need to carry an alternative to benzylpenicillin. However, if a GP wishes to carry one, a third generation cephalosporin, such as cefotaxime, may be used, before urgent transfer to hospital.

**Cefotaxime doses** by IM injection:

Adult and child over 12 years 1g

Child under 12 years 50mg/kg

### **Meningococcal Disease Prophylaxis** <sup>5,6</sup>

Obtain advice from the Consultant in Communicable Diseases.

Prophylaxis should include the whole household, overnight stays and intimate kissing contacts within 7 days prior to onset of symptoms. Advice will be provided by the Health Protection Unit or Public Health Doctor on Call.

Please also refer to PHE guidance:

<https://www.gov.uk/government/publications/meningococcal-disease-guidance-on-public-health-management>

Both rifampicin and ciprofloxacin are recommended for chemoprophylaxis, although several factors now favour the use of ciprofloxacin in most individuals. The advantages of ciprofloxacin over rifampicin are that it is given as a single dose, does not interact with oral contraceptives, and is more readily available in community pharmacies. It is now licensed for the indication in adults. However, it is contraindicated in known ciprofloxacin hypersensitivity.

#### 1<sup>st</sup> Choice

**Recommended in all age groups and in pregnancy**

**Ciprofloxacin orally** (not a licensed indication in children under 18):

Adults and children over 12 years of age 500mg single dose

Children aged 5 – 12 years of age 250mg single dose

Children aged 1 month up to and including 4 years of age 125mg single dose

(children under 5 years dose 30mg/kg up to the maximum of 125mg single dose)

Refer to most up to date copy of cBNF for recommendations.

#### 2<sup>nd</sup> Choice

**Rifampicin orally**

Adults and children over 12 years of age 600mg every 12 hours for 2 days

Child (1 – 12 years) 10mg/kg (max 600mg) every 12 hours for 2 days

Infant (3 months to 1 year) 5mg/kg every 12 hours for 2 days

Neonate 5mg/kg every 12 hours for 2 days

Refer to most up to date copy of cBNF for recommendations.

Written information for patients should be supplied with the prescription which should advise about staining of urine, contact lenses and interactions with other drugs such as hormonal contraceptives, phenytoin, anticoagulants and anticonvulsants. This is the responsibility of the prescriber. Interactions with other drugs, should be considered and appropriate advice taken.

Contra-indications to rifampicin

Jaundice, porphyria, known hypersensitivity.

## RESPIRATORY TRACT INFECTIONS

### Cough & Other Respiratory Tract Infections

After patients with chronic lung disease or clinically suspected pneumonia are excluded, antibiotics provide little or no benefit for patients with cough and lower respiratory tract symptoms, including fever and green sputum. Regardless of treatment method, cough will last about three weeks in most patients and for at least a month in 25% of patients.

Patients given an immediate prescription for an antibiotic are more likely to expect antibiotics in the future. Therefore, providing a verbal explanation about the expected course and potential complications of cough during the consultation is most likely to assure optimal patient satisfaction<sup>7</sup>. The use of a delayed or 'back-up' antibiotic prescription and advice leaflets should also be considered.

#### Treatment of acute cough in children (duration of < 3 weeks):

Antibiotics are generally not effective or recommended for treating acute coughs caused by simple 'head colds'. While there is evidence that an early antibiotic prescription for children who are coughing with 'head colds' increases parental satisfaction, a systematic review of the evidence shows that antibiotics are not beneficial and may be associated with side effects. This included children with acute bronchitis and green coloured sputum in the absence of signs of possible pneumonia.

Over-the-counter medications are as effective as placebo for acute cough with head colds in children. Bronchodilators are not effective for acute cough in non-asthmatic children. Macrolide antibiotics should be given early (first 1–2 weeks) to children with pertussis. Antihistamines and intranasal steroids are beneficial for children with an allergic cough in the pollen season.<sup>8</sup>

### Acute Bronchitis

**Almost always viral.**

Routine antibiotic use is not warranted in otherwise healthy patients with cough and purulent sputum.

Antibiotic therapy should be considered in the following groups:

- Reduced resistance to infection.
- Co-existing illness, diabetes, congestive heart failure, asthma, COPD
- History of previous persistent mucopurulent cough
- Clinical deterioration.

If antibiotics are indicated, treat as for acute exacerbations of COPD, irrespective of whether the patient has COPD or not.

*Acute bronchitis in children:*

Amoxicillin (refer to cBNF for doses)

Recommendations:

1. Exclude pneumonia as likely diagnosis by using patient history and physical examination. For diagnosis in children, please use the NICE guidance on Fever in under 5's (CG160): <https://www.nice.org.uk/guidance/cg160>
2. Explain limitations of antibiotics for this indication. More than 90% of cases of acute bronchitis do not have a bacterial cause.
3. Purulent sputum can arise from either bacterial or viral infection and so its presence is NOT a predictor of bacterial infection.
4. Do not use quinolones (ciprofloxacin or ofloxacin) as first line due to poor pneumococcal activity.
5. Consider using a delayed prescription for antibiotics.

**Acute Exacerbations of COPD**

First Line

**Doxycycline** capsules 200mg (2 x 100mg capsules) on the first day, then 100mg daily for further 4 days (total course length – 5 days)

A total course of 5 days is sufficient despite the usual pack size of 8 doxycycline capsules. If no improvement is seen after course of treatment, investigate patient further.

Second Line

**Clarithromycin** tablets 500mg every 12 hours for 5 days

Or

**Amoxicillin** 500mg every 8 hours for 5 days

If further concerns exist for severe infection, consult microbiology.

**Pneumonia**

Use CRB-65 score to help guide and review. The CRB-65 score may be used as a tool to predict the severity of community acquired pneumonia in adults:

Each feature scores 1 point:

- Confusion (Abbreviated Mental Test (AMT)<8);
- Respiratory rate >30/min;
- Age >65;
- BP systolic <90 or
- BP diastolic ≤ 60:

Score 0: suitable for home treatment

Score 1: assess with a view to hospital admission

Score 2: patient needs hospital assessment or admission

**Score 3-5: urgent hospital admission**

If CRB-65=0 or 1 and at home:

**Amoxicillin** capsules 500mg every 8 hours for 7 days

or

**Clarithromycin** tablets 500mg every 12 hours for 7 days

If CRB-65=2:

Patient needs hospital assessment or admission. A small percentage of stable ambulatory CRB-65 scores of 2 can be treated at home if appropriate.

Pneumonia in children:

**Amoxicillin** – please refer to the most up to date copy of the cBNF for doses.

**Infective Exacerbation of Bronchiectasis (excluding patients with Cystic Fibrosis)**

Antibiotics are recommended if at least one symptom in each arm is present:

<b>Arm 1:</b>	<b>Arm 2:</b>	<b>Arm 3:</b>
1. Increased sputum purulence	1. Increase in sputum volume 2. Change in viscosity	1. Increased cough 2. Increased wheezing 3. Systemic upset (any of: malaise, fatigue, lethargy or decreased exercise tolerance, temperature) 4. Increased breathlessness

If previous culture and sensitivities are available treat as per most recent C&S.

No pre-existing bacteriology:

First line

**Amoxicillin** capsules 500mg every 8 hours for 14 days

Second line

**Clarithromycin** tablets 500mg every 12 hours for 14 days

*Pseudomonas aeruginosa* colonisation:

**Ciprofloxacin** tablets 500mg every 12 hours for 14 days

For resistant species and MRSA colonisation, discuss with microbiology for further guidance.

Recommendations:

1. A sputum sample should be sent for culture prior to the patient starting the course of empiric antibiotics. Ask the patient to produce the sample for culturing before taking the first dose of antibiotics.
2. Failure of treatment should prompt repeat sputum sample.

3. Patients with newly diagnosed bronchiectasis should be referred to a chest physician.
4. The above antibiotics are for empiric therapy and should be modified with the sputum culture results.
5. Patients having >3 exacerbations per year requiring antibiotics or patients with <3 exacerbations causing significant morbidity should be considered for nebulised antibiotics. This should be discussed with microbiology or respiratory physician.
6. Nebulised antibiotics may be used for treatment of resistant pathogens on the advice of microbiology or respiratory physician.
7. Nebulised antibiotics may also be used for eradication of persistent colonisation of *Pseudomonas aeruginosa* in non CF bronchiectasis patients on the advice of microbiology or respiratory physician.

Refer to the local Joint Formularies (North Staffordshire Joint Formulary and South Staffordshire Joint Formulary) for drug choices.

### **Whooping Cough (Pertussis)**

Treatment should be given to:

- Any person in whom the clinician suspects pertussis infection OR
- Any person with an acute cough lasting for  $\geq 14$  days without an apparent cause plus one or more of the following:
  - Paroxysms of coughing
  - Inspiratory whoop
  - Post-tussive vomiting
  - Within three weeks from onset of cough

**Clarithromycin** 500mg every 12 hours for 7 days

If allergic to macrolides:

**Co-trimoxazole** 960mg every 12 hours for 7 days (not in pregnancy)

Pregnancy:

**Erythromycin** 500mg every 6 hours for 7 days

### **RESPIRATORY TRACT INFECTIONS NOTES**

1. In chronic bronchitis, the colour of purulent sputum may take some time to resolve because of the time taken for the inflammation to subside. If the patient continues to be ill, consider a change in antibacterial agent preferably after bacteriological investigation.
2. Tetracyclines - avoid in children under 12 years old and pregnancy - caution in elderly if renal impairment suspected.
3. Erythromycin and clarithromycin are active against *Mycoplasma pneumoniae*, *Chlamydia pneumoniae* and *Legionella pneumophila*. Tetracyclines are active against *Mycoplasma* but **not** *Legionella*.

4. Clarithromycin is favoured as first choice macrolide due to less GI side effects and increased blood levels.
5. Doxycycline has replaced amoxicillin as first line for COPD as it is thought to be less likely to be followed by *C. difficile* associated disease. Amoxicillin is still highly active against the pneumococcus.
6. Co-amoxiclav is more likely than amoxicillin to cause antibiotic-associated diarrhoea and *C. difficile* infection (CDI). Co-amoxiclav should therefore be avoided in patients at increased risk of CDI, such as age >65 years of age, patients on proton-pump inhibitors (PPIs), taking laxatives or with recent hospitalisation.
7. Cases clinically diagnosed as whooping cough or a suspicion of whooping cough should be notified to Public Health England but treatment must be commenced as soon as possible.

## EAR, NOSE, THROAT AND EYE

### Pharyngitis/Sore Throat/Tonsillitis

Not giving antibiotic prescriptions for sore throats reduces re-attendance rates<sup>9</sup>. Most are viral and self-limiting and resolve in three days in 40% of people and one week in 85% of people<sup>10</sup>.

Centor Criteria, Fever Pain Score (<https://ctu1.phc.ox.ac.uk/feverpain/>) or other relevant decision tools aids the diagnosis of Group A beta-haemolytic streptococcus (GABHS) as a cause of presentation with a sore throat:

Clinical signs include:

- Tonsillar exudates
- Tender anterior cervical lymph nodes
- Absence of cough
- History of fever

Presence of three or four of these clinical signs suggests that the chance of the patient having GABHS is between 40% and 60%, so the patient may benefit from antibiotic treatment. Absence of three or four of the signs suggests that there is an 80% chance that the patient doesn't have the infection, and antibiotics are unlikely to be necessary.

If a decision to prescribe an antibiotic is made then treat with:

**Phenoxymethylpenicillin** 500mg every 6 hours for 10 days

If compliance with phenoxymethylpenicillin suspension in young children is a problem due to taste, amoxicillin may be given as an alternative.

*Please note* - do not use amoxicillin if glandular fever is suspected.

If the patient is allergic to penicillin use:

**Clarithromycin** tablets 500mg every 12 hours for 5 days

### Sinusitis

Mostly viral. Reserve antibiotics for severe or persistent symptoms. Nasal douching with salt water spray e.g. Sterimar<sup>®</sup> - can be purchased over the counter.

Sinus disease has been shown to be present in 90% of patients with a common cold. However, it usually resolves or markedly improves in 2-3 weeks, and only 30-40% of patients with clinically suspected sinusitis have a bacterial infection<sup>11</sup>.

**Doxycycline** capsules 200mg (2 x 100mg capsules) on the first day, then 100mg daily for further 6 days (total course length - 7 days).

or

**Clarithromycin** tablets 500mg every 12 hours for 7 days

### **Acute Otitis Media (AOM)**

Antibiotic treatment should not be offered routinely in children with AOM. Parents can be reassured that AOM is a self-limiting illness and serious complications are rare. A strategy of watchful waiting and use of delayed prescriptions may be appropriate for many children. Paracetamol or ibuprofen can be used for symptomatic relief of pain and fever<sup>12, 13</sup>

However, for adults and children, antibiotics (and offering an immediate antibiotic prescription) may be beneficial in sub-groups of patients depending on severity, for example:

- children under two years with bilateral infection **or**
- children with perforation and/or discharge in the ear canal (otorrhoea) associated with AOM **or**
- people who are systemically unwell (e.g. fever or vomiting, but do not require admission) **or**
- with recurrent infections
- people at high risk of serious complications because of significant heart, lung, renal, liver or neuromuscular disease, immunosuppression, or cystic fibrosis
- young children born prematurely
- people whose symptoms of AOM have already lasted for 4 days or more and are not improving <sup>12,13</sup>.

If bacterial infection is suspected:

**Amoxicillin** 500mg every 8 hours for 5 days, increased if necessary to 1g every 8 hours, maximum dose (for severe infections)

For children's doses please refer to the most current version of the cBNF.

If allergic to penicillin:

**Clarithromycin** tablets 500mg every 12 hours for 5 days

(child aged 10 or under refer to cBNF– dose according to body weight)

### **Otitis Externa**

Clean and keep dry.

Remove or treat any precipitating or aggravating factors.

Prescribe or recommend simple analgesics up to the maximum recommended daily dose for symptomatic relief.

Prescribe a topical ear preparation for 7 days; in the case of Locorten-Vioform® prescribe for 7-10 days. Options include preparations containing:

1. A non-aminoglycoside antibiotic and a corticosteroid e.g. flumetasone–cloquinol (Locorten–Vioform®) ear drops.
2. An aminoglycoside antibiotic (contraindicated if the tympanic membrane is perforated), with or without a corticosteroid.

In the event of treatment failure, take a swab and treat according to sensitivity.

If there is sufficient earwax or debris to obstruct topical medication, consider cleaning the external auditory canal (may require referral).

If there is extensive swelling of the auditory canal, consider inserting an ear wick (may require referral).

Provide appropriate self-care advice.

## **Eye infections**

### **Conjunctivitis**

Only treat if severe or clinically indicated, as most infections are viral or self-limiting. Bacterial conjunctivitis is usually unilateral and also self-limiting. It is characterised by red eye with yellow-white mucopurulent, not watery, discharge. 65% of cases resolve by day five without treatment.

**Chloramphenicol** 0.5% drops 2 hourly for 2 days then 4 hourly (when awake)  
Continue for 48 hours after resolution.

*Second line:*

**Fusidic acid** 1% gel every 12 hours.

Continue for 48 hours after resolution.

Note: Fusidic acid has no Gram-negative activity, only covers staphylococcal infections.

## **DENTAL ABSCESSSES**

Patients should be **referred to their dental practitioner or for emergency dental treatment** and advised to take paracetamol or ibuprofen for pain relief.

## GASTRO-INTESTINAL INFECTIONS

### Eradication of *Helicobacter pylori*

Regimens include a PPI such as omeprazole or lansoprazole and two antibiotics from a choice of amoxicillin, clarithromycin or metronidazole.

Please refer to the current BNF for regimens.

### Gastro-Enteritis

Fluid replacement is essential.

For campylobacter, shigella and salmonella gastroenteritis antibiotics are usually not indicated unless patient is immunocompromised or invasive disease. If the patient is systemically unwell seek advice of a microbiologist. Suspected cases of food poisoning should be notified to the Consultant in Communicable Disease Control (CCDC) who will advise on the exclusion of patients in risk groups if necessary.

### *Clostridium difficile*-infection (CDI)

Doctors must consider CDI as a diagnosis in its own right.

<b>S</b>	Suspect that a case may be infective where there is no clear alternative cause for diarrhoea
<b>I</b>	Isolate the patient and consult with the infection control team while determining the cause of the diarrhoea
<b>G</b>	Gloves and aprons must be used for all contacts with the patient and their environment
<b>H</b>	Hand washing with soap and water should be carried out before and after each contact with the patient and the patient's environment
<b>T</b>	Test the stool for toxin, by sending a specimen immediately

Diarrhoea is considered to be stools of type 5-7 on the Bristol Stool Chart.

Once diagnosis of CDI has been confirmed a registered healthcare professional should assess the patient within 12 hours and commence treatment immediately. Ensure adequate hydration is maintained.

Refer to hospital if severe CDI/ life threatening CDI or if diarrhoea is still present after toxin result reported and any of the following symptoms are present: **fever, dehydration, sepsis, severe abdominal pain, abdominal distension or vomiting.**

1. Stop unnecessary antibiotics to re-establish normal flora.
2. Avoid antidiarrhoeal agents.
3. Stop proton pump inhibitors (PPIs) if possible after clinical review. Prescribing of PPIs is associated with increased risk of CDI.

4. Antibiotics most likely to be associated with CDI are cephalosporins, clindamycin, penicillin derivatives (e.g. co-amoxiclav) and quinolones, but it is important to note that virtually any antibiotic can trigger CDI by disrupting the normal intestinal flora in patients carrying a toxigenic strain of *C. difficile*.

**Patients with CDI should be reviewed daily, at least in the early days of infection.**

Mild or moderate CDI

**Metronidazole** 400mg three times a day for 10 to 14 days.  
If no response within three days treat as for severe CDI.

Severe CDI

**Oral Vancomycin** 125mg four times a day for 10-14 days.  
If no response consult with Microbiologist.

These patients are ideally managed within hospital, but some patients who have severe CDI e.g. palliative care patient might require treating in community.

**Contact microbiology in cases of recurrent relapse.**

Severity assessment	Mild CDI	Moderate CDI	Severe CDI	Life threatening CDI
Stool type and frequency Number of stools may not be a reliable indicator of severity	< 3 stools types 5-7 per day	3-5 stools types 5-7 per day	3-5 or more stools types 5-7 per day.	May not have opened bowels due to partial or complete ileus
<sup>1</sup> WCC	Within normal range	Raised but < 15X10 <sup>9</sup> /L (or <4X10 <sup>9</sup> /L)	> 15X10 <sup>9</sup> /L or <4X10 <sup>9</sup> /L)	>15X10 <sup>9</sup> /L or <4X10 <sup>9</sup> /L)
<sup>1</sup> Temperature	Usually afebrile	Afebrile to low grade temperature	Temperature >38.5°C or hypothermia	Temperature >38.5°C or hypothermia
Evidence of severe colitis (abdominal or radiological signs)	Absent	Absent	Usually present	Present
Acute rising serum creatinine (i.e. >50% increase above baseline)	Absent	Absent	Usually present	Usually present
Hypotension	-	-	-	Present
Toxic megacolon	-	-	-	Present

Assign the patient to the category which fulfils at least two parameters.

1: Elderly patients may not produce a prompt inflammatory response

2: Elderly patients may not spike high temperatures

The number of stools may be a less reliable indicator of severity.

For first recurrence, treat as for previous episode. For second or later recurrences, discuss with Microbiologist.

### NOTES

1. Patients diagnosed with *C.difficile* may be issued with a CDI passport by Secondary Care or treating clinician. CDI passports are also available from the Infection Control Teams. See appendix 1 for contact details.
2. Please use the *Clostridium difficile* Review Chart for documentation and further guidance of management of *C.difficile* infection.
3. GPs should educate the patient, family and Care Home staff (where relevant) on the basics of good hand hygiene and the importance of hygiene in the environment to help to reduce the incidence of relapse.

### Diverticular disease

Please note that a differential diagnosis for diverticular disease can include:

- Acute appendicitis
- Crohn's Disease
- Colitis (ischaemic, ulcerative, or pseudomembranous)
- Mesenteric infarction
- PID
- Peritonitis
- Small bowel obstruction
- Pancreatitis

Treat with oral antibiotics only if patient is not septic. If the patient is septic please refer to the hospital.

**Co-amoxiclav 625mg** orally every 8 hours for 7 days.

If the patient has penicillin allergy please refer the patient to the hospital or seek microbiology advice.

## URINARY TRACT INFECTION (UTI)

### LOWER UTI

#### Uncomplicated Lower UTI (patients that are at lower risk of UTI)

Some factors for complicated UTI include upper urinary tract infection, recurrent infections associated with stones or other anatomical/neurological abnormalities.

#### In Women:

- Consider empirical treatment with an antibiotic for otherwise non pregnant healthy women aged less than 65 years presenting with severe or  $\geq 3$  symptoms of UTI and presenting for the first time. There is no need to send MSU on first presentation.
- Symptoms of UTI can include dysuria, frequency, urgency, lower abdominal pain, polyuria, haematuria, fever, chills.
- Use dipstick tests to guide treatment decisions in otherwise healthy women under 65 years of age presenting with mild or  $\leq 2$  symptoms of UTI.
- In elderly women urine dipstick results are not a reliable marker for infection and should not be used alone to diagnose UTI.

<u>Interpreting urine dipstick results:</u>	
Positive nitrite (+/- leucocyte +/- protein)	= <b>probable UTI</b>
Negative nitrite and positive leucocyte	= <b>possible UTI</b>
Negative nitrite and leucocyte, +ve blood or protein	= <b>consider other diagnosis</b>
All dipstick tests negative	= <b>UTI very unlikely</b>

- Explore alternative diagnoses and consider pelvic examination for women with symptoms of vaginal itch or discharge.
- Consider the possibility of upper UTI in patients presenting with symptoms or signs of UTI who have a history of fever or back/ loin pain.
- In the elderly (>65yrs), do not treat asymptomatic bacteriuria.

## Empirical Treatment

### 1. Non-pregnant women < 65 years old (no need to send MSU for C&S)

**Nitrofurantoin** 100mg MR every 12 hours for 3 days or 50mg every 6 hours for 3 days (take with food)

or

**Trimethoprim** 200mg every 12 hours for 3 days (if low risk of resistance)

Risk factors for increased resistance include: care home resident, recurrent UTI, hospitalisation >7d in the last 6 months, unresolving urinary symptoms, recent travel to a country with increased antimicrobial resistance (outside Northern Europe and Australasia) especially health related, previous known UTI resistant to trimethoprim, cephalosporins or quinolones

### Nitrofurantoin Precautions

- Nitrofurantoin is contraindicated in patients with an estimated glomerular filtration rate (eGFR) of less than 45 ml/min.
- Nitrofurantoin should not be used to treat sepsis syndrome secondary to urinary tract infection or suspected upper urinary tract infections.
- Consider checking renal function when choosing to treat with nitrofurantoin, especially in the elderly.
- Closely monitor for signs of pulmonary, hepatic, neurological, haematological, and gastrointestinal side effects during treatment, as previously advised in the summary of product characteristics.
- Consult official guidance on the appropriate use of antibiotics when prescribing nitrofurantoin.
- Nitrofurantoin – macrocrystals or Modified Release preparations are recommended for better GI tolerance.

### 2. Elderly patients (aged 65 years and over)

**Urine dipstick results are not a reliable marker of infection in the elderly patients and should not be used alone to diagnose UTI (SIGN 88)<sup>14</sup>.** Send for MSU at first presentation.

Asymptomatic bacteriuria is common in the elderly and should not be treated<sup>15</sup>. Occurs in 25% of women and 10% of men and is not associated with increased morbidity.

Symptoms and signs of UTI in elderly patients include:

- Two or more of following symptoms - dysuria, urgency, frequency, urinary incontinence, shaking chills (rigors), flank or suprapubic pain, haematuria, new onset or worsening of pre-existing confusion /agitation.
- Bacteriuria accompanied by signs of systemic infection like hyperthermia or hypothermia, increased peripheral white blood cells or CRP.

Treatment as for non-pregnant women (as above) or men - please refer to the relevant section of the guidelines.

### 3. In men

Consider prostatitis & send pre-treatment MSU.

Treatment as for women but give 7 days course and consider review once sensitivities are available.

### 4. Children

Child <3 months: refer urgently for assessment.

Child ≥ 3 months: use positive nitrite to guide and send MSU.

Imaging: only refer if child <6 months, or recurrent or atypical UTI.

Prompt treatment is essential <sup>16,17</sup>.

Start empirical treatment with antibiotics:

First line: **trimethoprim** or **nitrofurantoin** for 3 days (refer to cBNF for doses).

Second line: **cefalexin** (refer to cBNF for doses).

Once sensitivities are available change accordingly.

### 5. Pregnant Patients.

Send MSU for C&S but do not delay treatment

**Amoxicillin** 500mg every 8 hours for 7 days **or**

**Cefalexin** 500mg every 8 hours for 7 days

**Avoid trimethoprim** 200mg every 12 hours for 7 days **in first trimester** and **avoid nitrofurantoin in third trimester.**

Given the risks of asymptomatic bacteriuria in pregnancy, a urine culture should be performed 7 days after completion of antibacterials as a test of cure.

### 6. Recurrent UTI infection, non-pregnant.

Recurrent UTIs are a common and debilitating problem. Recurrent UTI is defined as 3 or more episodes of urinary tract infection in the last 12 months or 2 or more in the last 6 months.

Prophylactic antibiotics should only be started following specialist advice i.e. such as from an urologist **after** appropriate investigation and intervention. Long term prophylaxis with antibiotics leads to development of resistance to the antibiotic used and infection with those organisms. That makes one antibiotic less in the choices we may have to treat the infection. In addition administering long term prophylactic antibiotics leads to infection/colonisation with drug resistant organisms like MRSA, ESBL producing gram negative bacilli and *Clostridium difficile*.

**Methenamine hippurate.** It is effective at preventing UTI in patients without known upper renal tract abnormalities. Adverse events caused by methenamine are rare.

*Cautions:* Avoid concurrent administration with sulfonamides (risk of crystalluria) or urinary alkalinising agents; (Please refer to BNF for detailed interactions).

*Contra-indications:* Severe dehydration, gout, metabolic acidosis, avoid in hepatic impairment

*Renal impairment:* Avoid if eGFR less than 10 mL/minute/1.73m<sup>2</sup> – risk of hippurate crystalluria.

**Dose:** 1 g every 12 hours (may be increased in patients with catheters to 1 g every 8 hours).

Note: pH of urine needs to be maintained at < 6 for methenamine treatment to be effective.

## 7. Chronic/permanently catheterised patients

Start treatment immediately with empiric treatment and replace catheter at the earliest opportunity<sup>18</sup>.

- A diagnosis of UTI should be made with caution in a patient with an indwelling urinary catheter.
- Urine dipstick results are not a marker of infection in catheterised patients and should not be used to diagnose UTI.
- Do not use antibiotics to clean murky urines in catheterised patients – review catheter care management.
- Antibiotics will not eradicate asymptomatic bacteriuria; only treat if systemically unwell or pyelonephritis likely.
- Do not use prophylactic antibiotics for catheter changes unless history of catheter-change-associated UTI or trauma.
- Antibiotic prophylaxis is no longer recommended for changing urinary catheters in patients at risk of infective endocarditis<sup>14</sup>.

## Multi-resistant Gram-Negative Organisms

Since 2003 many NHS hospitals have experienced an increase of patients colonised or infected with multi-resistant Gram-negative organisms, in particular *E. Coli* resistant to trimethoprim, betalactam antibiotics including cephalosporins, and often also resistant to quinolones and aminoglycosides. Strains that produce Extended Spectrum Beta-Lactamases are also referred to as **ESBL**. Most of these strains are still sensitive to nitrofurantoin. ESBL organisms resistant to multiple oral antibiotics represent an increasing challenge in primary care.

In the recent years there has also been an increase in infections and colonisation of patients by **carbapenemase-producing** enterobacteriaceae (CPE). These

bacteria produce enzymes (NDM-1, KPC, OXA-48 etc.) that inactivate carbapenems (meropenem, ertapenem etc.) and are generally multi-drug resistant. Treatment options for infections with these organisms is limited.

The following are some of the other oral options which can be used to treat such multi-resistant organisms; these might be requested by a Microbiologist. Please discuss with Microbiologist if sensitivities to these are not reported.

1. Pivmecillinam (not if penicillin allergic): 400mg *stat* then 200mg every 8 hours for 3 days (women) or 7 days (men). Note: even when reported as susceptible, clinical efficacy against ESBL organisms remains unproven.
2. Fosfomycin (for non-pregnant patients) only on the advice of consultant Microbiologist & for patients who cannot use any other oral alternative. The completed fosfomycin proforma should be attached to the FP10. Fosfomycin can only be supplied by certain designated pharmacies and both FP10 and the fosfomycin proforma are needed.

#### **Dose**

Orally [unlicensed], uncomplicated lower urinary-tract infections caused by multiple-antibacterial resistant organisms (when other antibacterials cannot be used) - **ADULT** over 18 years 3 g as a single dose (in men, repeat dose after 3 days).

Renal impairment – avoid *oral* treatment if eGFR less than 10 mL/minute/1.73m<sup>2</sup>

#### Complicated UTIs please discuss with a microbiologist

A definition of complicated UTI is anything which increases the risk of treatment failure e.g. diabetes, urinary catheter, immunocompromised, functional or anatomical abnormality of the urinary tract, in these circumstances a dose of 3G orally every 3 days for 2 doses could be suitable [unlicensed].

### **UPPER UTI**

Symptoms suggestive of upper urinary tract infection/pyelonephritis include loin pain, flank tenderness, fever, rigors or other manifestations of systemic inflammatory response. Patients with UTI associated with renal stones, ureteric obstruction due to other causes, urostomies or nephrostomies should be treated as pyelonephritis.

If patient is septic admit immediately.

Where hospital admission is not required, take a midstream urine sample for culture and begin a course of antibiotics.

**Co-amoxiclav 625mg** orally every 8 hrs for 7 days. Then change according to sensitivities.

If penicillin allergic please discuss alternative treatment options with microbiology.

Admit the patient to hospital if there is no response to the antibiotic within 24 hours.

In children:

**Co-amoxiclav** for 7-10 days (refer to cBNF for doses), then change according to sensitivities.

If no improvement within 24 hours of antibiotics in upper UTI: admit.

### **Acute Prostatitis**

Diagnosis should be made on urine culture. Prostatic massage should not be performed as this would be painful, might result in bacteraemia, and would be unlikely to add to information provided by the urine culture.

General measures include:

- Ample hydration
- Rest
- Stool softener
- Analgesia

Empirical antibiotic therapy should be started immediately after collecting urine for culture, because acute prostatitis is a serious and severe illness<sup>19</sup>. The initial antibacterial choice should be reassessed when the urine culture results are available.

1<sup>st</sup> Choice: **Ciprofloxacin** 500mg every 12 hours for 28 days (beware of CDI and MRSA)

2<sup>nd</sup> Choice: **Trimethoprim** 200mg every 12 hours for 28 days

### **Chronic Prostatitis**

The hall mark of chronic bacterial prostatitis is bacterial persistence in repeated urine cultures yielding the same organism. Chronic bacterial prostatitis is very difficult to cure because few antibiotics penetrate well into the non-inflamed prostate. Only trimethoprim and quinolones diffuse into prostatic fluid in high concentration. Conditions of the prostate curable by surgical intervention should be treated by an urologist first. Antibiotic regimens:

1<sup>st</sup> Choice: **Ciprofloxacin** 500mg every 12 hours for 6 to 12 weeks (beware of CDI and MRSA)

2<sup>nd</sup> Choice: **Trimethoprim** 200mg every 12 hours for 6 to 12 weeks

**Epididymo-orchitis - if not chlamydia or gonococcal**

First line

**Ciprofloxacin** 500mg every 12 hours for 14 days

If ciprofloxacin contra-indicated:

**Trimethoprim** 200mg every 12 hours for 14 days

## GENITAL TRACT INFECTIONS

### Bacterial Vaginosis

Bacterial vaginosis is the most common infective cause of vaginal discharge. A seven day course of oral metronidazole is slightly more effective than 2g stat. Avoid 2g stat dose in pregnancy.

**Metronidazole tablets** 2g as a single dose or 400mg every 12 hours for 7 days.

In pregnancy or breast feeding a possible alternative is:

**Clindamycin** 2% cream 5g applicator full at night for 7 days

Please note that clindamycin may only be used in the first trimester of pregnancy only if clearly needed. In the second trimester clindamycin cream was effective in treating bacterial vaginosis and no drug-related medical events were reported in neonates. However, as with any drug used during pregnancy, a careful risk-benefit assessment should take place beforehand.

It is not known if clindamycin is excreted in breast milk following vaginal use. A full assessment of risk-benefit should be made in a nursing mother<sup>20</sup>.

### NOTES

1. This is the most common cause of vaginosis and is characterised by offensive vaginal discharge and sometimes vulval itching.
2. Thought to be due to a synergistic infection with *Gardnerella vaginalis* and anaerobic bacteria.
3. High vaginal swab is required to look for the presence of *Candida*, *Trichomonas* and other pathogens. A cervical or urethral swab should be sent for *Neisseria gonorrhoeae*. Send an endocervical/urethral swab for *Chlamydia trachomatis*.
4. Group B streptococci and anaerobic cocci occur as normal commensal vaginal flora.
5. Note in children: Group A streptococci and *H. influenzae* may cause vaginal infection.

### Vaginal Candidiasis

**Clotrimazole pessary** 500mg stat plus **clotrimazole** cream if co-existing vulvitis. Care should be taken when using pessary applicator in pregnancy so as not to cause mechanical trauma.

### NOTES

1. Fluconazole 150mg orally as a single dose is an alternative, avoid in pregnancy.
2. Clotrimazole and fluconazole are available over the counter in community pharmacies.
3. Recurrent infections may be prevented by a variety of measures. These

include barrier contraception, antifungal cream and attention to hygiene rather than by repeated courses of oral medication.

4. Remember that *Candida* can be found in small numbers as normal flora.

#### Managing recurrent infection (non-pregnant)<sup>21</sup>

Eliminate or control predisposing risk factors as far as is practical. Measure vaginal pH if possible to assess the likelihood of symptoms being due to candida (pH less than or equal to 4.5), or bacterial vaginosis (pH above 4.5) or *Trichomonas vaginalis* (pH above 4.5). Take a high vaginal swab for microscopy and speciated culture to confirm the diagnosis. Consider alternative diagnoses if a woman has recurrent or persistent symptoms.

Treat the presenting episode with a longer course of an antifungal drug (induction course). Two options are: (**Please note that these are all unlicensed regimens**).

- Three doses of fluconazole 150 mg. One 150 mg dose to be taken every 72 hours,
- Topical imidazole therapy for 10–14 days according to symptomatic response.

For vulval symptoms, consider using a topical antifungal cream, *in addition to* the oral or intravaginal antifungal. Additional information can be found at the CKS website and the most up to date copy of the BNF: <http://cks.nice.org.uk/candida-female-genital>

For girls aged between 12 and 16 years, seek specialist advice. Also, seek specialist advice for the treatment of recurrent non-albicans *Candida* species infections.

#### Trichomoniasis

**Metronidazole** 2g as a single dose or 400mg every 12 hours for 7 days. Treat partners simultaneously. Refer to Genito-Urinary Medicine (GUM) for contact tracing.

In pregnancy:

Avoid short, high dose metronidazole regime or use clotrimazole pessary 100mg at night for 6 days for symptomatic relief and treat postnatally.

Care should be taken when using pessary applicator in pregnancy so as not to cause mechanical trauma.

#### Pelvic Inflammatory Disease

1<sup>st</sup> Choice

**Metronidazole** 400mg every 12 hours for 14 days plus **ofloxacin 400mg** every 12 hours for 14 days.

For severe cases refer to the BNF.

#### NOTES

1. Test for *C. trachomatis* (standard Chlamydia swab) and *N.gonorrhoeae*. (cervical swabs in transport media). Microbiological and clinical cure are greater with ofloxacin than with doxycycline.
2. Refer to GUM or gynaecological outpatients as appropriate. Refer contacts to GUM as appropriate.
3. Ofloxacin should be avoided in patients who are at high risk of gonococcal PID because of increasing quinolone resistance in the UK.
4. Severe cases or treatment failure may require specialist referral.

#### **Chlamydia trachomatis**

Consider referral to GUM clinic for contact tracing. If treating:

**Azithromycin** 1g stat, one hour before food or on an empty stomach

Or

**Doxycycline** 100mg every 12 hours for 7 days

For pregnant (or breast-feeding) women:

**Azithromycin** 1g stat, one hour before food or on an empty stomach

A test culture swab should be done 6 weeks later.

In cases of concern - refer to a Microbiologist.

#### NOTES

1. Test for *C. trachomatis* and *N. gonorrhoea*.
2. Refer to GUM or gynaecological outpatients as appropriate.
3. Advisable to take swabs to exclude Chlamydia (standard Chlamydia swab) and gonorrhoea (cervical swabs in transport media). For contact testing a first-void urine sample should be used for males for Chlamydia. The same sample can be tested for gonorrhoea as well as Chlamydia.

## SKIN AND SOFT TISSUE INFECTIONS (SSTI)

### Acne

Mild acne should be treated with topical preparations. Systemic treatment with oral antibiotics is generally used for moderate to severe acne or where topical preparations are not tolerated, are ineffective or where application to the site is difficult.

Oral antibiotics can be chosen from the list below based on patient choice, considering compliance, allergy status, pregnancy and age:

- Doxycycline,
- Oxytetracycline
- Clarithromycin
- Lymecycline
- Erythromycin  
(see current BNF for doses)

### NOTES

1. Avoid tetracyclines in children and pregnancy.
2. Do not take tetracyclines with meals, milk, antacids or iron-containing dietary supplements.

### Cellulitis

1st Line

**Flucloxacillin** 500mg every 6 hours for 7 days

There is no good evidence that addition of phenoxymethylpenicillin to flucloxacillin provides extra benefit. If not responding to oral flucloxacillin, the patient may require intravenous and/or broad spectrum antibiotics.

Penicillin allergy:

**Clarithromycin** tablets 500mg every 12 hours for 7 days

### Facial Cellulitis

**Co-amoxiclav** 625mg every 8 hours for 7 days

If penicillin allergic, contact microbiology for further advice.

Review patient during treatment. If no improvement in 24-48 hours refer patient to the hospital.

If peri-orbital cellulitis, refer to hospital immediately.

## **Chronic Wounds Including Leg Ulcers and Pressure Sores**

Bacteria will always be present. Antibiotics do not improve healing. Culture swabs and antibiotics are only indicated if patient is diabetic or there is evidence of clinical infection (inflammation/redness/cellulitis, increased pain, purulent exudates, wound extension, rapid deterioration of ulcer or pyrexia). Refer for specialist opinion if severe infection.

## **Diabetic Foot**

For the management of infected **diabetic foot ulcers in adults**, advice can be sought from the **Podiatry Team**, contact details can be found in appendix 1.

When infection of diabetic foot ulcer is clinically suspected the diabetic foot specialist (vascular or orthopaedic) should be consulted at an early stage. Note that Charcot arthropathy can present in a similar way to a deep infection, with or without an ulcer, and is an important differential diagnosis.

### **Patients with urgent diabetic foot problems:**

Please note the Podiatry Department does *not* provide a service to patients on Bank Holidays or weekends for urgent/emergency diabetic foot problems or ulcers. For more detailed advice, please refer to the Staffordshire and Stoke-on-Trent Partnership Diabetic Foot Pathway and Management Guidance.

## **Mastitis<sup>22</sup>**

Lactation mastitis (puerperal mastitis) is an inflammatory condition of the interlobular connective tissue of the breast that affects up to 10% of breastfeeding women within the first 12 weeks of giving birth. The primary cause is milk stasis caused by overproduction or insufficient removal and may present as:

- Non-infectious: occurs when accumulated milk causes an inflammatory response.
- Infectious: usually an infection of commensal flora occurs by retrograde spread through a lactiferous duct or a traumatized nipple. Very rarely, the infection occurs through the lymphatics or by haematogenous spread.
- Subclinical: associated with inadequate milk removal and poor infant weight gain.

First-line management includes:

- Reassure the woman that although mastitis is a painful condition that may make her feel very ill, the breast will return to normal size, shape and function.
- Antibiotics if infectious mastitis is suspected. Flucloxacillin is the antibiotic of choice for empirical treatment.
- Paracetamol or ibuprofen to relieve pain and discomfort.

- Topical treatment of nipple damage.

Women with mastitis should be encouraged to continue breastfeeding. If this is not possible, expression of breast milk by hand or using a breast pump is advised. Antibiotic treatment is recommended for mastitis if the woman has a nipple fissure that is infected, symptoms do not improve or are worsening after 12–24 hours despite effective milk removal, or bacterial culture is positive.

**Flucloxacillin** 500 mg every 6 hours for 14 days.  
If patient is >80kg prescribe 1g every 6 hours for 14 days

Alternative:

**Erythromycin** 500 mg, every 6 hours for 14 days.

Inform the woman that these antibiotics are only excreted in milk in very small amounts. Usually the infant is not affected, but occasionally stools may be looser or more frequent than usual or the infant may be more irritable.

### **Impetigo**

Oral therapy is preferred.

**Flucloxacillin** capsules 500mg every 6 hours for 5 days.  
For doses in children please refer to the most up to date copy of the cBNF.

Please note – in children sugar-free versions of flucloxacillin suspension may have a poor taste leading to reduced compliance. In discussion with parent/guardian consider sugar-containing preparation.

Or **clarithromycin** tablets 500mg every 12 hours for 5 days.  
For children's dose refer to cBNF, dosing is by body weight.

### **MRSA**

Meticillin resistant *Staphylococcus aureus* (MRSA) causes infection or colonisation in the same way as meticillin sensitive *S. aureus* (MSSA).

#### **Treatment of Infection**

Antibiotic treatment should only be used on wounds with cellulitis and/or signs of systemic infection. Refer to microbiologist to discuss sensitivities and treatment. Consider discussion/referral to tissue viability specialist.

#### **Colonisation**

Colonisation may require decolonisation treatment; this is an individual risk assessment for each patient. The infection prevention and control nurses can support the risk assessment if required. Patients who may benefit from decolonisation therapy:

- Patients who are booked for elective surgery

- Patients who have frequent admission to hospital
- The hospital has requested decolonisation prior to treatment
- Patients who are known to have MRSA colonisation and have a planned change of device such as a supra pubic catheter (one course of decolonisation may not eradicate the MRSA, but may help reduce the burden of MRSA at the time of the device insertion. Commence decolonisation 5 days before planned insertion)
- Patients who have MRSA colonisation and chronic wounds or pressure ulcers that are not healing

Where patients are found to be MRSA positive and require decolonisation before being admitted for elective surgery please follow the protocol on treatment and screening regimes from the hospital/provider.

#### Decolonisation for patients colonised with MRSA<sup>23</sup>

Advice on decolonisation should be sought from the Infection, Prevention and Control Nurses. Decolonisation requires nasal mupirocin (*Bactroban*<sup>®</sup>) applied to the anterior nares three times per day for 5 days plus skin and hair washes which contain chlorhexidine or triclosan for a total of 5 days. Patients with fragile skin can be treated with Skinsan<sup>®</sup> (triclosan 1% skin cleanser). If the MRSA is resistant to mupirocin (rare), Naseptin<sup>®</sup> four times a day for a total of 10 days should be used instead of the nasal mupirocin (*Bactroban*<sup>®</sup>).

Instructions for use:

Wet skin; apply approximately 30ml of solution directly on to the skin using the hands or a disposable cloth.

Do not dilute in the bath or bowl of water.

Use the antiseptic like liquid soap and shampoo. Wash from head to toe. The skin should be rubbed vigorously paying special attention to the following areas:

- Around the nostrils
- Under the arms
- Between the legs

The antiseptic should remain in contact with the skin for at least one minute and then thoroughly rinsed off.

Dry the skin and use a clean towel each time the treatment is carried out.

Change clothing and bedding daily after body wash.

After 5 days of topical treatment, re screen after 48hours only for patients requiring hospital admissions.

Decolonisation should not be attempted more than twice within the same episode.

MRSA is not a contraindication to the transfer of a patient to a care home. MRSA carriers do not require special treatment or follow up after discharge. Patients receiving topical treatment should complete their course but there is no need for routine follow up swabs.

Patients should be informed that MRSA does not represent a special risk to healthy relatives, carers or infants<sup>24</sup>.

### **PVL-toxin positive *S. aureus* (PVL-SA)**<sup>24</sup>

Skin or soft tissue infection (SSTI) caused by *S. aureus* strains that produce Panton-Valentine Leucocidin (PVL) toxin tend to be more severe, have a higher risk of recurrence, and often spread within the household (30-40%) or to other close contacts. PVL may be produced by MSSA as well as by Community-Associated MRSA (CA-MRSA). Small boils may heal spontaneously. If cellulitis or a larger infection is present, drainage and/or antibiotic treatment may be helpful.

Practitioners should suspect PVL-SA in case of:

1. Recurrent SSTI
2. SSTI affecting >1 member of the household
3. Unusually large spontaneous skin infection
4. Spontaneous abscess requiring admission to hospital

In above situations, the practitioner should submit appropriate samples from infected lesions, and provide relevant clinical information and request testing for 'PVL *S. aureus*'.

### **Once PVL-SA has been confirmed**

Enquire about SSTI in the household. If transmission within the household is suspected or confirmed, or if SSTI is recurrent, notify to and obtain advice from the local Health Protection Unit (HPU), and provide a PVL leaflet to the household. Inform the HPU also when:

- There is a healthcare worker in the household of the patient with PVL-SA
- A case of PVL-related infection has occurred in care home or residential facility, prison or barrack, or is associated with a sport/fitness centre
- There is suspicion of spread of PVL-associated infection in families, nurseries, schools and sports facilities

The household members should be alerted about the risk of recurrence in the following years. If PVL-MRSA has been reported, any subsequent SSTI in any member should not be treated empirically with any beta-lactam antibiotic. Contact microbiologist for further advice.

In an attempt to prevent further recurrence, simultaneous decolonisation of all household members is likely to be successful only if:

1. All current SSTI in the household have healed/dried up
2. Any underlying chronic skin condition (e.g. eczema) has been treated optimally. Refer to dermatologist or paediatrician first if applicable.
3. Household members optimise personal hygiene and decontaminate the home environment during the 5 days of decolonisation, in order to eradicate any PVL-SA surviving in the environment that could be the source of future re-infection.

Guidance on the diagnosis and management of PVL-SA infections in England has been issued by the Health Protection Agency in 2008 (now Public Health England), available at <https://www.gov.uk/government/organisations/public-health-england>. This guidance includes an appendix for Primary Care (Appendix 6) and patient information leaflets (Appendix 1 and 2)<sup>25</sup>.

## **Skin disinfection preparation guidance prior to device insertion and/or management**

2% Chlorhexidine with 70% alcohol wipes for device insertion and skin management during central line and long line treatments.  
2% Chlorhexidine with 70% alcohol wipes for peripheral cannulation insertion.  
2% Chlorhexidine with 70% alcohol wipes prior to blood culture collection.  
70% alcohol wipes prior to venepuncture procedure.  
70% alcohol prior to IM and SC injections (except insulin and long term SC injections no skin prep required if skin visibly clean, long term use of alcohol in one area can harden skin).

Please allow enough time for skin to dry before insertion of device or procedure.

## **Dermatophyte Infections**

### **Body and Groin:**

Topical imidazole cream (**clotrimazole** or **miconazole** applied twice a day for four to six weeks) for limited lesions.  
The timing of application and duration of treatment depends on the drug used<sup>26</sup>.

### **Feet and Toe Clefts (Athlete's Foot):**

**Clotrimazole 1%** cream applied twice a day for four to six weeks.  
It is possible to buy some antifungal preparation suitable for athlete's foot over the counter<sup>27</sup>.

### **Nails:**

**Self care alone** may be appropriate for people who are not bothered by the infected nail or who wish to avoid the possible adverse effects of drug treatment. Treatment should not be considered for asymptomatic nail infections, however consider drug treatment if:

- Walking is uncomfortable
- Abnormal-looking nails are causing significant psychological distress
- The person has diabetes, vascular disease, or a connective tissue disorder (because of a higher risk for secondary bacterial infections and cellulitis)
- The nail infection is thought to be the source of fungal skin infection
- The person is, or is likely to become, severely immunocompromised (for example with haematological malignancy or its treatment)

Mycological confirmation of infection should be obtained before commencing treatment<sup>28</sup>.

### **Terbinafine (adults):**

Finger nails: 250mg daily for 6 weeks to 3 months.

Toe nails: 250mg daily for up to 6 months.

LFTs should be checked at 28 days or mid way through the treatment course.

Terbinafine tablets are not recommended for patients with chronic or active liver disease. Before prescribing any pre-existing liver disease should be assessed.

Hepatotoxicity may occur in patients with and without pre-existing liver disease therefore periodic monitoring (after 4-6 weeks of treatment) of liver function test is recommended. Terbinafine tablets should be immediately discontinued in case of elevation of liver function test.

Patients prescribed terbinafine tablets should be instructed to report immediately any signs or symptoms suggestive of liver dysfunction such as pruritus, unexplained persistent nausea, decreased appetite, anorexia, jaundice, vomiting, fatigue, right upper abdominal pain, dark urine, or pale stools. Patients with these symptoms should discontinue taking oral terbinafine and the patient's liver function should be immediately evaluated.<sup>29</sup>

As no data is available, the use of terbinafine in children is not recommended.

### **Infected Eczema**

Children with atopic eczema and their parents or carers should be offered information on how to recognise the symptoms and signs of bacterial infection with staphylococcus and/or streptococcus (weeping, pustules, crusts, atopic eczema failing to respond to therapy, rapidly worsening atopic eczema, fever and malaise). Diagnosis of bacterial infection relies on the visible appearance, not on microbiological examination, because 90% of atopic eczema patches are colonised by *Staphylococcus aureus*.

Avoid topical antibiotics.

**Flucloxacillin** 500mg every 6 hours for 5 days

If penicillin allergic:

**Clarithromycin** 500mg every 12 hours for 5 days

### **NOTES**

1. Herpes simplex complicating atopic eczema (eczema herpeticum) may be misdiagnosed as a *S. aureus* infection. The presence of punched-out erosions, vesicles, or infected skin lesions that fail to respond to oral antibiotics should raise suspicion of a herpes simplex infection.
2. Microbiological investigations to ascertain sensitivities are useful if visible infection fails to respond to a first-line antibiotic. Swab severely infected eczema before treating, to reduce delay in switching to an appropriate antibiotic.
3. The typical appearance of impetigo (crusted lesions that may be yellow) may be difficult to distinguish from eczema. It is common practice, therefore, to assume that severe eczema or that which unexpectedly deteriorates may have become infected, and to treat it with an oral antibiotic.

4. Systemic antibiotics are effective for widespread bacterial infections. Topical antibiotics including those combined with topical corticosteroids may be used in localised clinical infection for a maximum of two weeks<sup>30</sup>.

### **Treatment and prevention of infection after bites from humans and other mammals in adults**

Irrigate thoroughly with Sodium Chloride 0.9%

Prophylactic management with antibiotics is recommended for<sup>31</sup>:

- Hand, foot or facial bites
- Puncture wounds
- Wounds involving joints, tendons, ligaments or suspected fractures
- Wounds that have undergone primary closure
- People who are at risk of serious wound infection e.g. have a prosthetic joint, diabetes or cirrhosis or who are asplenic, immunosuppressed or had a mastectomy

**NOTE** - Antibiotics are not generally needed if the wound is more than 2 days old and there is no sign of local or systemic infection<sup>32</sup>.

**Co-amoxiclav** 625mg every 8 hours for 7 days

If penicillin allergic (adults):

**Doxycycline** capsules 200mg (2 x 100mg capsules) on the first day, then 100mg daily **plus metronidazole 400mg** orally every 8 hours for 7 days

Children (if penicillin allergic):

Please refer to cBNF or seek advice from Microbiologist

In pregnancy:

Seek advice from the Microbiology Department

Most bite wounds are crush injuries; rule out bony injury and tooth, foreign body, where appropriate, and irrigate wound thoroughly. Wounds are considered tetanus-prone if they are:

- sustained more than 6 hours before surgical treatment
- at any interval after injury and are puncture-type (particularly if contaminated with soil or manure)
- show much devitalised tissue
- are septic
- are compound fractures
- contain foreign bodies.

For all wounds, fully immunised individuals do not require tetanus vaccine.

Individuals whose primary immunisation is incomplete or whose boosters are not up to date require a reinforcing dose of a tetanus-containing vaccine, followed by further doses as required to complete the schedule.

For tetanus prone wounds, management includes the addition of a dose of tetanus immunoglobulin, given at a different site; in fully immunised patients the immunoglobulin is only required if the infection risk is especially high (e.g. contamination with manure).

## VIRAL INFECTIONS

### Herpes Simplex Labialis

Topical antiviral treatments are generally not recommended. They have been shown to reduce time to complete healing by one day and time to loss of pain by 0.6 day. There is no consensus on whether or not to treat immunocompetent patients with topical antivirals. In limited situations, patients who suffer from recurrent disease and can easily identify the prodrome, clinicians may feel the marginal benefits offered by topical antivirals may be helpful.

### Acute Herpes Zoster (shingles)

Seek specialist obstetric advice if pregnant.

Start an oral antiviral drug *within 72 hours* of rash onset<sup>32</sup>, to reduce pain and severity for anyone over the age of 50 years with shingles, and for people aged less than 50 years with any of the following criteria:

- Ophthalmic involvement (seek immediate specialist advice or refer immediately)
- Immunocompromised (seek immediate specialist advice or refer immediately)
- Non-truncal involvement (e.g. shingles affecting neck, limb or perineum)
- Moderate or severe pain
- Moderate or severe rash

If it is not possible to initiate treatment within 72 hours, consider starting an antiviral drug up to one week after rash onset, especially if the person is at higher risk of severe shingles or complications (for example continued vesicle formation, older age, immunocompromised, or in severe pain).<sup>33</sup>

**Aciclovir** 800mg five times a day for 7 days

### Chickenpox

#### Patients ages >14 years:

If onset of rash is less than 24 hours and the patient is aged 14 years and over, or in severe pain, or dense/oral rash, or secondary household case, taking steroids or a smoker, consider aciclovir.

**Aciclovir** 800mg five times a day for 7 days.

If the patient presents more than 24 hours from onset of rash then antivirals are not advised. If uncomplicated disease, then reassure and review daily or earlier if the patient deteriorates.

#### Children:

Aciclovir is **NOT** recommended for children with chickenpox and do **NOT** prescribe or advise ibuprofen in chickenpox. There are concerns that use of NSAIDs in

children with varicella is associated with an increased risk of necrotizing soft-tissue infections and infections with invasive group A beta-haemolytic streptococci. See NICE CKS <http://cks.nice.org.uk/chickenpox#!prescribinginfosub:1>

Pregnant/immunocompromised/neonate:

Seek urgent specialist advice. If pregnant inform the obstetrician.

Prophylaxis in Case of Contact with Chickenpox in Pregnancy

Pregnant contacts who report having previously had chickenpox can be reassured and no further action needs to be taken.

Pregnant contacts who do not remember having chickenpox should be tested for immunity. Take 10ml blood (plain clotted in a Z9 bottle) asking for urgent chickenpox immunity (VZV-IgG) and discuss with on-call microbiologist.

Immune contacts may be reassured. If patient not immune then advice should be sought from Consultant Microbiologist with regard to obtaining Varicella Zoster immunoglobulin. The VZV-IgG is indicated only within 10 days of significant exposure.

For further information please refer to Public Health England website (formerly HPA).

<https://www.gov.uk/government/collections/chickenpox-public-health-management-and-guidance>

## Seasonal Influenza

Depending on the most recent surveillance data, the Department of Health authorises the use of antivirals in people presenting with influenza-like illness. At risk patients are defined by the Chief Medical Officer (CMO) letter issued for current seasonal influenza. Refer to the most recent CMO letter for the up to date list of defined at risk patient.

For up to date information on influenza for treatment and post-exposure prophylaxis please refer to Public Health England website:

<https://www.gov.uk/government/publications/influenza-treatment-and-prophylaxis-using-anti-viral-agents>

In the event of a Pandemic Flu situation, please refer to current guidelines.

## PARASITIC INFESTATIONS

### **Thread worm (Enterobius Vermicularis)**<sup>33</sup>

Treat the person if thread worms have been seen, or their eggs have been detected. Treat all household members at the same time (unless contraindicated). For adults and children aged over 6 months, an anthelmintic combined with hygiene measures is recommended. For children aged 6 months and under, hygiene measures alone are recommended. For people who do not wish to take an anthelmintic, physical removal of the eggs, combined with hygiene measures is recommended.

### **Adults and children aged over 2 years old (non-pregnant and not breast-feeding)**

**Mebendazole** 100mg chewable tablet as a single dose.

Repeat after 2 weeks if infestation persists.

In children **mebendazole** 100mg/5ml oral suspension can be prescribed.

One 5ml spoonful as a single dose.

Repeat after 2 weeks if infestation persists.

See cBNF for treating children under 2 years. Mebendazole is NOT licensed for use in children under 2 years, however the cBNF provides an off-license dose for children aged 6-18 months.

### **Patients who are pregnant or breastfeeding**

#### **Pregnancy**

During pregnancy, physical removal of eggs combined with hygiene methods is the preferred treatment. Measures to physically remove eggs include washing the perianal area first thing in the morning, then washing or wet-wiping at 3 hourly intervals during the day (this may be impractical for some people, and twice a day is probably more realistic).

Mebendazole should not be used in the first trimester of pregnancy. However, it can be considered in the second or third trimester if drug treatment is considered necessary. This indication is off-label.

For more details, contact the UK Teratology Information Service (UKTIS), formerly the National Teratology Information Service (NTIS), on 0344 892 0909.

#### **Breastfeeding**

If a woman is breastfeeding, physical removal of eggs (see above for methods) combined with hygiene methods is generally preferred.

However, mebendazole can be considered if drug treatment is required. This indication is off-label.

Some women who are pregnant or breastfeeding may be anxious to eradicate the worms as soon as possible (for example if it is proving difficult to prevent

reinfection by hygiene methods alone). In this situation drug treatment may be preferred, provided the woman is not in the first trimester of pregnancy.

For further details please refer to NICE CKS  
<http://cks.nice.org.uk/threadworm#!scenariorecommendation:3>

### **Head Lice**<sup>34</sup>

1. Check for head lice by detection combing on wet hair and treat the person only if a live head louse is found.
2. Treat all affected household members simultaneously.
3. Depending on the preference of the individual or parent and on the treatment history, treat with dimeticone or insecticide. Explain the advantages and disadvantages of each.
4. The choice of treatment will also depend on the individual and treatment history.
5. If insecticide strategy is chosen, malathion or permethrin is recommended first line and
  - a. The treatment should be repeated after 7 days.
  - b. Lotions are the treatment of choice; foams and shampoos are not recommended.
  - c. Alcohol preparations are not recommended for the very young or patients with asthma or eczema.
6. All treatments need more than one treatment session. No treatment can guarantee success. Treatment has the best chance of success if it is performed correctly and if all affected household members are treated on the same day.
7. Advise people to check whether treatment was successful by detection combing on day 2 or day 3 after *completing* a course of treatment, and again after an interval of 7 days (day 9 or day 10 after *completing* a course of treatment).
8. Parents/carers must be encouraged to continue regular grooming with detection combs even after successful treatment to prevent further established infection.
9. Some parents who refuse pharmacological treatments can be offered wet-combing.

### **Scabies**<sup>35</sup>

A toolkit containing more detailed advice and guidance can be obtained from the Health Protection Team.

1. Successful treatment relies on accurate identification, treatment and monitoring of the case and all individuals having prolonged skin to skin contact with the case within the last 6-8 weeks.
2. Simultaneously (within 24 hours) treat all members of the household, close contacts, and sexual contacts with a topical insecticide (even in the absence of symptoms).

3. Encourage the family not to delay treatment.
4. Use these treatments which are available over the counter:
  - a. **Permethrin** 5% dermal cream first line treatment (usually one 30g tube per application (maximum 60g - 2x30g tubes may be required for larger patients for adequate treatment). It should be washed off after 8-12 hours contact time.
  - b. **Malathion** 0.5% aqueous basis if permethrin is inappropriate (e.g. the person has an allergy to chrysanthemums.) It should be washed off after 24 hours contact time.
5. Treatments should be applied according to manufacturer's instructions (detailed instructions for use are provided in the package insert) for adult or child age groups, and left on the body for the correct amount of time according to product instruction.
6. Treatment should be applied to the whole body including the face, neck, scalp & ears.
7. Reapply if washed off during treatment time.
8. Repeat treatment **after 7 days**.
9. For outbreaks in Care Homes please refer to the Public Health England.
10. The Community Infection and Prevention control nurses should be notified of cases within the community hospitals.

**Pregnancy or breastfeeding:** treat scabies with permethrin 5% dermal cream. Alternatively use malathion 0.5% aqueous liquid if permethrin is not appropriate (e.g. the person has an allergy to chrysanthemums).

Breastfeeding mothers should remove the liquid or cream from the nipples before breastfeeding, and reapply treatment afterwards.

**For children under 2 months old:** seek specialist advice from a paediatric dermatologist. Children under 6 months old require a prescription for an insecticide to treat scabies. If parents prefer to purchase an insecticide over the counter, malathion 0.5% aqueous liquid can be purchased for children over 6 months old. Children under 2 years old require a prescription for permethrin 5% dermal cream.

**Scabies in the frail elderly:**

A highly contagious form of scabies called the hyperkeratotic or Norwegian scabies can occur in immune-deficient individuals like the frail elderly. Infection often appears as a generalised dermatitis, more widely distributed than the burrows and the usual severe itching may be reduced or absent. Large numbers of mites are present in the skin scales and hence this form of scabies is highly contagious. Treatment is as above, but note that patients with hyperkeratotic scabies may require 2 or 3 applications of topical treatment on consecutive days to ensure that enough penetrates the skin crusts and kill all the mites. Repeat treatment after 7 days as above. If condition not responding to above treatment discuss with dermatology/infectious disease/Microbiology.

## Antimicrobials in School-aged Children

The necessity for children to take antibiotics whilst in school should be kept to a minimum. Guidance has been issued by the Department for Education (DE) and the Department of Health (DH) on how to diminish the need for medicines to be taken during school hours.<sup>36</sup>

1. Medicines should only be taken to school when essential; that is, where it would be detrimental to a child's health if the medicine were not administered during the school day.
2. Schools should only accept medicines that have been prescribed by a doctor, dentist, nurse prescriber or pharmacist prescriber.
3. Medicines should always be provided in the original container as dispensed by a pharmacist and include the prescriber's instructions for administration.
4. Schools should never accept medicines that have been taken out of the container as originally dispensed nor make changes to dosages on parental instructions.
5. Supporting Pupils at School With Medical Conditions (DH April 2014) <https://www.gov.uk/government/publications/supporting-pupils-at-school-with-medical-conditions--3> recommends that a range of options, where clinically possible, are explored including: prescribers consider the use of medicines which need to be administered only once or twice a day for children and young people so that they can be taken outside school hours.<sup>37</sup> Parents could be encouraged to ask the prescriber about this. Medicines that need to be taken three times a day could be taken in the morning, after school and at bedtime.
6. For medicines which do need to be taken to school, prescribers are asked to consider providing two prescriptions, where appropriate and practicable, for a child's medicine: one for home and one for use in school, avoiding the need for repackaging or relabelling of medicines by parents.
7. Clinical management plans for use by schools, signed by parent, head teacher and school nurse/GP provide a means of formalising medicines administration and minimising risk attached for all concerned.

## **Antimicrobials in pregnancy and breast-feeding**

Please refer to the most recent edition of BNF or the Summary of Product Characteristics for each drug for more detailed information.

BNF – specific information has been moved to the relevant chapters and is included under the individual drug or in the prescribing notes.

Expert advice is available from:

UK Drugs in Breast Milk Service:

contact your local Medicines Information service or West Midlands Medicines Information Service (Tel: 0121 424 7298)

Medicines in Lactation Specialist Advisory Service - UK Drugs in Lactation Advisory service (UKDILAS). UKDILAS is available during the centres' main opening hours - 09:00 am until 17.00 pm, Monday to Friday, excluding Bank Holidays. To contact the service:

- Telephone: 0116 255 6491 or 0121 424 7298
- For non-urgent enquiries email via the enquiry facility on <http://www.midlandsmedicines.nhs.uk>

<http://www.ukmi.nhs.uk/activities/specialistServices/default.asp?pageRef=2>

<http://www.midlandsmedicines.nhs.uk/content.asp?section=6&subsection=17&pageIdx=1>

The United Kingdom Teratology Information Service (UKTIS)

- Telephone service: 09:00-17:00 Monday-Friday (excluding bank holidays) for routine enquiries. Urgent enquiries are answered 24 hours per day, seven days per week, in partnership with the National Poisons Information Service (NPIS).
- Telephone: 0344 892 0909  
<http://www.uktis.org/>

### **Common and important drug interactions**

Please refer to Appendix 1 of the most recent edition of the BNF or product SPC.

Contact your local Medicines Information service if in doubt or West Midlands Medicines Information Service (Tel: 0121 424 7298).

## Appendix 1 – Useful contact numbers

### University Hospital of North Midlands NHS Trust (UHNM)

#### Consultant Microbiologist

Microbiology Helpdesk: 01782 674898

Out of hours, Bank Holidays and weekends the UHNM Microbiologist can be contacted by phoning the UHNM Switchboard on 01782 715444

<http://www.uhnm.nhs.uk/contactus/pages/ContactUs.aspx>

### Burton Hospital NHS Foundation Trust

#### Consultant Microbiologist

Main switchboard: 01283 566333

<http://www.burtonhospitals.nhs.uk/contact-details.htm>

### Staffordshire and Stoke-on-Trent Partnership NHS Trust (SSOTP) Infection Prevention and Control Team

01889 571837

### Staffordshire and Stoke-on-Trent Partnership NHS Trust (SSOTP)

#### Head of Infection Control

Carrie Felgate

Tel: 01543 412987 or 07814 830661

[carrie.felgate@ssotp.nhs.uk](mailto:carrie.felgate@ssotp.nhs.uk)

### Head of Infection Prevention and Control Staffordshire Health Economy

Jacqueline Derby

Staffordshire Place 2

Stafford

ST16 2LP

Tel: 07890 320626 or 01785 355773

[Jacqueline.Derby@staffordsurroundsccg.nhs.uk](mailto:Jacqueline.Derby@staffordsurroundsccg.nhs.uk)

### Combined Healthcare

Cheryl Wagner

Tel: 01782 275140

Mobile: 07740 372868

### Medicines Optimisation Teams

North Staffordshire CCG & Stoke-on-Trent CCG

tel: 01782 298084

Cannock Chase CCG

tel: 01785 356790

Stafford & Surrounds CCG

tel: 01785 356790

East Staffordshire CCG

tel: 01283 507100

South East Staffordshire & Seisdon CCG

tel: 01827 306148

**Medicines Management Team Staffordshire and Stoke-on-Trent Partnership  
NHS Trust (SSOTP)**

Medicines Management Office, Haywood Pharmacy  
01782 673845  
Dispensary  
01782 673767

**Hazel Gibson**

Diabetes Specialist Podiatrist (Acute)  
Outpatients 1 Main Building  
Royal Stoke University Hospital  
Newcastle Road  
Stoke on Trent  
ST4 6QG  
01782 674679  
Mobile 07515187919  
Email: [hazel.gibson@ssotp.nhs.uk](mailto:hazel.gibson@ssotp.nhs.uk)

**Podiatry Department – North Staffordshire**

Fenton Primary Care Centre  
01782 222951  
Working hours are from 8am-4.30pm Monday to Friday  
Email: [Stokepodiatry@nhs.net](mailto:Stokepodiatry@nhs.net)

**Podiatry department – South Staffordshire**

Podiatry Appointment Booking Centre, Edric House, Wheelhouse Rd, Rugeley  
WS15 1UW  
01543 509770  
Email: [apptbookingcentre.ssotp@nhs.net](mailto:apptbookingcentre.ssotp@nhs.net)

**Health Protection Agency**

<https://www.gov.uk/government/organisations/public-health-england>

The HPA is now part of [Public Health England](#).

PHE provides health protection services via its four regional centres:

<https://www.gov.uk/government/publications/midlands-and-east-of-england-phe-region-and-centres/contact-details-for-the-midlands-and-east-of-england-phe-region-and-centres>

**West Midlands PHE Centre**

Dr. Sue Ibbotson, Centre Director  
6<sup>th</sup> Floor,  
5 St. Philip's Place  
Birmingham  
B3 2PW  
Telephone: 0344 225 3560

### **West Midlands North HPT**

Local health protection teams lead Public Health England response to all health related incidents. This team covers the areas of Shropshire and Staffordshire. If you need any information on health protection or are concerned by a health related problem in your area, contact the team.

West Midlands North PHE Team (Health Protection)  
Public Health England  
Stonefield House  
St Georges Hospital  
Corporation Street  
Stafford  
ST16 3SR

Tel: 0844 225 3560 Option 1 then Option 2

Out of Hours advice for health professionals – to contact a public health professional in an emergency out of hours; in the evenings, at weekends or during bank holidays, please phone: 0138 4215621

### **Environmental Health**

Staffordshire County Council  
Environmental Health departments in each local council can be found here:  
<https://www.staffordshire.gov.uk/environment/PestControl.aspx>

## References

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- 3) Department of Health. Resistance to Antibiotics and other antimicrobial agents. London: Department of Health; 1999/049 Available at: [http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Healthservicecirculars/DH\\_4016586](http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Healthservicecirculars/DH_4016586)
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## Working Party

Susan Abell	Deputy Lead Hospital Pharmacist and Clinical Trials Lead Staffordshire & Stoke-on-Trent Partnership NHS Trust
Dr. Krishna Banavathi	Consultant Microbiologist, UHNM
Samantha Buckingham	Pharmaceutical Advisor, NHS Stafford and Surrounds CCG
Mara Cope	Medicines Optimisation Pharmacist, North Staffordshire CCG
Dr. Judith Crosse	General Practitioner, East Staffordshire CCG
Emma Dasey	Medicines Optimisation Pharmacist, Stoke-on-Trent CCG
Jacqueline Derby	Head of Infection Prevention and Control, Staffordshire Health Economy
Angelina Dyche	Antimicrobial Pharmacist, Burton Hospitals NHS Foundation Trust
Carrie Felgate	Head of Infection Control, Staffordshire and Stoke-on-Trent Partnership NHS Trust
Dr. James Paton	Consultant Microbiologist & Director of Infection Prevention & Control, Burton Hospitals NHS Foundation Trust
Dr. Mukesh Singh	General Practitioner, Cannock Chase CCG
Dr. Sri Sundaram	General Practitioner, Stoke-on-Trent CCG
Rachel Tarbuck	Senior Pharmacist, North Staffordshire Combined Healthcare NHS trust

## Acknowledgements

Dr. N. Ahmed	Chair Local Dental Network, Shropshire and Staffordshire
Rickard Beck	Clinical Director Dental Services Staffordshire and Stoke on Trent Partnership NHS Trust
Sue Garland	Team Leader/Professional Lead School Nursing Stoke-on-Trent
Dr. Manir Hussain	Associate Director, Medicines Optimisation, Stoke-on-Trent CCG and North Staffordshire CCG
Kellie Johnson	Primary Care Nurse Lead, Stoke-on-Trent CCG
Sr. Maria Njoku	Interface Pharmacist, University Hospital of North Midlands
Dr. Ashish Patel	Consultant Geriatrician and General Practitioner, Stoke-on-Trent CCG

## Notes

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