South Central Antimicrobial Network
Guidelines for Antibiotic Prescribing in the Community 2018

Adapted from the Public Health England (PHE) and British Infection Association Management of Infection Guidance for Primary Care by the South Central Antimicrobial Network Group (SCAN)

In conjunction with all WESSEX CCGs, Berkshire East, Berkshire West, Surrey Heath, Coastal West Sussex and Oxfordshire CCG
Index

Foreword 3
Guideline Development Group 5
Aims, Implications, Principles 7
Risk Assessment 9
Sepsis Screening 11

Ear, Nose and Throat Infections
- Acute Sore Throat 13
- Fever Pain 14
- Acute Otitis Media (AOM) 15
- Acute Otitis Externa 16
- Acute Rhinosinusitis 17
- Oral Candidiasis 18

Respiratory Tract Infections
- Acute Cough, Bronchitis 19
- Influenza 20
- COPD Acute Exacerbation 21
- Community-Acquired Pneumonia (CAP) 22

Central Nervous System
- Meningitis or Suspected Meningococcal Disease 23

Urinary Tract Infections
- Uncomplicated UTI in Women 25
- Lower UTI in Pregnancy 26
- Lower UTI in Men 27
- Catheter-associated UTI 28

Gastro-intestinal Infections
- Eradication of Helicobacter pylori 43
- Eradication of Helicobacter pylori cont. 44
- Infectious Diarrhoea 45
- Diverticulitis 46
- Clostridium difficile Infection 47
- Clostridium difficile Infection cont. 48
- Travellers’ Diarrhoea (Stand-by or Prophylactic Treatment) 49

Genital Tract Conditions
- Criteria for referring patients to specialist care 31
- Vulvovaginal Candidiasis 32
- Bacterial Vaginosis 33
- Chlamydia Trachomatis 34
- Trichomoniasis 35
- Pelvic Inflammatory Disease (PID) 36
- Acute Prostatitis 37
- Balanitis 38
- Epididymo-Orchitis 39
- Genital Herpes 40
- Bartholin’s Cyst, Post Top Endometritis, Gonorrhoea 41

Skin & Soft tissue Infections
- Threadworms 50
- Cholecystitis 51

Surgical Site Infection (SSI) 71

Continued overleaf
Index

Eye Infections
- Infective Conjunctivitis 75
- Blepharitis 76

Dental Infections
- Mucosal Ulceration and Inflammation (Simple Gingivitis) 77
- Acute Necrotising Ulcerative Gingivitis (ANG) and Pericoronitis (PC) 78
- Dental Abscess 79
- Bacterial Parotitis 80

IV/IM Drugs in the Community
- IV/IM Ceftriaxone – For treatment of pneumonias, UTI’s and skin and soft tissue infection 81

Purely Paediatrics by Dr Sanjay Patel
- Ear Nose and Throat Infections – Acute Rhinosinusitis (CHILDREN) 83
- Ear Nose and Throat Infections – Acute Otitis Externa (CHILDREN) 84
- Ear Nose and Throat Infections – Acute Otitis Media (AOM) (CHILDREN) 85
- Ear Nose and Throat Infections – Tonsillitis (CHILDREN) 86
- Ear Nose and Throat Infections – Cervical Lymphadenitis (CHILDREN) 87
- Respiratory Tract Infections – Community Acquired Pneumonia (CAP) (CHILDREN) 88
- Urinary Tract Infections – UTI in Children 89
- Urinary Tract Infections – UTI in Children (continued) 90
- Skin & Soft Tissue Infections – Cellulitis & Impetigo (CHILDREN) 91
- Skin & Soft Tissue Infections – Scarlet Fever (Scarlatina) (CHILDREN) 92
- Eye infections – Infective Conjunctivitis (CHILDREN) 93
Foreword

These guidelines are intended to provide advice on the effective and safe treatment of infections commonly presenting in primary care (doses are for adults unless otherwise stated) in mainly Wessex, but also Surrey Heath, Berkshire East and West and Coastal West Sussex and Oxfordshire CCG. The guidelines also promote the use of narrow-spectrum antibiotics in preference to broad-spectrum antibiotics where safe and appropriate. The audience of users is anticipated to be general practitioners, GP trainees, GP practice nurses, non-medical prescribers, paramedics, hospital emergency department staff and community pharmacists.

These guidelines were drafted by a multi-disciplinary group of health professionals with an interest in infection from around the region. The 2017 update was led by pharmacists from the South Central Antimicrobial Network group in close partnership with consultant medical microbiologists from local hospitals – a list of stakeholders is available below. The draft guidelines were published for consultation in December 2017 and feedback was received from a number of GPs, consultant medical microbiologists and pharmacists, before the final guidelines were published in February 2018. The guidelines have been updated from the previous version, published in 2014, taking into consideration feedback from users, emerging evidence and changing epidemiology of antimicrobial resistance. The guidelines are based largely on the Management of Infection Guidance for Primary Care, published jointly by the Health Protection Agency and the British Infection Association, updated in November 2017, and the guideline development group gratefully acknowledges the work of Dr Cliodna McNulty, Sarah Alton and her colleagues in the PHE and BIA.

Recommendations for when antimicrobial treatment is indicated, based upon cited national or international evidence-based guidelines, have been expanded from the PHE/BIA Guidance, along with recommendations and practical advice for taking specimens for microbiological investigations and interpreting culture and sensitivity laboratory reports. Clinically relevant information on cautions and warnings associated with antimicrobial treatment has also been expanded from the PHE/BIA Guidance including information about risk of *Clostridium difficile* infection. All statements were fully referenced.

This updated version of the guidelines has been developed during 2017 and the next update will be scheduled for review in November 2019. This version also includes new areas not previously covered and hopefully will be useful.

Comments and feedback are welcome; please e-mail ruth.ellenby@nhs.net.

Reference

Guideline Development Group

Janet Brember
Melody Chapman
Helen Chesterfield
Sarah Crotty
Liz Dmoch
Ruth Ellenby
Jen Etherington
Sian Evans
Andrew Flatt
Phillip Foster
Jennie Fynn
Kieran Hand
Michaela Hooper
Matthew Inada-Kim
Carys Jones
Graeme Jones
Taryn Keyser
Catriona Khetyar

Alma Kilgarriff
Catherine McLean
Jo Munns
Leena Nanavati
Roberta Parnaby
Sanjay Patel
Matthew Richardson
Kordo Saeed
Ami Scott
Adel Sheikh
Liz Sheridan
Vanessa Sherwood
Lenka Strakova
Julian Sutton
Mike Vickers
Hayley Wickens
Darren Wilson

With special acknowledgments to Liz Dmoch and Carys Jones for their help in formatting and evidence sourcing, and Kieran Hand for his support.
Aims

- To provide a simple, effective, economical and empirical approach to the management and treatment of common infections.
- To minimise the emergence of antimicrobial resistance in the community.

Principles of Treatment (PHE/BIA)

1. This guidance is based on the best available evidence, but use professional judgement and involve patients in management decisions.
2. This guidance should not be used in isolation; it should be supported with patient information about safety netting, delayed/back-up antibiotics, self-care, infection severity and usual duration, clinical staff education, and audits. Materials are available on the RCGP TARGET website.
3. Prescribe an antibiotic only when there is likely to be clear clinical benefit, giving alternative, non-antibiotic self-care advice, where appropriate.
4. Consider a ‘no’ or ‘delayed/back-up’ antibiotic strategy for acute self-limiting upper respiratory tract infections and mild UTI symptoms.
5. In severe infection, or immunocompromised, it is important to initiate antibiotics as soon as possible, particularly if sepsis is suspected. If patient is not at moderate to high risk for sepsis, give information about symptom monitoring, and how to access medical care if they are concerned.
6. Where an empirical therapy has failed or special circumstances exist, microbiological advice can be obtained from the local microbiology laboratory.
7. Limit prescribing over the telephone to exceptional cases.
8. Use simple, generic antibiotics if possible. Avoid broad spectrum antibiotics (e.g. co-amoxiclav, quinolones and cephalosporins) when narrow spectrum antibiotics remain effective, as they increase the risk of *Clostridium difficile* infection, MRSA and resistant UTIs.
9. Always check for antibiotic allergies. A dose and duration of treatment for adults is usually suggested, but may need modification for age, weight, renal function, or if immunocompromised. In severe or recurrent cases, consider a larger dose or longer course.

Continued overleaf
10. Child doses are provided when appropriate, and can be accessed through the J symbol.

11. Refer to the BNF for further dosing and interaction information (e.g. the interaction between macrolides and statins), and check for hypersensitivity.

12. Have a lower threshold for antibiotics in immunocompromised, or in those with multiple morbidities; consider culture/specimens for seeking advice.

13. Avoid widespread use of topical antibiotics, especially in those agents also available as systemic preparations (e.g. fusidic acid).

14. In pregnancy, take specimens to inform treatment. Where possible, avoid tetracyclines, aminoglycosides, quinolones, azithromycin, clarithromycin, and high dose metronidazole (2g stat), unless the benefits outweigh the risks. Penicillins, cephalosporins, and erythromycin are safe in pregnancy. Short-term use of nitrofurantoin is not expected to cause foetal problems (theoretical risk of neonatal haemolysis). Trimethoprim is also unlikely to cause problems unless poor dietary folate intake, or taking another folate antagonist.

15. This guidance is developed alongside the NHS England Antibiotic Quality Premium. The required performance in 2017/19 is: a 10% reduction (or greater) in the number of E. coli bloodstream infections across the whole health economy; a 10% reduction (or greater) in the trimethoprim: nitrofurantoin prescribing ratio for UTI in primary care, and a 10% reduction (or greater) in the number of trimethoprim items prescribed to patients aged 70 years or greater; sustained reduction of inappropriate prescribing in primary care.
Risk assessment

<table>
<thead>
<tr>
<th>Risk of <em>Clostridium difficile</em> infection</th>
<th>Risk of antibiotic treatment failure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient</strong></td>
<td>Older patients (over 65yr) &amp; antibiotic exposure within previous 2 months</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>Contact with patients with <em>Clostridium difficile</em> or recent hospital admission</td>
</tr>
</tbody>
</table>
| **Action**                            | Withhold antibiotics if safe to do so (watchful waiting). Avoid high risk antibiotics (the 4 Cs):  
  • Cephalosporins  
  • Ciprofloxacin & quinolones  
  • Co-amoxiclav  
  • Clindamycin |
|                                        | History of infection with resistant microorganism. Recent antibiotic exposure. Immunocompromised. |
|                                        | Infection acquired in healthcare environment |
|                                        | Consider second-line antibiotics from the following tables |

Evidence Grading

<table>
<thead>
<tr>
<th>Study design</th>
<th>Recommendation grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good recent systematic review of studies</td>
<td>A+</td>
</tr>
<tr>
<td>One or more rigorous studies, not combined</td>
<td>A</td>
</tr>
<tr>
<td>One or more prospective studies</td>
<td>B+</td>
</tr>
<tr>
<td>One or more retrospective studies</td>
<td>B-</td>
</tr>
<tr>
<td>Formal combination of expert opinion</td>
<td>C</td>
</tr>
<tr>
<td>Informal opinion, other information</td>
<td>D</td>
</tr>
</tbody>
</table>
Sepsis Screening and Action Tool

**Aligned Wessex Sepsis definition**

**NEWS**

- **0-2**
  - Sepsis unlikely
  - Follow NEWS protocol as per organisation

- **3-4**
  - Are there concerning clinical features?
    - Is there any of:
      - High risk patient*
      - New confusion
      - Lactate ≥2
      - Worry (Dr/nurse/patient/carer)
      - Single RED parameter
      - Anuria
      - Mottling / ashen skin
      - Cyanosis / purpuric rash

- **≥5**
  - Urgent Clinical Review

**Clinical Judgement**

- Is Sepsis suspected?
  - If uncertain, Senior review
  - Convey/Refer urgently
    - Blood Cultures/IV Ab
    - Consider fluids/Oxygen/Lactate
    - Document Time of Decision
    - Monitor Urine output.
      - Time Zero in hospital
      - If in Community, Time Zero is arrival in hospital

*HIGH RISK*

- Repeated attendances
- Age ≥75
- Immunosuppression
- Chemotherapy
- Current / recent antibiotics
- PHx sepsis / Res. bugs
- Line / catheters in situ / IVDU
- Recent post procedure / op, trauma

www.rcplondon.ac.uk/projects/outputs/national-early-warning-score-news-2
Ear, Nose and Throat Infections
**Ear, Nose and Throat Infections – Acute Sore Throat (Patient Information Leaflet available from TARGET)**

FOR PAEDIATRIC GUIDELINES see page 86

<table>
<thead>
<tr>
<th>When to treat&lt;sup&gt;1,2&lt;/sup&gt;</th>
<th>Avoid antibiotics as 82% resolve in 7 days without, and pain only reduced by 16 hours.&lt;sup&gt;1&lt;/sup&gt; Average total length of illness is one week.&lt;sup&gt;1,2&lt;/sup&gt; Complications are rare: acute otitis media, acute sinusitis and quinsy.&lt;sup&gt;1&lt;/sup&gt; Antibiotics to prevent otitis media NNT 200.&lt;sup&gt;1,2&lt;/sup&gt; Those most likely to benefit from an antibiotic: see attached sore throat clinical scoring system (FeverPain). Advise paracetamol or ibuprofen, self-care and safety net. If Fever Score 4 or more: offer immediate antibiotics if severe or offer a delayed prescription.</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Fever score 2 or 3: consider 2 or 3-day delayed antibiotics.&lt;sup&gt;1&lt;/sup&gt; Or if systemically very unwell (see cautions below) or has symptoms and signs of a more serious illness or condition, or has high risk of complications.</td>
<td></td>
</tr>
</tbody>
</table>

| When to investigate | Throat swabs or rapid antigen tests should not be carried out routinely in the investigation of acute sore throat.<sup>2,3</sup> Suspect glandular fever in a person with a sore throat that fails to improve, or becomes worse, after several days.<sup>3</sup> |

<table>
<thead>
<tr>
<th>Treatment choices&lt;sup&gt;1&lt;/sup&gt;</th>
<th>First line: <strong>Phenoxymethylpenicillin</strong>&lt;sup&gt;8&lt;/sup&gt; 500mg qds OR 1g bd&lt;sup&gt;A+&lt;/sup&gt; for 7 days&lt;sup&gt;Sa&lt;/sup&gt;. (a bd dosing is as effective as a tds or qds dosing, if total daily dose remains the same, and may be more convenient)&lt;sup&gt;6&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>If allergic to penicillin: Clarithromycin 250-500mg bd for 5 days&lt;sup&gt;A+&lt;/sup&gt;. If allergic to penicillin and pregnant: Erythromycin 500mg qds or 1g bd for 5 days&lt;sup&gt;A+&lt;/sup&gt;.</td>
<td></td>
</tr>
</tbody>
</table>

Prescribing amoxicillin or ampicillin will produce a generalized, itchy maculopapular rash in over 90% of people with glandular fever.<sup>3</sup>

<table>
<thead>
<tr>
<th>Cautions&lt;sup&gt;3&lt;/sup&gt;</th>
<th>Admit immediately anyone who has:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Stridor or respiratory difficulty.</td>
<td>• Dehydration or reluctance to take any fluids.</td>
</tr>
<tr>
<td>• Respiratory distress, drooling, systemically very unwell, painful swallowing, muffled voice: suspect acute epiglottitis. Do not examine the throat of anyone who has suspected epiglottitis.</td>
<td>• Severe suppurative complications (e.g. peri-tonsillar abscess or cellulitis, parapharyngeal abscess, retropharyngeal abscess, or Lemierre syndrome) as there is a risk of airway compromise or rupture of the abscess.</td>
</tr>
<tr>
<td>• Upper airway obstruction.</td>
<td>• Signs of being markedly systemically unwell and is at risk of immunosuppression.</td>
</tr>
<tr>
<td>• Stridor or respiratory difficulty.</td>
<td>• Suspected Kawasaki disease, diphtheria yersinial pharyngitis, or profoundly unwell with cause unknown or rare cause suspected, e.g. Stevens-Johnson syndrome</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Studies involving clarithromycin and erythromycin used a 5 day course, whereas studies involving phenoxymethylpenicillin used a 10 day course. Based on evidence, clinical experience and resistance data 5-10-day courses of phenoxymethylpenicillin was needed.&lt;sup&gt;1&lt;/sup&gt; Evidence suggests the use of broader spectrum antibiotics will drive the emergence of bacterial resistance; kills normal commensal flora leaving people susceptible to <em>Clostridium difficile</em> associated disease.&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No statistically significant reduction in acute glomerulonephritis in people taking antibiotics.&lt;sup&gt;1&lt;/sup&gt; Rheumatic fever was reported only in RCTs published before 1961, results from these low quality studies found antibiotics reduced acute rheumatic fever by more than two thirds compared with placebo.&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

Sore Throat Clinical Scoring System (FeverPAIN) to predict streptococcal infection\textsuperscript{1,2}

**Inclusion criteria:** patients aged 3 years and over presenting to English primary care clinicians with an acute (<2 weeks) sore throat.

Note: average total length of illness is 1 week.

**FeverPAIN** – one point each for:
- Fever during the last 24 hours
- Purulence on tonsils
- Attend rapidly (short prior illness duration of 3 days or less)
- Inflamed (severely) tonsils
- No cough or coryza (‘runny nose’)

**Suggested actions:**
- **Score 0-1:** 13-18\% streptococci – no antibiotic.\textsuperscript{a}
- **Score 2-3:** 34-40\% streptococci – 3-day delayed antibiotic.\textsuperscript{b}
- **Score 4-5:** 62-65\% streptococci – if severe, immediate antibiotic, or 48-hour delayed antibiotic

\% likelihood of isolating streptococcus.

\textsuperscript{a} Approximately one third of patients in the original study population had a FeverPAIN score of \( \leq 1 \).

\textsuperscript{b} A prescription was prepared and left in reception, with advice to the patient to collect the prescription after 3-5 days if symptoms were not starting to settle or were getting considerably worse.

This strategy is expected to reduce antibiotic use in this setting by 29\%.

**Reference List**
Ear, Nose and Throat Infections – Acute Otitis Media (AOM) (Patient Information Leaflet available from TARGET)  
FOR PAEDIATRIC GUIDELINES see page 85

| When to treat | Optimise analgesia and target antibiotics.  
AOM resolves in 60% within 24h without antibiotics, which only reduce pain at 2 days (NNT15) and do not prevent deafness.  
Consider 2 or 3-day delayed, or immediate antibiotics for pain relief  
• All ages with otorrhoea NNT3.  
Antibiotics to prevent mastoiditis NNT>4000  

| When to investigate | Routine follow-up is not required in the absence of persistent symptoms. 

| General advice | Average total length of illness is 4 days. 

| Treatment choices | First-line: Amoxicillin A+  
500mg tds²  
If allergic to penicillin: Clarithromycin² for 5 days or Erythromycin for 5 days 250-500mg qds  

| Cautions | Admission or immediate referral if: suspected acute complications of (AOM), such as meningitis, mastoiditis, or facial paralysis  
Elective referral if: Persistent effusion or discharge, perforation not healed after 6 weeks, 3 or more episodes in 6 months or impaired hearing after 3 to 6 months, 4 or more episodes in previous 12 months with at least 1 in the past 6 months. 

| Evidence | Amoxicillin is as effective as other antibiotics in the treatment of AOM in RCTs.  
Macrolides concentrate intracellularly and so are less active than penicillin against the extracellular H influenzae.  
No advantage in using an antibiotic to cover beta-lactamase resistant organisms (e.g. co-amoxiclav) in the initial treatment of AOM. This should be reserved for persistent acute otitis media. 

| References | 1. Management of Infection Guidance for Primary Care, PHE Endorsed by RCGP & BIA, January 2017  
Accessed Dec 2017  
**Ear, Nose and Throat Infections – Acute Otitis Externa**

**FOR PAEDIATRIC GUIDELINES see page 84**

<table>
<thead>
<tr>
<th>When to treat</th>
<th>First use analgesia for pain relief, and apply localised heat. Similar cure at 7 days for topical acetic acid or topical antibiotic +/- steroid. If cellulitis or disease extends outside ear canal, or there are systemic signs of infection, start oral antibiotics and refer to exclude malignant otitis externa, if necessary.¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>When to investigate</td>
<td>If the treatment strategy fails, consider taking an ear swab for causative organism if: otitis externa is recurrent or chronic, topical treatment cannot be delivered effectively, infection spread, or the condition is severe enough to require oral antibiotics. A swab is best taken from the medial aspect of the ear canal to reduce contamination.</td>
</tr>
<tr>
<td>How to respond to a positive lab report</td>
<td>Reported bacterial susceptibility may not correlate with clinical outcomes because sensitivities are determined for systemic (not topical) administration. Also, higher concentrations of antibiotic can be achieved with topical application. It is not possible to tell from the culture results whether the isolated organisms are causing the disease or are merely contaminants and there is also likely to be a fungal overgrowth after using antibacterial drops.</td>
</tr>
<tr>
<td>Treatment choices</td>
<td><strong>First use analgesia for pain relief and apply localised heat</strong></td>
</tr>
</tbody>
</table>
| | **First-line: ear drops / spray Acetic acid** *(EarCalm spray®)*  
2% one spray tds for 7 days.¹,²  
Or **ear drops / spray Neomycin + steroid** three drops tds for 7-14 days.¹, A, D,²  
**Oral antibiotics are rarely indicated:**  
2nd line:  
**Flucloxacillin** *(adult dose)* 250-500mg qds for 7 days¹,²  
**Ciprofloxacin** may be needed in pseudomonal infections which may occur if the patient has diabetes or is immunocompromised.³  
If **Penicillin allergic:**  
**Clarithromycin** *(adult dose)* 250mg bd for 7 days²,³ |
| Cautions | Adverse effects to consider include aminoglycoside-induced ototoxicity in people with a perforated tympanic membrane, aminoglycoside induced skin sensitization, and fungal superinfection (particularly with longer treatments). |
| Evidence | Acetic acid was as effective and comparable to antibiotic/steroid for the first 7 days, but inferior after this point.¹ It is important to instruct patients to use drops for at least one week, and to continue for up to 14 days if symptoms persist. The oral antibiotics in the trials were often inactive against *P. aeruginosa* (incidence 45%) and *S. aureus* (incidence 9%).¹ Topical antibiotics such as neomycin have a broader spectrum of activity. When using topical antibiotics in the ear bacterial resistance is less of a concern as the high local concentration of the drug will generally eradicate all susceptible organisms, plus those with marginal resistance.¹ |
| References | 1. Management of Infection Guidance for Primary Care, PHE. Endorsed by RCGP & BIA, July 2017  
3. BNF 74 September 2017 |
## Ear, Nose and Throat Infections – Acute Rhinosinusitis (Patient Information Leaflet available from TARGET)

### FOR PAEDIATRIC GUIDELINES see page 83

| When to treat | Avoid antibiotics as 80% resolve in 14 days without, and they only offer marginal benefit after 7 days (NTT15). Only about 2% of cases are complicated with bacterial infection (however these can be hard to distinguish). NICE states average duration of symptoms of acute sinusitis is 2-3 weeks. A systematic review analysed the placebo arms of several randomized controlled trials (RCTs), and found that, after 7-15 days, 73% of people taking placebos experienced some improvement in their symptoms, and 30% had complete recovery. Use adequate analgesia.

**For patients with symptoms of less than 10 days**
- Do not offer an antibiotic prescription. Give advice on course of acute sinusitis (2-3 weeks), managing symptoms with self-care and seeking help if symptoms deteriorate rapidly or significantly, do not improve after 3 weeks or they become systemically unwell.

| When to investigate | Investigations are not required in primary care because nasal swabs for culture have a poor diagnostic yield and are frequently contaminated (or bacteria found are commensal). Acute sinusitis usually follows a common cold, and is defined as an increase in symptoms after 5 days, or persistence of symptoms beyond 10 days, but less than 12 weeks.

| Treatment choices | **First-line** for delayed: Penicillin[^1] 500mg qds (or 1g bd) for 5 days[^1]:

- **If penicillin allergic or intolerant:** Doxycycline[^2] 200mg stat then 100mg od for 5 days OR Clarithromycin[^1] 500mg bd for 5 days

- **Self-care:** paracetamol or ibuprofen for pain/fever[^2B+]
- Nasal decongestants or saline may help some.[^2A]

| Cautions[^3] | Admit to hospital if there is severe systemic infection (sepsis, or if a complication of sinusitis is suspected). Suspect orbital involvement if there is peri-orbital oedema, cellulitis, a displaced globe, double vision, ophthalmoplegia, or reduced visual acuity. Suspect intracranial involvement if there is a severe frontal headache, frontal swelling, symptoms or signs of meningitis, or focal neurological signs.

- Consider urgent referral to an Ear, Nose, and Throat (ENT) department if the person is suspected of having a sinonasal tumour (persistent unilateral symptoms, such as bloodstained discharge, nasal obstruction, crusting, non-tender facial pain, facial swelling, or unilateral nasal polyps).

- Consider routine referral to ENT if the person has frequent recurrent episodes of sinusitis which are troublesome (such as more than three episodes requiring antibiotics in a year). Seek specialist advice if second-line antibiotics have been ineffective.

| Evidence | S. pneumoniae susceptibility to tetracycline is falling in the UK (88.1% in 2013-14) but H. influenzae susceptibility to tetracycline is 98.7% compared with co-amoxiclav at 93%.[^5]


For patients with symptoms of around 10 days or more with no improvement[^1][^3]

- Consider high-dose nasal corticosteroid for 14 days in adults and children over 12 years (may improve symptoms but not affect length of course of illness). Caution for side effects especially in patients receiving other corticosteroids.

- Consider No or delayed antibiotic prescription (with advice as to when to use the prescription and evidence that antibiotics make little difference to symptom course length and can cause side effects) if several of: purulent nasal discharge, severe localised unilateral pain, fever, marked deterioration after initial milder phase.

- Consider an immediate antibiotic prescription[^3] only if it is not appropriate to admit the person and they are:

  - Systemically unwell, or at high risk of complications because of a pre-existing comorbidity.
  Recommend measures to relieve symptoms, such as analgesia for pain or fever, an intranasal decongestant, irrigation of the nose with normal saline solution, application of warm face packs, drinking adequate fluids, and rest.

Second line: If systemically very unwell, or more serious signs & symptoms or worsening symptoms on first choice taken for at least 2-3 days:

- **Co-amoxiclav** 625mg tds for 5 days[^1]+[^6] High risk drug for Clostridium difficile infection and should be avoided in at-risk patients.

- Alternative second choice for penicillin allergy or worsening symptoms on second choice taken for 2 to 3 days: consult local microbiologist.

Ear, Nose and Throat Infections – Oral Candidiasis

When to treat
Oral candidiasis is most commonly caused by Candida albicans, a yeast-like fungus which is part of the normal commensal flora of the human gastrointestinal tract. Colonization with Candida is usually asymptomatic, however, if mucosal barriers are disrupted or defences lowered, it can cause infections ranging from non-life-threatening superficial mucocutaneous disorders to invasive disseminated disease involving multiple organs (the latter mostly in immunocompromised). Comorbidities that increase the risk of candidal infections include diabetes mellitus, severe anaemia, and immunocompromise (chemotherapy, radiotherapy, HIV infection, and AIDS). Other risk factors include poor dental hygiene; local trauma; smoking; the use of broad-spectrum antibiotics or prolonged courses of antibiotics; or inhaled or oral corticosteroids; and malnutrition.

When to investigate
If the infection has not completely resolved following first-line treatment (below), consideration should be given to treating with oral fluconazole for a further 7 days (referral should be arranged if the infection persists after this); swabbing to identify the causative organism; seeking specialist advice. Referral for biopsy should be considered for people with chronic plaque-like candidiasis which is unresponsive to treatment, as it carries a risk of malignancy.

General Advice
Care should be taken when applying the gel to the mouth of infants and young children due to the risk of choking. Advise on good dental hygiene. If the patient is using an inhaled corticosteroid, advise the following: good inhaler technique; rinsing the mouth with water (or cleaning the teeth) after inhalation, to remove any drug particles; using a spacer device to reduce the impaction of particles in the oral cavity; and stepping down the dose of inhaled corticosteroid when appropriate.

Treatment choices

<table>
<thead>
<tr>
<th>First-line</th>
<th>Second line</th>
</tr>
</thead>
<tbody>
<tr>
<td>For immunocompetent adults and children older than 2 years of age: <strong>Miconazole</strong> oral gel 2.5mls applied qds (hold in mouth after food) for at least 7 days after lesions have healed or symptoms have cleared. Children aged 4-24 months: <strong>Miconazole</strong> oral gel 1.25mls (1/4 of measuring spoon) applied four times a day after meals. Caution, miconazole oral gel is unlicensed for use in a child aged younger than 4 months, or 5-6 months for a born pre-term. If miconazole oral gel is unsuitable or not tolerated, <strong>Nystatin</strong> suspension (unlicensed for use in neonates) 100,000 units (1ml) qds usually for 7 days, and continued for 48 hours after lesions have resolved.</td>
<td>If topical treatment is ineffective, infection is extensive or severe, or the person is significantly immunocompromised: for adults and children over 16 years of age, oral <strong>fluconazole</strong> 50mg od for 7-14 days (100mg od if HIV or immunocompromised). For children younger than 16 years of age, or if fluconazole is contraindicated, specialist advice should be sought.</td>
</tr>
</tbody>
</table>

Cautions
Miconazole can inhibit the metabolism of drugs metabolized by the CYP3A4 and CYP2C9 enzyme systems, resulting in an increase and/or prolongation of their effects, including adverse effects. Miconazole oral gel is contra-indicated with simvastatin, quetiapine, drugs known to prolong the QT interval. Use miconazole oral gel with caution or preferably avoid with coumarins (extra monitoring necessary), certain calcium channel blockers and phenytoin. For a complete list of possible drug interactions of miconazole oral gel see the electronic Medicines Compendium (eMC) Seek specialist advice before starting antifungal treatment if the patient is taking ciclosporin or oral tacrolimus, especially if these drugs are being used to suppress tissue rejection following transplantation or if the person is receiving chemotherapy. Admission to hospital should be arranged if there is widespread infection (such as oesophageal candidiasis characterized by difficulty or pain on swallowing, or retrosternal pain), or the person is systemically unwell. Oral candidiasis is rare in healthy, immunocompetent adults and older children; consider undiagnosed risk factors, including HIV.

Evidence
Topical azoles are more effective than topical nystatin.

References
3. BNF 72 September 2016
Respiratory Tract Infections
## Respiratory Tract Infections – Acute Cough, Bronchitis (Patient Information Leaflet available from TARGET)

### When to treat

Presents as cough with or without sputum, breathlessness, wheeze or general malaise. No chest signs other than wheeze and crackles. Crackles, if present, should clear with coughing; if they persist, review diagnosis.

**First line management is self-care and safety-netting.** Antibiotics offer little benefit if the patient has no co-morbidities and may cause side effects. More than 90% of acute bronchitis has no identifiable bacterial cause; a 7-day delayed antibiotic strategy may be used where this approach is felt to be safe. Patients should be advised to use the prescription if symptoms not settling or significantly worsening and should seek further medical advice if symptoms worsen significantly despite taking antibiotics. Consider immediate antibiotics if >80 yrs of age and one of: hospitalised in past year; taking oral steroids; insulin-dependent diabetic; congestive heart failure; serious neurological disorder/stroke or if or >65 years with two of the above. Consider using CRP; No antibiotics if CRP <20mg/L and symptoms for >24hr; delayed antibiotics if 20-100 mg/L; immediate antibiotics if >100mg/L.

### When to investigate

Routine follow-up is unnecessary. Re-examine if symptoms deteriorate.

### Treatment choices

**First-line:** Amoxicillin 500mg tds for 5 days OR Doxycycline 200mg stat then 100 mg od for 5 days total

**Second line:** (if Amoxicillin or Doxycycline unsuitable) Clarithromycin 500mg bd for 5 days

### General advice

Symptom resolution can take up to 3 weeks; acute cough resolves in 90% of children by 25 days. Advise paracetamol or ibuprofen as required, drink plenty of fluids and stop smoking. Cough medicines are not recommended, though unlikely to do harm. Some may find simple remedies like honey and lemon soothing. Low doses of penicillins are more likely to select out resistance. Do not use quinolones (ciprofloxacin, ofloxacin) first line (poor pneumococcal activity); reserve all quinolones (inc. levofloxacin) for proven resistant organisms.

### Evidence

A Cochrane Review of antibiotics for acute bronchitis reported no difference in designation as “clinically improved” between antibiotic and placebo groups at follow-up (11 trials; 3841 participants). Antibiotics were associated with a half-day shorter mean cough duration. A large European multicentre placebo controlled trial found that amoxicillin did not meaningfully alter important outcomes (symptom severity or duration of more severe symptoms). The development of new or worsening symptoms was significantly different between groups but the NNT was high (30) and was roughly equivalent to the number needed to harm.

### References

### Respiratory Tract Infections – Influenza

#### When to treat

Influenza is characterised by the sudden onset of fever, chills, headache, myalgia and extreme fatigue. In healthy individuals, seasonal influenza is an unpleasant but usually self-limiting disease with recovery in 2-7 days.\(^1\)

**Vaccination:** Annual vaccination (ideally between September and early November) is essential for all those at risk:\(^1,2\)

**At-risk groups** (not exhaustive; exercise clinical judgement):
- ≥ 65 years old or child aged 2-4;
- chronic heart disease (not uncomplicated hypertension);
- chronic respiratory, kidney, liver or neurological disease;
- diabetes;
- pregnant women (up to 2 weeks post-partum);
- immunocompromised individuals\(^3;\)
- those in long-stay residential / nursing homes or other long-stay care facilities;
- all healthcare and social care staff directly involved in patient care (via occupational health depts.), household contacts of immunocompromised individuals and principal carers of dependent individuals.
- Morbid obesity (BMI ≥ 40).\(^4\)

**Treatment:** For otherwise healthy adults who do not fall into the specified risk groups (see above), antivirals are not recommended unless the individual is felt to be at serious risk of complications.\(^4\) If flu is circulating in the community and a patient in an at-risk group can start treatment within 48h of onset of flu-like illness (or of close-contact exposure), oseltamivir or zanamivir is recommended.\(^4\)

Administration commencing beyond 48 hours is an off-label use.

#### When to investigate

Routine follow up in otherwise healthy patients is not necessary, but advise the person they should:
- Return if no improvement after 1 week or they are deteriorating;
- Seek urgent medical attention if they develop shortness of breath, pleuritic chest pain or haemoptysis;
- Return if they have a low threshold for seeking help if they are caring for a young child or baby with influenza, as children cannot accurately communicate their symptoms.\(^3\)

In at-risk groups, consider follow up (particularly in frail people) after 1 week to confirm improvement and to exclude complications.\(^1\)

#### Treatment choices\(^1\)

**First line:** (after CAS-alert ‘go-ahead’ from CMO):\(^4\)

- **Oseltamivir** 75 mg *bd* for 5 days.

**Severely immunocompromised patients ≥ 5yr or where oseltamivir resistance suspected:**\(^4\)

- **Zanamivir** 10 mg (2 inhalations by diskhaler) *bd* for 5 days.

**Post-exposure prophylactic regimens:** The above agents are given ONCE daily for 10 days. For detailed advice on paediatric dosing, consult product literature or latest PHE guidance.\(^4\)

#### Evidence

After immunisation, antibody levels may take up to 10 to 14 days to reach protective levels.\(^1\)

#### References

2. Management of Infection Guidance for Primary Care, PHE & BJA Reviewed Sept 2017; accessed Nov 2017  
3. NICE CKS Influenza-Seasonal  
Respiratory Tract Infections – COPD Acute Exacerbation

When to treat
Antibiotics should be used to treat exacerbations of COPD associated with a history of more purulent sputum. Patients with exacerbations without more purulent sputum do not need antibiotic therapy unless there is consolidation on a chest radiograph or clinical signs of pneumonia. Alternative treatments include bronchodilators and oral steroids (see CKS2).

When to investigate
Sending sputum samples for culture is not recommended in routine practice. Pulse oximetry is of value if there are clinical features of a severe exacerbation.

Treatment choices
Amoxicillin 500mg tds for 5 days
OR if allergic to penicillin:
Doxycycline 200mg stat then 100-200mg od for 5 days
Some hospital specialists may prescribe high-dose doxycycline 200mg bd for 2 days then 200mg od for 4 days (16 capsules).
OR Clarithromycin 500mg bd for 5 days
If the person has an increased risk of antibiotic resistance risk or known previous resistance, (comorbid disease, severe COPD, frequent exacerbations, or antibiotic use in the past 3 months), prescribe co-amoxiclav* 500/125 mg three times daily for 5 days
*High risk drug for Clostridium difficile infection and should be avoided in at-risk patients.

Cautions
Consider hospital admission if the person has any of the following:
• severe breathlessness,
• rapid onset of symptoms,
• acute confusion,
• cyanosis,
• worsening peripheral oedema, impaired consciousness
• the person is unable to cope or lives alone.
• a reduction in activities of daily living, is confined to bed, or is on long-term oxygen therapy (LTOT).
• significant comorbidity
• low oxygen saturation (less than 90%) on pulse oximetry

Evidence
A Cochrane review supports antibiotics for patients with COPD exacerbations with increased cough and sputum purulence who are moderately or severely ill. However, the authors reported that the analysis restricted to community-based studies (2 studies) did not find differences between antibiotic and placebo. A meta-analysis of 21 double-blind RCTs involving 10,698 patients, concluded that clinical cure at early follow-up was the same following a short course of antibiotic treatment (≤5 days; 77.2% cure) compared to longer treatment (>5 days; 77.4% cure) in patients with mild to moderate exacerbations of chronic bronchitis and COPD (OR 0.99; 0.90-1.08).
Resistance data from www.bsacsurv.org for UK respiratory specimens in 2015-16 indicate resistance to amoxicillin in S. pneumoniae isolates (n=262) was 0%; H. influenzae (n=277) resistance to amoxicillin was 25% and to co-amoxiclav was 5%.
Respiratory quinolones such as levofloxacin and moxifloxacin are not more effective than macrolides.

References
Respiratory Tract Infections – Community-Acquired Pneumonia (CAP)
FOR PAEDIATRIC GUIDELINES see page 88

When to treat
The diagnosis of pneumonia is based on assessment of symptoms and clinical signs, which usually include cough, fever and difficulty breathing. However these features may be absent (for example in the elderly). When a clinical diagnosis of community-acquired pneumonia is made in primary care, determine whether patients are at low, intermediate or high risk of death using the CRB65 score.1,2,3

CRB65 score is calculated by giving 1 point for each of the following prognostic features1:
• confusion (abbreviated Mental Test score 8 or less, or new disorientation in person, place or time)
• respiratory rate ≥30 breaths/minute
• BP systolic <90mmHg or diastolic ≤60 mmHg
• age ≥65 years.

Interpretation of CRB65 score:
• CRB65 score 0 = low severity (risk of death <1%); patients do not normally require hospitalisation for clinical reasons
• CRB65 score 1-2 = moderate severity (risk of death 1-10%); consider hospital referral (particularly if score 2)
• CRB65 score ≥3 or more = high severity (risk of death >10%); urgent hospital admission.*

When to investigate
Low-severity CAP: do not routinely offer microbiological tests. Moderate-severity CAP: take blood and sputum for culture.1

General practitioners should consider use of pulse oximeters allow for simple assessment of oxygenation.3 Consider a point of care C-reactive protein test if after clinical assessment a diagnosis of pneumonia has not been made and it is not clear whether antibiotics should be prescribed.1,5 If CRP<20mg/L do not routinely offer antibiotic therapy. Patients must have had symptoms for at least 24-36 hours.

Treatment choices1,2
If CRB-65 score is 0 (low severity), prescribe monotherapy1:
• Amoxicillin (first-line, if no penicillin allergy) 500 mg three times daily for 5 days,
• or doxycycline 200mg on the first day then 100mg once daily, for a total of 5 days,
• or clarithromycin 500mg twice daily for 5 days
Consider longer course if not improving as expected after 3 days.1

If the CRB-65 score is 1 or 2 (moderate severity):
• amoxicillin 500mg three times daily AND clarithromycin 500mg twice daily for 7 days,
• or doxycycline monotherapy2,3 200 mg on the first day then 100mg once daily, for 7 days; some hospital specialists may prescribe high-dose doxycycline 200mg bd for 2 days then 200mg od for 4 days (16 capsules).D

Do not routinely offer patients with low-severity CAP a fluoroquinolone or dual antibiotic therapy.1

Cautions
*Give immediate IM Benzylpenicillin 1.2g or Amoxicillin 1g po (IM Cefotaxime in non-severe penicillin allergy) if delayed admission/life threatening.3 Advise the person to seek medical advice within 3 days if symptoms do not begin to improve, or earlier if symptoms worsen as hospital admission may be needed.2 Most people can expect that by 1 week, fever should have resolved, and by 4 weeks, chest pain and sputum production should have substantially reduced.1 Doxycycline is contra-indicated in children <12 yrs (see page 79).

Evidence
Approximately 7% of patients presenting with acute cough to primary care in England have radiographic CAP.5 In a US emergency department setting, the presence of at least one respiratory complaint (cough, chest pain, SOB) AND at least one vital sign abnormality (temp >38°C; HR >100; RR>20; Sats on air <95%) had a 90% sensitivity for radiographic CAP (PPV 30%, NPV 98.6%; CAP prevalence 10%).6

References
5. van Vugt SF & GRACE consortium, 2013. Use of serum C-reactive protein and procalcitonin concentrations in addition to symptoms and signs to predict pneumonia in patients presenting to primary care with acute cough: diagnostic study. BMJ. 2013 Apr.
Central Nervous System Infections – Meningitis or Suspected Meningococcal Disease

When to treat

Transfer all patients to hospital immediately.\(^1\)
If time before admission, and non-blanching rash, give IV cefotaxime or benzylpenicillin\(^3B+\), unless allergic, i.e. history of difficulty breathing, collapse, loss of consciousness, or rash.\(^1B-\)
If a patient with suspected bacterial meningitis without non-blanching rash cannot be transferred to hospital urgently, cefotaxime or benzylpenicillin or should be given before the transfer.\(^1B\)

Treatment choices

| IV or IM Cefotaxime\(^4\) one dose | OR IV or IM Benzylpenicillin\(^4\) | If history of immediate allergic reactions to penicillin or cephalosporins\(^4\), IV
Chloramphenicol
Child: 1 month - 18 yrs: 25mg/kg IV
Adult: 25mg/kg IV |
|-----------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------|
| Child: 1 month - 11yrs: 50mg/kg (max 1g) | Neonate 50mg/kg
Child: 1 month - 1yr: 300mg
Child: 1yr - 9yrs: 600mg
Child: 10-18yrs: 1.2g
Adult: 1.2g | Give IM if vein cannot be found.\(^1\) |
| Adult: 1g | Give IM if vein cannot be found.\(^1\) |

Prevention of secondary case of meningitis.\(^5\) Only prescribe following advice from Public Health Doctor: 9am - 5pm 0344 225 3861 (PHE South-east).
Out-of-hours contact: 0844 967 0082.

Cautions

For suspected meningococcal disease (meningitis with non-blanching rash or meningococcal sepsicaemia), give parenteral antibiotics (intramuscular or intravenous benzylpenicillin or Cefotaxime) at the earliest opportunity in primary care, but do not delay urgent transfer to hospital to give the parenteral antibiotics.\(^2\)
Only withhold benzylpenicillin 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.\(^2\)

Evidence

The NICE guideline development group recommended benzylpenicillin because it is the most frequently used antibiotic in primary care and they found no evidence to recommend an alternative antibiotic.\(^2\) Cefotaxime should be the first line antibiotic in meningococcal sepsis.\(^3\)

References

4. BNF for Children April 2017 Accessed June 2017
Urinary Tract Infections – Uncomplicated UTI in Women (Patient Information Leaflet available from TARGET UTI)

**When to treat**

| Women 18-65y: offer empirical antibiotics to those with severe symptoms or ≥ 2 of burning dysuria, urine cloudiness or night frequency; 74% will be culture-positive. | 1 |
| Women 18-65y with only one of the three symptoms/signs: perform dipstick test (see below) to guide treatment decision (morning specimen most reliable). | 1 |
| Women 18-65y with none of the three symptoms/signs: consider dipstick test; 67% will be culture-negative. | 1 |
| Women >65y: asymptomatic bacteriuria is common in older patients (32% in nursing home residents). Treating does not reduce mortality or prevent symptomatic episodes, but does increase side-effects and antibiotic resistance. Consider dipstick test to exclude UTI in symptomatic patients only. | 1 |

**Dipstick testing**

- **Women 18-65y:** If all three variables (nitrites, leucocytes, blood) are negative, UTI is unlikely (76% will be culture-negative); offer symptomatic advice and consider delayed prescribing. Positive nitrite OR both positive leucocytes + positive blood, indicates probable UTI (81% will be culture-positive).
- **Women >65y:** Dipstick for symptomatic patients only. If both nitrites negative and leucocytes negative, UTI is unlikely (78% culture-negative). If both nitrites positive and leucocytes positive a positive culture is likely (78% culture-positive). If only one of nitrites or leucocytes positive, 50% will be culture-negative.

Non-pregnant women with asymptomatic bacteriuria should not receive antibiotic treatment. In women with symptoms of vaginal itch or discharge, explore alternative diagnoses and consider pelvic examination.

**When to investigate**

- Do not culture routinely for urinary symptoms in adult women <65 years. In sexually active young women, consider Chlamydia trachomatis.
- Do not send urine for culture in asymptomatic elderly with positive dipsticks; only send urine for culture if two or more signs of infection, especially dysuria, fever > 38°C or new incontinence.

Perform culture (mid-stream) if failed antibiotic treatment, persistent symptoms or patient is immunesuppressed.

**How to respond to a positive lab report**

- Single organism ≥ 10⁴ colony forming units (CFU)/mL OR ≥ 10⁶ mixed growth with one predominant organism OR E. coli or Staphylococcus saprophyticus ≥ 10⁵ CFU/mL usually indicates UTI in patient with urinary symptoms. Single E Coli may be as low as 10⁵ CFU/mL and be positive.

White cells ≥ 10⁴/mL are considered to represent inflammation. In adults ‘no white cells present’ indicates no inflammation and reduces culture significance. Epithelial cells/mixed growth indicates perineal contamination, reducing significance of culture.

**Treatment choices**

- **First line:** Nitrofurantoin™ 100mg m/r bd or 50mg m/r qds for 3 days if GFR>45ml/min
- **OR if low risk of resistance**: Trimethoprim® 200mg bd for 3 days

If first line unsuitable or GFR<45ml/min: Pivmecillinam 400mg stat THEN 200mg tds for 3 days (400mg tds for 3 days if high resistance risk or known previous resistance)

If organism susceptible: Amoxicillin 500mg tds for 3 days

If high resistance risk: Fosfomycin

**Note:** As antimicrobial resistance and Escherichia coli bacteraemia is increasing, use nitrofurantoin first line, always give safety net and self-care advice, and consider risks for resistance.

**Cautions**

- The activity of nitrofurantoin is reduced with increasing pH; avoid alkalinising agents e.g. potassium citrate.
- Avoid nitrofurantoin if eGFR<45ml/min, (risk of peripheral neuropathy; ineffective due to inadequate urine concentrations), although may be suitable in some patients with a eGFR of 30-44ml/min if a short course (3-7 days) is prescribed. Prescribe for lower UTI where the benefits outweigh the risk of side effects.

**Risk factors** for increased antibiotic resistance include: care-home resident; recurrent UTI; hospitalisation for >7 days in the last 6 months; unresolved urinary symptoms; recent travel to a country with increased resistance; previous UTI resistant to trimethoprim, cephalosporins, or quinolones.

**Evidence**

Three days of treatment with nitrofurantoin has been shown to be effective in non-pregnant adult women with uncomplicated UTI.

**References**

Urinary Tract Infections – Lower UTI in Pregnancy (Patient Information Leaflet available from TARGET UTI)

When to treat

Send MSU for culture; start antibiotics in all with significant bacteriuria, even if asymptomatic [NICE CG62].1,2A systematic review concluded that antibiotic treatment of asymptomatic bacteriuria in pregnancy reduces the risk of upper urinary tract infection, pre-term delivery and low birth weight babies.7

When to investigate

MSU should be performed routinely at the first antenatal visit.1,2 If bacteriuria is reported, it should be confirmed with a second MSU.1,2 Dipstick testing is not sufficiently sensitive to be used for screening for bacteriuria in pregnant women (too many false negatives).1,2 Given the risks of symptomatic bacteriuria in pregnancy, a urine culture should be performed seven days after completion of antibiotic treatment as a test of cure.1

How to respond to a positive lab report2

Single organism ≥ 10⁴ colony forming units (CFU)/mL or ≥ 10⁵ mixed growth with one predominant organism or E. coli or Staphylococcus saprophyticus ≥ 10³ CFU/mL usually indicates UTI in patient with urinary symptoms. In adults ‘no white cells present’ indicates no inflammation & reduces culture significance. Epithelial cells/mixed growth indicates perineal contamination, reducing significance of culture.3

Women with bacteriuria confirmed by a second urine culture should be treated and have repeat urine culture at each antenatal visit until delivery.1

How to respond to a positive lab report2

Women with bacteriuria confirmed by a second urine culture should be treated and have repeat urine culture at each antenatal visit until delivery.1

Treatment choices

First line:2,3 Treat for 7 days

- Nitrofurantoin (unless at term) 100mg m/r bd OR 50mg i/r QDS if GFR >45ml/min

Second line:1 Treat for 7 days

- Trimethoprim 200mg bd (off-label). Give folic acid (5mg daily) if first trimester.3 Avoid trimethoprim if low folate status or on folate antagonist2

Third line:

- Cefalexin* 500mg bd for 7 days8

Note: As antimicrobial resistance and Escherichia coli bacteraemia is increasing, use nitrofurantoin first line,8 always give safety net and self-care advice, and consider risks for resistance.10

Cautions

The activity of nitrofurantoin is reduced with increasing pH; avoid alkalinising agents e.g. potassium citrate (available OTC).2

Trimethoprim is a folate antagonist. Folate supplementation during the first trimester reduces the risk of neural tube defects in offspring of pregnant women treated with trimethoprim.2 In women with normal folate status, who are well nourished, trimethoprim is unlikely to cause folate deficiency.4 However, it should not be used by women with established folate deficiency or low dietary folate intake, or by women taking other folate antagonists (e.g. antiepileptic drugs or proguanil).2,3,4 Avoid nitrofurantoin if eGFR<45ml/min, (risk of peripheral neuropathy; ineffective due to inadequate urine concentrations5), although may be suitable in some patients with a eGFR of between 30-44ml/min if a short course (3-7 days) is prescribed. Prescribe for lower UTI where the benefits outweigh the risk of side effects.8

*High-risk drug for Clostridium difficile infection and should be avoided in at-risk patients, however risk in pregnancy is generally low.9

Evidence

Nitrofurantoin has been associated with haemolysis in people with G6PD deficiency. However, the risk seems very small because placental transfer is so low.2

There is only one reported case of haemolytic anaemia in a newborn whose mother was treated at term with nitrofurantoin.2 The efficacy and safety profiles of nitrofurantoin are supported in a recent large multicentre study undertaken by the World Health Organization in which 778 pregnant women with asymptomatic bacteriuria were treated with nitrofurantoin [Lumbiganon et al, 2009]. A cure rate of 86% was achieved with a 7-day course.3

References


5. BNF 73 April 2017 (Accessed June 2017)


## Urinary Tract Infections – Lower UTI in Men

### When to treat
Men <65 years: consider prostatitis and send MSU, or if symptoms mild or non-specific, use negative dipstick to exclude UTI.

Conditions like prostatitis, chlamydial infection and epididymitis should be considered in the differential diagnosis of men with acute dysuria or frequency and appropriate diagnostic tests should be considered. In elderly men (over 65 years of age), treatment of asymptomatic bacteriuria does not reduce mortality or significantly reduce symptomatic episodes. Antibiotic treatment significantly increases the risk of adverse events, such as rashes and gastrointestinal symptoms (NNTH 3).

If treatment failure: always perform culture.

### When to investigate
A urine sample is recommended because UTI in men is generally regarded as complicated (it results from an anatomic or functional abnormality).

Send pre-treatment MSU OR if symptoms mild/non-specific, use negative dipstick (both nitrite & leucocytes) to exclude UTI.

### How to respond to a positive lab report
Follow up after 48 hours (or according to the clinical situation) to check response to treatment and the urine culture results.

Obtaining a clean-catch sample of urine in men is easier than in women and a colony count of ≥10^3 cfu/ml may be sufficient to diagnose UTI in a man with signs and symptoms as long as 80% of the growth is of one organism.

### Treatment choices

<table>
<thead>
<tr>
<th>First line (if afebrile)</th>
<th>OR (if high risk of resistance, or known previous resistance):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trimethoprim 200mg bd (if low risk of resistance**)</td>
<td>Nitrofurantoin* 100mg m/r bd or 50mg i/r qds*</td>
</tr>
<tr>
<td>First line (fever &gt;38.2°C or recurrent UTI):</td>
<td>Ciprofloxacin 500mg bd</td>
</tr>
<tr>
<td>Treat for 7 days</td>
<td></td>
</tr>
</tbody>
</table>

If first line unsuitable or GFR<45ml/min:
- Pivmecillinam 400mg stat then 200mg tds for 7 days (400mg tds for 7 days if high resistance risk, or known previous resistance).
- If organism susceptible: Amoxicillin 500mg tds for 7 days.
- If high resistance risk*: Fosfomycin 3g stat then repeat on day 3 (unlicensed)

**Note:** As antimicrobial resistance and *Escherichia coli* bacteraemia is increasing, always give safety net and self-care advice, and consider risks for resistance.

### Cautions
- Avoid nitrofurantoin if eGFR<45ml/min, (risk of peripheral neuropathy; ineffective due to inadequate urine concentrations), although may be suitable in some patients with a eGFR of 30-44ml/min if a short course (max7 days) is prescribed. Prescribe for lower UTI where the benefits outweigh the risk of side effects. **Risk factors for increased resistance include: care-home resident; recurrent UTI; hospitalisation for >7 days in the last 6 months; unresolved urinary symptoms; recent travel to a country with increased resistance; previous UTI resistant to trimethoprim, cephalosporins, or quinolones.

### Evidence
No high quality evidence for the treatment of bacterial UTI in men was identified.

### References
5. BNF 73, April 2017 (Accessed June 2017)
Urinary Tract Infections – Catheter-associated UTI

When to treat

Between 2% and 7% of patients with indwelling urethral catheters acquire bacteriuria each day, even with the application of best practice for insertion and care of the catheter. All patients with a long-term indwelling catheter are bacteriuric, often with two or more organisms. Treatment of asymptomatic bacteriuria does not reduce mortality or prevent symptomatic episodes and causes harm: increased short-term frequency of symptomatic infection and re-infection with antimicrobial-resistant organisms. Catheter in situ: antibiotics will not eradicate asymptomatic bacteriuria; only treat if systematically unwell or pyelonephritis likely. Treat after urine sent for culture if new onset of delirium and 2/more symptoms (including new onset or worsening of fever, rigors, altered mental status, malaise, or lethargy with no other identified cause; flank pain; costo-vertebral angle tenderness; acute haematuria; pelvic discomfort; and in those whose catheters have been removed, dysuria, urgent or frequent urination, or supra-pubic pain or tenderness. In patients with spinal cord injury, increased spasticity, autonomic dysreflexia, or sense of unease are also compatible with catheter-associated UTI.

Consider changing the catheter to manage the UTI If an indwelling catheter has been in place for >2 weeks at the onset of UTI, and if the catheter is still indicated, replace the catheter to hasten resolution of symptoms and reduce the risk of subsequent UTI. Obtain urine specimen for culture from the freshly-placed catheter before initiating antibiotic therapy.

When to investigate

Symptomatic catheter-associated UTI (CA-UTI) cannot be differentiated from UTI asymptomatic bacteriuria on the basis of urine analysis with dipstick tests. Dipstick testing should not be used to diagnose UTI in catheterised patients. A urine specimen for culture should be obtained prior to initiating antimicrobial therapy for presumed CA-UTI because of the wide spectrum of potential infecting organisms and the increased likelihood of antimicrobial resistance. In patients with short-term catheterisation, it is recommended that specimens be obtained by sampling through the catheter port using aseptic technique or, if a port is not present, puncturing the catheter tubing with a needle and syringe. Culture specimens should not be obtained from the drainage bag.

How to respond to a positive lab report

If urine culture shows that the organism is resistant to the current antibiotic, and:
• If symptoms have not resolved, change to an antibiotic that the organism is sensitive to.
• If symptoms recur, start treat with an antibiotic shown in the culture to cover the infecting organism.

Treatment choices

**Lower UTI:** Nitrofurantoin 100mg m/r bd OR 50mg I/R qds for for 7 days OR Trimethoprim 200mg bd for 7 days if culture sensitive

**Upper UTI (fever or loin pain):** See Pyelonephritis

ONLY TREAT IF SYMPTOMATIC

Cautions

Nitrofurantoin is now contraindicated in patients with an estimated glomerular filtration rate (eGFR) of less than 45 ml/min. However, a short course (3 to 7 days) may be used with caution in certain patients with an eGFR of 30 to 44 ml/min. Treatment may need to be extended to 10-14 days in patients with a delayed response.

Evidence

When changing catheters in patients with a long-term indwelling urinary catheter; do not offer antibiotic prophylaxis routinely. Consider antibiotic prophylaxis for patients with a history of symptomatic UTI after catheter change or who experience trauma during catheterisation.

References

7. BNF 73, April 2017 (Accessed June 2017)
### When to treat

**Recurrent UTI is defined as 2 in 6 months or ≥ 3 UTIs per year.**

If cystitis is related to sexual intercourse, advise: Using a different contraceptive method if a diaphragm is being used; using a lubricant if symptoms could be due to mild trauma rather than infection. Encourage post-coital voiding.

- Continuous or postcoital antimicrobial prophylaxis should be considered only after counselling and behavioural modification has been attempted, and when non-antimicrobial measures have been unsuccessful.
- In appropriate women with recurrent uncomplicated cystitis, self-diagnosis and self-treatment with a short course ‘stand-by’ regimen of an antimicrobial agent should be considered.

### When to investigate

Seeking specialist advice before starting continuous antibiotic prophylaxis is recommended pragmatically to decide whether the woman needs investigation to exclude an underlying cause.

### How to respond to a positive lab report

Before any prophylaxis regimen is initiated, eradication of a previous UTI should be confirmed by a negative urine culture 1-2 weeks after treatment. The choice of antibiotics should be based upon the identification and susceptibility pattern of the organism that causes the UTI and the patient’s history of drug allergies.

### Treatment choices

#### Non-antibiotic treatment:
- Hydration (1.6L/day) and ibuprofen for symptom relief
- Cranberry products may reduce the recurrence rate of cystitis, and are available from shops. These products work for some women.
- Cranberry products should not be taken if warfarin is being used.
- High strength capsules (containing at least 200mg of cranberry extract) are recommended because they may be more effective than cranberry juice.
- Probiotics containing lactobacilli (oral or vaginal)

#### Second Line:

**STAND-BY** OR

For women in whom episodes of infection are associated with sexual intercourse:
- Post-coital dose to be taken within 2 hours of intercourse (off-label use)

**First line:** Nitrofurantoin 100mg m/r caps stat
**Second line:** Ciprofloxacin 500mg stat

If recent culture sensitive: Trimethoprim 100mg stat

### Long-term low dose prophylaxis for 3-6 months then review recurrence rate and need:

- Methenamine hippurate 1G bd for 6 months (consider adding in Ascorbic Acid to possibly enhance acidity of urine)

### Cautions

Monitor patients on long term nitrofurantoin for signs of pulmonary fibrosis. Avoid nitrofurantoin if eGFR<45ml/min, (risk of peripheral neuropathy, ineffective due to inadequate urine concentrations), although may be suitable in some patients with a eGFR of between 30-44ml/min if a short course (3-7 days) is prescribed. Prescribe for lower UTI where the benefits outweigh the risk of side effects.

Long term prophylaxis: A 3 to 6-month trial is recommended, as this reflects the duration of most trials of prophylactic antibiotics. Information on long-term follow up is lacking therefore benefits beyond 6-12 months are unknown. Review at 3-6 months and consider stopping.

### Evidence

Nightly prophylaxis: pooled data from 10 RCTs of poor methodological quality calculated a Relative Risk of having one microbiological recurrence was 0.21 (95% CI 0.13 to 0.34), favouring antibiotic and the NNT was 1.85 over 6-12 months. But adverse effects do occur and 30% of women did not adhere to treatment.

### References

2. CKS Urinary Tract Infection - Lower women - Recurrent cystitis. [link](https://cks.nice.org.uk/urinary-tract-infection-lower-women#scenario:2)
4. BNF 73, Apr 2017 (Accessed June 2017)
5. MHRA 2014.
Urinary Tract Infections – Acute Pyelonephritis (Upper UTI)

When to treat
Upper urinary tract infection is defined as: evidence of urinary tract infection with symptoms suggestive of pyelonephritis (loin pain, flank tenderness, fever, rigors or other manifestations of systemic inflammatory response). Upper urinary tract infection can be accompanied by bacteraemia, making it a life threatening infection.
Admit to hospital people who:
• Are significantly dehydrated or who are unable to take oral fluids and medications.
• Have signs of sepsis*, including:
  • Marked signs of illness (such as impaired level of consciousness, perfuse sweating, rigors, pallor, significantly reduced mobility), or have
  • Significant tachycardia, hypotension, or breathlessness.
• Are pregnant and pyrexial.
• Fail to improve significantly within 24 hours of starting antibiotics.
*See Sepsis guide
Consider admitting frail, elderly residents in care homes who have recently been hospitalised or who have had recurrent UTI (benefits vs risks/need for care plan).

When to investigate
Dipstick test the urine for leucocyte esterase and nitrite in non-catheterised patients 18-70y for evidence of a UTI. [Dipstick testing is less helpful in older patients or catheterised patients; who are more likely to have pre-existing asymptomatic bacteriuria].
• If the nitrite test is positive, with or without a positive leucocyte esterase test, a UTI is highly (90%) likely.
• If the leucocyte esterase test alone is positive, a UTI is moderately (50%) likely.
• If both nitrites and leucocytes are negative, 40-50% of patients will not have culture-positive UTI. Consider and exclude other causes of loin pain and/or fever including: pelvic inflammatory disease; appendicitis; renal calculi.
If admission not needed, send MSU for culture and susceptibility testing, and start antibiotics.
If no response within 24 hours, seek advice. If ESBL risk, hospitalisation or antibiotics in last 3 months, care home resident, age >65y, male gender and on advice from a microbiologist, consider IV antibiotic via OPAT.

How to respond to a positive lab report
Single organism ≥ 10^4 colony forming units (CFU)/mL or ≥ 10^5 mixed growth with one predominant organism or E. coli or Staphylococcus saprophyticus ≥ 10^3 CFU/mL usually indicates UTI in patient with urinary symptoms. Review culture and sensitivity results when they become available, and change the antibiotic if indicated. Check micro results for last 6 months and avoid antibiotics for which there has been recent resistance.

Treatment choices
First line:
• Ciprofloxacin* 500mg bd for 7 days OR *Co-amoxiclav C 625mg tds for 14 days
If organism sensitive: Trimethoprim 200mg bd for 14 days

Cautions
*High-risk drugs for Clostridium difficile infection but benefits considered to outweigh risks in acute pyelonephritis. Nitrofurantoin is an ineffective treatment for upper UTI because it does not achieve effective concentrations in the blood.

Evidence
A systematic review and meta-analysis of eight randomised controlled trials and 2,515 patients, which found that a shorter seven-day course of quinolones or beta-lactam antibiotics was as clinically effective as a 14-day course (RR 0.63; 95% CI 0.33 to 1.18; I^2=41%). There was, however, no direct comparison of seven versus 14 days of trimethoprim or co-trimoxazole, so 14 days of treatment should be prescribed.

References
Genital Tract Conditions
## Genital Tract Conditions – Criteria for referring patients to specialist care

### Patient risk factors

Refer patients with the following risk factors for STIs to GUM/Sexual Health Services clinic or general practices with level 2 expertise in GUM/Sexual Health Services:

- **<25yrs**
- No / inconsistent condom use
- recent (<12mth) or frequent change of sexual partner
- previous STI
- symptomatic partner
- MSM

### Diseases

- Syphilis – always refer to GUM/Sexual Health Services
- Gonorrhoea – always refer to GUM/Sexual Health Services
- Genital Herpes – Treat on suspicion and refer to GUM/Sexual Health Services

### Evidence

See Health Protection Agency and British Infection Association Quick Reference Guide to Management and Laboratory Diagnosis of Abnormal Vaginal Discharge for useful flowchart.

### References

### Genital Tract Conditions – Vulvovaginal Candidiasis

#### When to treat
Symptoms suggestive of episodic vulvovaginal candidiasis include external dysuria, vulval pruritus, swelling or redness. Signs include vulval oedema, fissures, excoriation, or thick curdy discharge. The vaginal pH is usually normal (<4.5). Treatment on the basis of symptoms alone is common clinical practice but results in the over-treatment of a large number of women. There is no evidence to support the treatment of asymptomatic male sexual partners in either episodic or recurrent vulvovaginal candidiasis.

#### When to investigate
Microscopy and culture are not routinely done on women with features of typical acute uncomplicated vulvovaginal candidiasis. Microscopy and speciation of a vaginal swab to identify yeasts is recommended for: supporting the diagnosis when this is uncertain; severe vulvovaginal candidiasis; treatment failure; recurrent vulvovaginal candidiasis. Request ‘fungal speciation of non-albicans Candida species’ if there is unexplained treatment failure or recurrent infection.

#### General advice
Advise the woman to return if symptoms have not resolved within 7-14 days. Refer, or seek specialist advice, if: symptoms are not improving and treatment failure is unexplained; treatment fails again; if diagnosis is unclear. Avoid local irritants e.g. perfumed products. Routine recommendation of use of vulval moisturisers (such as Cetraben cream) as soap substitute and regular skin conditioner (permission may need to be given to the patient that this does not constitute ‘internal use’). Avoid tight fitting synthetic clothing.

#### Treatment choices
**First line non-pregnant**
- **Clotrimazole**
  - 10% Vaginal Cream (5g) stat
  - OR Clotrimazole
  - 500mg pessary stat at night
- **Miconazole**
  - 2% Cream 5g inserted high into vagina once daily for 10-14 days or twice daily for 7 days
- **Fluconazole**
  - 150mg orally stat

**Recurrent (>4 episodes per year)**
- 150mg oral fluconazole every 72 hours for three doses (induction) followed by ONE dose of 150mg every week for SIX months (maintenance)

**First line pregnant**
- Avoid oral azoles and use intravaginal treatment
- **Miconazole**
  - 2% Cream 5g inserted high into vagina once daily for 10-14 days or twice daily for 7 days

#### Cautions
There is evidence from a number of randomized controlled trials that vulval burning and vaginal discharge are more common with intravaginal imidazoles, whilst nausea, headache, and abdominal pain are more common with oral imidazoles. Clotrimazole and miconazole damage latex condoms and diaphragms and inactivate spermicidal contraceptives.

#### Evidence
No statistically significant differences were observed in clinical cure rates of antifungals administered by the oral or the intravaginal route. At short-term follow-up, 74% cure was achieved with oral treatment and 73% cure with intra-vaginal treatment (OR 0.94, 95% CI 0.75 to 1.17).

#### References
### Genital Tract Conditions – Bacterial Vaginosis

#### When to treat

Treatment is indicated for: symptomatic women (offensive fishy-smelling vaginal discharge, not associated with soreness, itching, or irritation)\(^a\); women undergoing some surgical procedures\(^a\); and some pregnant women.\(^1\)

Symptomatic pregnant women should be treated in the usual way\(^a\) and asymptomatic pregnant women may be considered for treatment.\(^1\) Routine screening and treatment of male partners is not indicated. Treating partners does not reduce relapse.\(^1,2\)

#### When to investigate

Examination and further tests may be omitted and empirical treatment for bacterial vaginosis (BV) started in women with characteristic symptoms of BV if all of the following apply:\(^2\):

- The woman is not at high risk of a sexually transmitted infection (STI).
- The woman does not have symptoms of other conditions causing vaginal discharge (e.g. itch, abdominal pain, abnormal bleeding, dyspareunia, fever).
- The woman is not pregnant, post-natal, post-miscarriage, or post-termination.
- Symptoms have not developed after a gynaecological procedure.
- Symptoms have not recurred soon after treatment for BV or persisted following treatment for BV.

If empirical treatment is not considered appropriate, or if the diagnosis is uncertain:\(^2\):

- Perform a speculum examination.
- If pH paper is available, test the pH of the vaginal fluid (pH > 4.5 is consistent with a diagnosis of BV).\(^3\)
- Take a high vaginal swab (or use a self-taken low vaginal swab) for Gram staining and to exclude other causes of vaginal discharge.

#### General advice

Advise patients to avoid vaginal douching, use of perfumed products, and use of antiseptic agents or shampoo in the bath.\(^1C\)

#### Treatment choices

**First Line:**\(^1,2,4,5\)

- **Metronidazole** 400mg oral \(bd\) for 7 days\(^a\), (preferred over 2g stat for efficacy and also in pregnancy)\(^5\)
- **OR Metronidazole** 2g stat \(^a\) (consider suspension formulation at night for better tolerability; avoid 2g dose in pregnancy)\(^5\)
- **OR Metronidazole** 0.75% vaginal gel 5g applicatorful at night for 5 days\(^a\)
- **OR Clindamycin** 2% vaginal cream, 5g applicatorful at night for 7 days\(^a\)

#### Cautions

Clindamycin cream weakens condoms – advise against use during treatment.\(^1\)

#### Evidence

All treatments have been shown to have cure rates of 70-80\%.\(^1,4,5\) A 7 day course of oral metronidazole results in fewer relapses than 2g stat at four weeks.\(^4,5\)

Topical treatment gives similar cure rates\(^4,5\) but is more expensive.

#### References

## Genital Tract Conditions – Chlamydia Trachomatis

### When to treat
In people with signs or symptoms strongly suggestive of Chlamydia, start treatment without waiting for laboratory confirmation (after testing for other sexually transmitted infections as appropriate).\(^1\) In the absence of treatment, 10-40% of infected women will develop pelvic inflammatory disease (PID).\(^2\)

### When to investigate
Test for Chlamydia if patients are sexually active with symptoms and signs suggesting Chlamydia.\(^1\) Opportunistically screen all aged 15-25yrs.\(^3\) Repeat test for cure in all at three months.\(^4\)

### How to respond to a positive lab result
Treat partners and refer to GUM service.\(^4\)B+
Positive confirmed reactive nucleic acid amplification technique (NAAT) test. Note: In high-risk populations, tests are not confirmed with culture. Beware of false positive test results in low-risk populations.\(^6\) Patients with reactive unconfirmed NAAT test results should also be offered treatment.\(^2\)

### General advice
Patients should be advised to avoid sexual intercourse (including oral sex) until they and their partner(s) have completed treatment (or wait 7 days if treated with azithromycin).\(^2\)

### Treatment choices

<table>
<thead>
<tr>
<th>First line: (non-pregnant)(^1),(^2),(^3),(^4)</th>
<th>First line: Pregnant or breastfeeding(^1),(^2),(^4),(^5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azithromycin 1g stat(^a)(^+)</td>
<td>Azithromycin 1g stat(^a) (off-label use)(^1),(^2),(^3),(^4)</td>
</tr>
<tr>
<td>OR Doxycycline 100mg bd for 7 days(^5)</td>
<td>OR Erythromycin(^++) 500mg bd for 14 days(^5)</td>
</tr>
<tr>
<td>OR Amoxicillin 500mg tds for 7 days (off-label use)</td>
<td></td>
</tr>
</tbody>
</table>

### Cautions
Refer all pregnant patients to GUM/Sexual Health Services.\(^1\),\(^2\) Pregnancy or breastfeeding: azithromycin is the most effective option.\(^4\)\(^+\) As lower cure rate in pregnancy, test for cure at least 3 weeks after end of treatment.\(^2\),\(^4\)\(^+\)

### Evidence
NAATs are more sensitive and specific (90-95%) than enzyme immunoassays (EIAs) (40-70%). Comparative studies of doxycycline and azithromycin have shown similar efficacy at 2-5 week follow-up, with >97% being Chlamydia- negative on retesting.\(^2\) However, there is evidence to suggest that with longer follow-up >10% will be positive on retesting (NAATs may remain positive for up to 5 weeks, even if treatment has been successful).\(^2\) Erythromycin and amoxicillin are less effective than doxycycline or azithromycin.\(^1\),\(^2\),\(^4\)

### References
3. SIGN 109 Management of genital Chlamydia trachomatis infection 2009
## Genital Tract Conditions – Trichomoniasis

### When to treat
Treat only laboratory confirmed diagnosis. Patients with *T. vaginalis* seen on cytology should have lab confirmation before treatment. Sexual partner(s) should be treated simultaneously. Refer to GUM/Sexual Health Services clinic. Oral treatment needed as extravaginal infection common.

### When to investigate
All symptomatic patients. Yellow, green frothy discharge. Fishy/offensive odour +/- pruritis, vaginitis, dysuria. Screening of asymptomatic patients is not recommended. Screening for co-existent sexually transmitted infections should be undertaken in both men and women.

### General advice
Patients should be advised to avoid sexual intercourse (including oral sex) until they and their partner(s) have completed treatment and follow-up.

### Treatment choices

<table>
<thead>
<tr>
<th>First line:</th>
<th>Symptomatic relief (not cure) if metronidazole declined:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metronidazole</strong>&lt;sup&gt;a+&lt;/sup&gt; 400mg <em>bd</em> for 5-7 days&lt;sup&gt;3&lt;/sup&gt;</td>
<td><strong>Clotrimazole</strong> pessary&lt;sup&gt;b+&lt;/sup&gt; 100mg each night for 6 nights</td>
</tr>
<tr>
<td><strong>OR</strong> Metronidazole 2g stat&lt;sup&gt;a+&lt;/sup&gt; (consider suspension formulation at night for better tolerability&lt;sup&gt;d&lt;/sup&gt;; avoid 2g dose in pregnancy/breastfeeding&lt;sup&gt;3&lt;/sup&gt;)</td>
<td></td>
</tr>
</tbody>
</table>

### Cautions
The single dose has the advantage of improved compliance and being cheaper; however there is some evidence to suggest that the failure rate is higher with single dose, especially if partners are not treated concurrently.

### Evidence
Treating partners does not reduce relapse.<sup>5b+</sup> Most strains of *T. vaginalis* are highly susceptible to metronidazole and related drugs (approx. 95% cure rate). There is a spontaneous cure rate in the order of 20-25%.<sup>2</sup>

### References
### Genital Tract Conditions – Pelvic Inflammatory Disease (PID)

#### When to treat

Signs include: lower abdominal tenderness which is usually bilateral; adnexal tenderness on bimanual vaginal examination; cervical motion tenderness on bimanual vaginal examination; fever (>38°C).\(^1\) Delaying treatment may increase the risk of long term sequelae such as ectopic pregnancy, infertility and pelvic pain.\(^1\) Because of this, and the lack of definitive diagnostic criteria, a low threshold for empiric treatment of PID is recommended.\(^1\)

Start treatment and refer woman & contacts to GUM service.\(^2\)

#### When to investigate

Always test for gonorrhoea and chlamydia as positive result supports PID diagnosis.\(^1,3\) However, a negative result does not exclude PID.\(^1\)

All patients should be offered a pregnancy test when required to exclude pregnancy.\(^1\) Refer woman & contacts to GUM service to screen for sexually transmitted infections.\(^2\)

#### General advice


Rest is advised for those with severe disease.\(^1\) Appropriate analgesia should be provided.\(^1\) Patients should be advised to avoid unprotected intercourse until they, and their partner(s), have completed treatment and follow-up.\(^1\)

#### Treatment choices\(^3\)

| If low risk of Gonococcal infection\(^{A+}\) | If high risk of Gonococcal infection\(^{B+}\) (partner has it, severe symptoms, sex abroad) |
| Metronidazole 400mg bd **PLUS:** Ofloxacin 400mg bd\(^{A+}\) | **PLUS:** Ceftriaxone 500mg IM **stat**\(^{c}\) (seek expert advice if history of severe penicillin allergy) |
| All for 14 days | **PLUS:** Metronidazole 400mg bd **PLUS:** Doxycycline 100mg bd. Both for 14 days |

#### Cautions

PID in pregnancy requires parenteral treatment – refer to specialist.\(^1\)

**Ceftriaxone** is supplied as a powder which needs to be reconstituted with lidocaine solution. To reconstitute, mix the contents of a 1g vial with 3.5mL of 1% lidocaine injection BP: Half (2mL) of the resulting solution provides 500mg ceftriaxone. It should be given by deep intramuscular injection.\(^4\)

**Metronidazole** is included in some regimens to improve coverage for anaerobic bacteria.\(^1\) Anaerobes are of relatively greater importance in patients with severe PID and metronidazole may be discontinued in those patients with mild or moderate PID who are unable to tolerate it.\(^1\)

#### Evidence

Use ceftriaxone regime if gonorrhoea likely as resistance to quinolones is high, 25% of gonorrhoea isolates in 2014 were resistant to ciprofloxacin.\(^3\)

#### References

Genital Tract Conditions – Acute Prostatitis

When to treat
Acute prostatitis should be suspected in a man who presents with a feverish illness of sudden onset; irritative urinary voiding symptoms or acute urinary retention; perineal or suprapubic pain; exquisitely tender prostate on rectal examination. Empirical therapy should be started immediately after urine cultures have been obtained.

When to investigate
All patients >35 years need mid-stream urine sample for dipstick testing and culture for bacteria and antibiotic sensitivity. (An STI is much more likely in men <35 years. Send first-catch urine for NAATs). Admit to hospital if the man is unable to take oral antibiotics, has acute urinary retention or is severely ill. Refer urgently if the man has a pre-existing urological condition and consider urgent referral if the man has diabetes or is immunocompromised.

How to respond to a positive lab result
Reassess after 24-48 hours:
Review the culture results and ensure that an appropriate antibiotic is being used.
If there is deterioration or failure to respond to oral therapy, urgent admission and parenteral therapy should be arranged; prostatic abscess may need to be excluded or treated.
Treatment of sexual partners is not required.

General advice
Adequate hydration should be maintained, rest encouraged and analgesics such as non-steroidal anti-inflammatory drugs if required. Most men treated appropriately for acute prostatitis will recover completely within 2 weeks (but treatment should be continued for at least a further 2 weeks). Following recovery, refer for investigation to exclude structural abnormality of the urinary tract.

Treatment choices
**First line:**
- Ciprofloxacin* 500mg bd for 28 days
- Ofloxacin* 200mg bd for 28 days

*High-risk drug for Clostridium difficile infection and should be avoided in at-risk patients.

**Second line or if allergic to quinolones:**
- Trimethoprim 200mg bd for 28 days

Cautions
Avoid quinolones in people with a history of tendon disorders related to quinolones, or a history of seizures or conditions that predispose to seizures.

Evidence
Quinolones achieve higher prostate levels than trimethoprim. UK guidelines recommend treatment for at least 4 weeks to prevent the development of chronic prostatitis.

References
<table>
<thead>
<tr>
<th>Genital Tract Conditions – Balanitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When to treat</strong></td>
</tr>
<tr>
<td><strong>When to investigate</strong></td>
</tr>
<tr>
<td><strong>How to respond to a positive lab result</strong></td>
</tr>
<tr>
<td><strong>General advice</strong></td>
</tr>
<tr>
<td><strong>Treatment choices</strong></td>
</tr>
<tr>
<td><strong>Cautions</strong></td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
</tr>
</tbody>
</table>
### Genital Tract Conditions – Epididymo-Orchitis

#### When to treat
Have a very low threshold for admitting immediately to exclude testicular torsion. Consider other causes, such as mumps orchitis (may be parotid swelling), Behçet’s syndrome (if recurrent epididymitis), tuberculosis, and amiodarone. If symptoms are severe or the man or boy is very unwell, consider admitting to hospital, particularly if he has diabetes or is immunocompromised. Ideally refer for same-day or next-day assessment by a sexual health specialist. If this is not possible: Obtain a mid-steam urine for dipstick, microscopy, and culture and test for sexually transmitted infections. Empirical therapy should be given to all patients with epididymo-orchitis before laboratory results are available.

#### When to investigate
All patients with sexually transmitted epididymo-orchitis should be screened for other sexually transmitted infections. If a urinary tract infection is confirmed, refer to a urologist to investigate for an underlying structural abnormality or urinary tract obstruction.

#### How to respond to a positive lab result
Tailor treatment according to culture and sensitivity results. If the patient was gonorrhoea positive, they should be referred to a GUM clinic. If symptoms worsen, or do not begin to improve within 3 days, return for reassessment.

#### General advice
Bed rest, scrotal elevation (such as with supportive underwear), and analgesia. If symptoms worsen, or do not begin to improve within 3 days, return for reassessment.

#### Treatment choices

<table>
<thead>
<tr>
<th>Organism related, including gonorrhoea:</th>
<th><strong>Most probably due to chlamydia or other non-gonococcal organism</strong> (no risk factors for gonorrhoea) consider:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone* 500mg stat IM (See PID monograph for reconstitution and administration) PLUS Doxycycline 100mg bd for 14 days</td>
<td>Doxycycline 100mg bd for 14 days OR Ofloxacin* 200mg bd for 14 days</td>
</tr>
<tr>
<td>No intercourse until review. Notify partner.</td>
<td>No intercourse until review. Notify partner</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All causes, but patient is allergic to tetracyclines and/or cephalosporins:</th>
<th>If due to an enteric organism (for example, <em>Escherichia coli</em>):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ofloxacin* 200mg bd for 14 days</td>
<td>Ofloxacin* 200mg bd for 14 days OR Ciprofloxacin* 500mg bd 10 days</td>
</tr>
</tbody>
</table>

#### Cautions
*High-risk drug for *Clostridium difficile* infection and should be avoided in at-risk patients. Avoid quinolones in people with a history of tendon disorders related to quinolones, or a history of seizures or conditions that predispose to seizures.

#### Evidence
Cefixime 400mg oral as a single dose may be an alternative to ceftriaxone where IM route is contraindicated or refused. Observations in Asia have raised concern over the adequacy of 400mg cefixime for the treatment of genital gonorrhea.

#### References
3. Amiodarone SPC Amiodarone 200mg Tablets – Summary of Product Characteristics (SPC) – (EMC)
### Genital Tract Conditions – Genital Herpes

#### When to treat
Oral antiviral drugs are indicated within five days of the start of the first episode, while new lesions are still forming, or if systemic symptoms persist. Self-initiated treatment should be considered for recurrent episodes, so antiviral medication can be started early in the next attack.

#### When to refer
Referral should be considered in the following circumstances:
- Women who are pregnant
- Immunocompromised people (people with HIV can treated in primary care provided that the infection is uncomplicated and not severe).
- There is no response to treatment (e.g. of lesions are still forming after 3-5 days of treatment).
- People with herpetic proctitis, severe local secondary infection, complications (such as urinary retention) and systemic herpes infection such as meningitis.

#### When to investigate
Ideally, all people with suspected genital herpes should be referred to a specialist in genito-urinary medicine (GUM) for diagnosis, treatment, screening for STIs, counselling, and follow-up. If this is not possible or acceptable, the person can be managed in primary care if the appropriate expertise is available. Take a swab from the base of a lesion (pop blister if necessary) for viral culture, or polymerase chain reaction (PCR) depending on local arrangements. Also consider screening for other STIs, the possibility of pregnancy, HIV or immunosuppression.

#### General advice
Advise saline bathing, oral analgesia, topical anaesthetic agents (lidocaine 5% ointment) especially prior to micturition. Advise abstinence from sexual intercourse (including non-penetrative and oro-genital sex) until follow-up or lesions have cleared.

#### Treatment choices
**First episode:**
- **First line:** Aciclovir oral 400mg tds for 5 days
- **Second line:** Valaciclovir 500mg bd for 5 days OR Famciclovir 250mg tds for 5 days

**Recurrent episodes:** Self-care if mild. Short immediate treatment
- **First line:** Aciclovir oral 800mg tds for 2 days
- **Second line:** Famciclovir 1g bd for 1 day

Suppressive antiviral treatment if attacks are frequent (six or more attacks per year):
- Aciclovir 400mg bd for maximum of 12 months

#### Cautions
Topical agents are less effective than oral agents, and combining oral and topical treatment is of no additional benefit over oral treatment alone.

#### Evidence
BASHH recommends five days of antiviral treatment for primary genital HSV, as there is no evidence of benefit for treatment longer than this period. There is no evidence of a difference in efficacy, tolerability, or toxicity between aciclovir, valaciclovir, or famciclovir in the management of primary genital herpes.

#### References
### Genital Tract Conditions – Bartholin’s Cyst

| When to treat | Refer to secondary care |

### Genital Tract Conditions – post TOP Endometritis

| When to treat | Refer to treating Consultant |

### Genital Tract Conditions – Gonorrhoea

| When to treat | Antibiotic resistance is now very high. Use IM ceftriaxone and oral azithromycin, refer to GUM and test of cure is essential. **Ceftriaxone** is supplied as a powder which needs to be reconstituted with lidocaine solution. To reconstitute, mix the contents of a 1g vial with 3.5mL of 1% lidocaine injection BP: Half (2mL) of the resulting solution provides 500mg ceftriaxone. It should be given by deep intramuscular injection. |
| Treatment Choices | **Ceftriaxone** 500mg **IM stat** (seek expert advice if history of severe penicillin allergy) **PLUS Azithromycin** 1g **oral stat** |
Gastro-intestinal Infections
## Gastro-intestinal Infections – Eradication of *Helicobacter pylori*

### When to treat: test and treat approach\(^1,\!^2\)

Patients 55 and older, with recent onset, unexplained & persistent (over 4-6 weeks) dyspepsia, should be referred urgently for endoscopy, to exclude cancer\(^3,\!^4\) otherwise the presence of *H. pylori* (HP) should be confirmed by Stool helicobacter antigen test (SAT) or Urea breath test (UBT) before starting eradication therapy.\(^1,\!^2\)

Test in the following situations\(^1,\!^2\):
- Patients with uncomplicated dyspepsia unresponsive to lifestyle change, antacids single course of PPI for 1 month and without alarm symptoms
- Patients with a past history of gastric ulcer (GU) or duodenal ulcer (DU) who have not previously been tested
- Patients before starting or taking NSAIDs especially if a prior history of gastro-duodenal ulcers
- Patients with unexplained iron-deficiency anaemia, idiopathic thrombocytopenic and vitamin B12 deficiency

Do not test or offer eradication for gastro-oesophageal reflux disease (GORD) or to children with functional dyspepsia.

### When to investigate

- Test eligible patients for HP (see above) using a SAT. A UBT may be available if following endoscopy.
- Do not perform SAT or UBT within at least 2 weeks of PPI or 4 weeks of antibiotics
- Patients testing negative – reassure as NPV is >95%. Treat as functional dyspepsia with low dose PPI or H2A for one month, then as required. Consider re-testing for HP\(^1\), preferably by UBT, but SAT is an alternative\(^1\). Withhold re-testing for at least 2 weeks after PPI or 4 weeks after antibiotic/bismuth\(^2\) treatment.
- If poor compliance or local high resistance rates
- Patients with complicated peptic ulcer or MALTOMA
- Patients requiring aspirin or NSAID in whom a PPI is not co-prescribed

### General advice

- Check antibiotic history – as each additional course of clarithromycin (CL), metronidazole (MZ) or quinolone increases resistance risk
- Check penicillin allergy status, confirm nature of reaction
- Stress importance of compliance to increase eradication rates

### Treatment choices

#### No penicillin allergy:

**First-line:** Triple-therapy regimen with twice daily dosing for 7 days\(^1\)

- PPI: Lansoprazole 30mg **BD OR** Omeprazole 20-40mg **BD OR** Pantoprazole 40mg **BD OR** Esomeprazole 20mg **BD OR** Rabeprazole 20mg **BD**
- PLUS 2 antibiotics (not previously used):
  - Either Amoxicillin 1g and Clarithromycin (CL) 500mg **BD** OR Amoxicillin 1g and Metronidazole (MZ) 400mg **BD**

**Penicillin-allergic:**

**First-line:** PPI twice-daily **PLUS CL** 500 mg **BD PLUS MZ 400 mg BD** for 7 days

If previous exposure to CL or ongoing symptoms after first-line

**Second-line:** PPI twice-daily **PLUS MZ 400 mg BD PLUS Levofloxacin 250 mg BD** for 10 days

#### No penicillin allergy:

**Ongoing symptoms after first line:**

- PPI **PLUS Amoxicillin PLUS** antibiotic not used first-line for 7 days

**Ongoing symptoms after first line with previous exposure to CL and MZ:**

- PPI **PLUS Amoxicillin PLUS Tetracycline** 500mg QDS **OR Levofloxacin 250mg BD for 10 days.**

**Penicillin-allergic:**

If previous exposure to levofloxacin and on-going symptoms after first-line

**Second-line:**

- PPI twice daily **PLUS bismuth subsalicylate** 525 mg QDS **PLUS Tetracycline 500 mg QDS PLUS MZ 400mg BD for 7 days**

---

*continued overleaf*
**Gastro-intestinal Infections – Eradication of *Helicobacter pylori* (continued)**

| Cautions | If diarrhoea develops, consider *Clostridium difficile* infection and review need for treatment.¹ |
| Evidence | Helicobacter test and treat strategies will benefit patients with ulcer disease. Eradication rate is about 85%.¹,⁴ |
|          | Increasing the duration of PPI-based triple therapy to 14 days, increases HP eradication rates⁴ but adverse effects and poor compliance may limit its usefulness.⁴ |

<table>
<thead>
<tr>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Test and treat for <em>Helicobacter pylori</em> in dyspepsia – Quick reference guide for primary care. PHE 2017</td>
</tr>
<tr>
<td>3. NICE Clinical Guideline no. 184: Dyspepsia and gastro-oesophageal reflux disease: investigation and management of dyspepsia, symptoms suggestive of gastro-oesophageal reflux disease or both. September 2014</td>
</tr>
<tr>
<td>4. BNF December 2016 (accessed 8 December 2016)</td>
</tr>
</tbody>
</table>
Gastro-intestinal Infections – Infectious Diarrhoea

When to treat
Definition of acute diarrhoea: 3 or more episodes a day, <14d and sample takes shape of pot.¹
Empirical treatment for patients well enough to be managed in primary care is not usually recommended because the majority of illnesses seen in the community do not have an identifiable bacterial cause.²
If Campylobacter is strongly suspected as the cause of diarrhoea (e.g. undercooked meat and abdominal pain), consider empirical treatment with clarithromycin if treating early (within 3 days).²
Urgently refer all previously healthy children with acute painful, bloody diarrhoea or confirmed E. coli O157.¹

When to investigate
Send a stool specimen for culture and sensitivity if:
• systemically unwell; blood or pus in the stool;
• it is necessary to exclude other pathologies; immunocompromised;
• diarrhoea occurs after high risk foreign travel (also request tests for ova, cysts, and parasites);
• recent antibiotics or hospitalisation (also request C. difficile);
• diarrhoea is persistent (e.g. >1 week).³ Consider Bristol stool chart types 5-7, that is not clearly attributable to an underlying cause (e.g. laxatives).⁴
If the diarrhoea has stopped, culture is rarely indicated, as recovery of the pathogen is unlikely.¹
Consider blood tests if infection and other causes of acute diarrhoea excluded and a chronic cause is suspected.³
Consult local HPU if: Suspected public health hazard; outbreaks of diarrhoea in the family or community; infected with certain organisms (e.g. E. coli O157) where there may be serious clinical sequelae to an infection.³

How to respond to a positive lab result
Most patients in whom pathogens are detected will NOT require specific treatment unless systemically unwell or treatment is advised by a microbiologist or consultant in communicable disease control.
Campylobacter: Antibiotic therapy has little effect on duration of symptoms unless given very early in illness course.
Giardia lamblia and Entamoeba histolytica should be treated according to sensitivity results.
Unless symptoms persist, Blastocystis and Dientamoeba fragilis do not usually require treatment if otherwise healthy.
Salmonella and Shigella: treat according to sensitivities, empirical prescribing not recommended as resistance rates are often high. Most patients in whom pathogens including salmonella and shigella are detected will not require specific treatment unless systemically unwell or treatment is advised by a microbiologist or consultant in communicable disease control.¹
C. difficile: See C. difficile recommendations.

General advice and treatment choices
Fluid replacement is essential.
If systemically unwell and campylobacter suspected consider Clarithromycin 250-500mg bd for 5-7 days if treated early (within 3 days).²⁵

Evidence
There are no routine methods for detecting enterotoxigenic E. coli, the commonest cause of traveller’s diarrhoea.¹ Quinolones are not recommended because there is increasing resistance in Campylobacter to quinolones.²

References
## Gastro-intestinal Infections – Diverticulitis

### When to treat

Evidence on the use of antibiotics for the treatment of uncomplicated diverticulitis is sparse, of low quality and conflicting. Generally, there is little evidence mandating the use of antibiotics in uncomplicated diverticulitis, although several guidelines recommend this. However antibiotics are still recommended, along with paracetamol and clear fluids, for managing people with mild, uncomplicated diverticulitis at home. Arrange admission for people with diverticulitis when:

- pain cannot be managed with paracetamol;
- hydration cannot be easily maintained with oral fluids;
- oral antibiotics cannot be tolerated;
- the person is frail or has a significant comorbidity that is likely to complicate their recovery (particularly if immunocompromised);
- the person has any of the following suspected complications: rectal bleeding that may require transfusion, perforation and peritonitis, intra-abdominal abscess, fistula.

### When to investigate

If symptoms persist after 48 hours despite conservative management at home admit patient to hospital.

### General advice

Review within 48 hours or sooner if symptoms deteriorate. Arrange admission if symptoms persist or deteriorate. Prescribe paracetamol for pain. Recommend clear liquids only. Gradually re-introduce solid food as symptoms improve over 2-3 days.

### Treatment choices

- **First choice:**
  - **Co-amoxiclav** * 625mg tablets **TDS** for at least 7 days (7-10 days)
- **Second choice or if allergic to co-amoxiclav:**
  - **Metronidazole** 400mg **TDS** for 7 days **PLUS**
  - **Ciprofloxacin** * 500mg **BD** for at least 7 days (7-10 days)

### Cautions

*High-risk for *C. difficile infection*.*

### Evidence

Avoid non-steroidal anti-inflammatory drugs (NSAIDs) and opioid analgesics such as co-codamol, which have been identified as risk factors for diverticular perforation. Evidence on antibiotic treatment for uncomplicated diverticulitis suggests that antibiotics have no effects on complications, emergency surgery and recurrence. However, this evidence will need some more confirmation from future ongoing trials before clinical guidelines can be changed safely.

### References

1. **Diverticular disease March 2013 - NICE CKS** | Scenario 3 accessed August 2017
<table>
<thead>
<tr>
<th><strong>Gastro-intestinal Infections – <em>Clostridium difficile</em> Infection</strong></th>
</tr>
</thead>
</table>
| **When to treat**<sup>1</sup> | *C. difficile* infection (CDI) ranges from asymptomatic carriage to severe life-threatening illness and management is based on clinical presentation and symptoms. Patients shown to carry a toxigenic CDI strain through Nucleic Acid Amplification Test (NAAT) regardless of toxin enzyme immunoassay (EIA) result should be managed according to clinical symptoms and suspicion of CDI.  
- Asymptomatic carriage does not require treatment  
- People with mild disease may improve with cessation of precipitating antibiotics alone<sup>1</sup>; treat patients with moderate CDI  
- If the patient has features of severe or life-threatening CDI, or their condition is rapidly deteriorating, admit to hospital  
- **Mild CDI**: Typically associated with <3 episodes of loose stools/day,<sup>1B</sup> no or mild abdominal discomfort, no increased white cell count (WCC)  
- **Moderate CDI**: Typically associated with 3–5 loose stools per day,<sup>3C</sup> moderate abdominal discomfort / cramping, increased WCC but <15 x 10<sup>9</sup>/L  
- **Severe CDI**: The number of stools may be a less reliable indicator of severity,<sup>1C</sup> severe abdominal discomfort / cramping / distension, WCC >15 x 10<sup>9</sup>/L, or an acutely rising serum creatinine (>50% above baseline), or a temperature >38.5°C, or evidence of severe colitis  
**Life-threatening CDI**: Signs and symptoms include hypotension, partial or complete ileus, or toxic megacolon.<sup>1B+</sup> |
| **When to investigate**<sup>1</sup> | Consider CDI in patients with liquid/loose stool with recent exposure to antibiotics, Proton Pump Inhibitors (PPI) or recent hospitalisation<sup>2,3</sup>. Other risk factors include advanced age, history of previous CDI, exposure to other cases, underlying morbidity (abdominal surgery, cancer, chronic renal disease, tube feeding), inflammatory bowel disease.<sup>2,3</sup>  
- Specifically request CDI test for patients <65 years of age (stool samples in patients >65 years of age are routinely tested for CDI)  
- Do not re-test people with a positive CDI if they are still symptomatic within a period of 28 days  
- Do not repeat tests to confirm clearance in asymptomatic patients  
Only re-test to confirm recurrent CDI if symptoms resolve and then recur and differential diagnosis is unclear.<sup>2</sup> |
| **How to respond to a positive lab result** | CDI testing uses a screening test to detect the presence of *C. difficile* bacteria and a Toxin EIA to detect the excretion of toxin causing disease.<sup>4</sup>  
- Screening test negative (Negative Predictive Value = 98.9%) CDI very unlikely to be present<sup>4</sup>  
- Screening test positive **BUT** Toxin EIA negative – potential for carriage OR active CDI, manage according to clinical symptoms and suspicion of CDI, consider alternative cause of diarrhoea or possibility of false negative Toxin EIA<sup>1</sup>  
- Screening test positive **AND** Toxin EIA positive (Positive Predictive Value = 91.4%) – CDI highly likely and associated with poor outcome.<sup>3</sup>  
- Start treatment based on results **AND** clinical assessment of severity, check full blood count and serum creatinine  
- Discontinue precipitating antibiotic(s) wherever possible; agents with less risk of inducing CDI can be substituted if underlying infection still requires treatment  
- Manage fluid loss and symptoms as for acute gastroenteritis<sup>4</sup>, discontinue other drugs that might cause diarrhoea<sup>18+</sup>  
- Screening test positive, Toxin EIA negative, PCR positive, patient likely to be a cross-infection risk and continue enteric precautions if on-going diarrhoea. Stop unnecessary PPI’s (using a tapering regime with concomitant alginate cover for patients who have been receiving PPI’s for more than eight weeks) or step down to lower risk H<sub>2</sub> Receptor Antagonist (H2RA)<sup>5B</sup> |
| **General advice and Cautions** |  
- Review the person daily and monitor for signs of increasing severity of disease as they may deteriorate rapidly<sup>4</sup>  
- Give advice on hand hygiene with soap and water to minimize the spread of possible infection, avoid alcohol hand rubs<sup>2</sup>  
- All antibiotics increase CDI risk (OR 3.55) but Clindamycin (OR 16.80), Cephalosporins (OR 5.68), Co-Amoxiclav (OR 2.71) and Quinolones (OR 5.50) are particularly associated with increased risk of CDI<sup>8</sup>  
- Antimotility agents (such as loperamide) should be avoided in acute infection due to the risk of precipitating toxic megacolon<sup>1</sup>  
- If possible, avoid other drugs with anti-peristaltic effects (such as opioids)<sup>2</sup>  
Administration of currently available probiotics is not recommended to prevent CDI or antibiotic associated diarrhoea<sup>1</sup> |

<sup>1</sup>Gastrointestinal Infections – *Clostridium difficile* Infection  
<sup>2</sup>Continued overleaf
### Gastro-intestinal Infections – *Clostridium difficile* Infection (continued)

<table>
<thead>
<tr>
<th>Treatment choices</th>
<th>Patients with no history of CDI or an episode of CDI more than 30 days ago (excluding severe CDI):</th>
<th>Patients with a previous episode of CDI within 30 days that was treated with metronidazole (or initial severe CDI/Type 027)):</th>
<th>Patients with a previous episode of CDI within 30 days that was treated with vancomycin: <strong>Oral Vancomycin</strong> 125-500*mg QDS for 10-14 days</th>
<th>Faecal Microbiota Transplantation* (FMT): For patients with recurrent CDI that have failed to respond to antibiotics. Consult your Clinical Commissioning Group for commissioning / referral guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metronidazole 400-500mg TDS for 10-14 days*</td>
<td><strong>Oral Vancomycin</strong> 125mg QDS for 10-14 days*</td>
<td>*Higher doses can be used where there is no response to 125mg therapy to increase intraluminal concentration</td>
<td><strong>Fidaxomicin</strong>* 200mg BD for 10-14 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>then taper.</td>
<td>Tapering followed by pulsed doses of Vancomycin may be of value:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Week 1: 125mg QDS, Week 2: 125mg TDS, Week 3: 125mg BD, Week 4: 125mg OD, Week 5: 125mg alternate days, Week 6: 125mg every third day</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Recurrent or second line:</td>
<td><strong>Fidaxomicin</strong>* 200mg BD for 10-14 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>*best to follow the advice of a consultant medical microbiologist following recurrent relapse</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>FMT has a primary cure rate of 81.3% with an overall cure rate of 93.8% when an additional treatment is given to initial non-responders (compared with vancomycin therapy alone of 30.8%). Recurrence rates of CDI post FMT are 6.3% (vancomycin 53.8%).</td>
<td></td>
</tr>
</tbody>
</table>

#### Evidence
- 70% of patients respond to Metronidazole in 5 days; 92% in 14 days
- Recurrent disease occurs in about 20% of patients treated initially with either Metronidazole or Vancomycin and in 45-60% patients following a second episode of CDI. Relapses tend to occur in the first two weeks after treatment cessation.
- Vancomycin is non-inferior to Fidaxomicin for initial cure but Fidaxomicin is superior in reducing relapse
- FMT has a primary cure rate of 81.3% with an overall cure rate of 93.8% when an additional treatment is given to initial non-responders (compared with vancomycin therapy alone of 30.8%). Recurrence rates of CDI post FMT are 6.3% (vancomycin 53.8%).

#### References
1. PHE Updated guidance on the management and treatment of *Clostridium difficile* infection. May 2013
Primary care guidance: diagnosing and managing infections - GOV.UK
8. NICE [ESMPB1]. *Clostridium difficile* infection: risk with broad-spectrum antibiotics. March 2015.
10. Wessex Community CDI Pathway Oct 17 <https://tinyurl.com/yc9k4c7f>
Gastro-intestinal Infections – Travellers’ Diarrhoea (Stand-by or Prophylactic Treatment)

**When to treat**
Travellers’ diarrhoea is, for most people, a non-serious, self-limiting illness, lasting 3-4 days which will recover without antibiotic treatment. Do not routinely offer prophylactic or standby antibiotics for prevention of travellers’ diarrhoea.1

**Prophylactic antibiotics:** Consider if the patient is at high risk of diarrhoea and: is immunocompromised; at high risk of complications (e.g. Crohn’s disease, UC, colostomy, renal disease, congestive heart failure) or if diarrhoea could severely impact the purpose of a critical trip.1

**Standby antibiotics:** Only consider for high risk remote areas or for people at high risk of severe illness with travellers’ diarrhoea (unless eligible for prophylaxis).1

High-risk countries are defined as most of Asia, the Middle-East, Africa, Mexico, Central and Southern America.2

**When to investigate**
Advise travellers to seek medical care if symptoms do not improve within two days (earlier if elderly) or they have a fever or are passing blood/mucous. Seek immediate attention for children with diarrhoea if dehydration; vomiting; fever or blood.3

**General advice**
Provide advice on food hygiene and safe drinking water if the person is travelling to locations with low standards of hygiene and sanitation.1

**Treatment choices**1,2,3

<table>
<thead>
<tr>
<th>First line:</th>
<th>Prophylaxis:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advise the use of oral rehydration salt solution for the management and prevention of dehydration (particularly for children and infants).1</td>
<td>Ciprofloxacin 500mg od (on private Rx) for up to 3 weeks. If contra-indicated seek specialist advice1</td>
</tr>
<tr>
<td>Loperamide can be considered for travellers in whom frequent diarrhoea is inconvenient.2 Avoid loperamide in children and patients with inflammatory bowel disease, a fever or blood in stools.3</td>
<td>Standby: (start if symptoms moderate/severe): Ciprofloxacin 500mg bd for 3 days (on private Rx)2</td>
</tr>
<tr>
<td>OR If ciprofloxacin contra-indicated or travelling to Thailand/Far East: Azithromycin 500mg od for 3 days (on private Rx)1</td>
<td>If quinolone resistance high (e.g. south Asia): consider bismuth subsalicylate (Pepto Bismol®) 2 tablets QDS as prophylaxis1 or for 2 days treatment</td>
</tr>
</tbody>
</table>

**Evidence**
Azithromycin, bismuth salicylate, loperamide and probiotics are not recommended for prophylaxis.1 Antibiotic treatment is associated with shorter duration of diarrhoea but higher incidence of side-effects.4 The combination of loperamide and an antibiotic in moderate diarrhoea may lead to more rapid improvement compared with either agent alone.3

**References**
4. Antibiotic treatment for travellers’ diarrhoea - Cochrane Database of Systematic Reviews - de Bruyn - Wiley Online Library 2012 Accessed September 2017
Gastro-intestinal Infections – Threadworms

<table>
<thead>
<tr>
<th>When to treat¹</th>
<th>Treat if threadworms have been seen or their eggs have been detected. All members of the household should be treated at the same time even if asymptomatic (unless treatment is contraindicated).</th>
</tr>
</thead>
<tbody>
<tr>
<td>When to investigate¹</td>
<td>If the diagnosis is uncertain, the adhesive tape test for eggs may be useful – the tape should be examined under a microscope. If there are frequent recurrences consider seeking advice from a paediatrician or consultant in infectious diseases.</td>
</tr>
<tr>
<td>General advice²</td>
<td>In conjunction with treatment, advise hygiene measures for 2 weeks (hand hygiene, pants at night, morning shower including perianal area) <strong>PLUS</strong> wash sleepwear, bed linen, dust, and vacuum on day one. Child &lt;6 months add perianal wet wiping or washes three hourly.²⁰</td>
</tr>
</tbody>
</table>
| Treatment choices | **First line for adults and children aged >6 months:**²  
Mebendazole 100mg stat chewable tablet (off label if <2yrs)  
Repeat in 2 weeks if infestation persists²  
For children aged <6 months¹  
6 weeks strict hygiene (alone) to prevent faecal-oral re-infection² |
| Cautions¹ | Treatment with an anthelmintic is contraindicated in pregnancy. Mebendazole should not be used in the first trimester of pregnancy. However, it can be considered for off-label use in the second or third trimester.  
In breastfeeding, physical removal of eggs combined with hygiene methods is generally preferred. Mebendazole can be considered if drug treatment is required. This indication is off-label. |
| Evidence¹,³ | Mebendazole does not kill the eggs; therefore adequate personal and environmental hygiene is essential to prevent re-infestation from recently swallowed eggs, or eggs already in the environment.  
It is generally accepted that mebendazole has a 90-100% cure-rate³, however it has few contraindications and post-marketing surveillance has revealed no serious safety concerns.¹  
Hygiene measures, plus physical removal advice is based on expert opinion.¹ |
³. NHS Choices Threadworms. Available at [Threadworms - Treatment - NHS Choices](https://www.nhs.uk/conditions/threadworms/treatment/) |
# Gastro-intestinal Infections – Cholecystitis

## When to treat
Reassure people with asymptomatic gallbladder stones found in a normal gallbladder and normal biliary tree that they do not need treatment unless they develop symptoms.\(^1\)

Offer laparoscopic cholecystectomy to people diagnosed with symptomatic gallbladder stones.\(^1\)

## When to investigate\(^2\)
Urgently admit to hospital anyone with suspected acute cholecystitis for:

- Confirmation of the diagnosis (including abdominal ultrasound, and blood tests such as a white blood cell count, C-reactive protein, and serum amylase).
- Monitoring (for example blood pressure, pulse, and urinary output).
- Treatment (may include intravenous fluids, antibiotics, and analgesia).
- Surgical assessment for cholecystectomy

## General advice
The Royal College of Surgeons’ Commissioning guidance: gallstone disease states that if acute cholecystitis is suspected the person should be referred to hospital as an emergency.\(^2\) Urgent admission to secondary care is recommended because of the high mortality rate (up to 10% associated with acute cholangitis).\(^3\) Confirmation of the diagnosis includes abdominal ultrasound, and blood tests such as a white blood cell count, C-reactive protein, and serum amylase. There is no single test to diagnose or exclude acute cholecystitis, but diagnosis takes into account history, examination findings, and test results.\(^2\)

## References
# Skin & Soft Tissue Infections – Impetigo (Adults)

*(FOR PAEDIATRIC GUIDELINES see page 91)*

## When to treat

Although usually self-limiting, treatment is recommended for all cases, as untreated impetigo is highly contagious and there is a risk it may become generalised. Topical antibiotics should be reserved for very localised lesions and oral antibiotics used for extensive, severe or bullous impetigo.

Non-bullous impetigo (also known as impetigo contagiosa or crusted impetigo) is the most common form. Lesions begin as vesicles or pustules, which rapidly burst and evolve into gold-crusted plaques. The area around the mouth and nose is most commonly affected. Bullous impetigo, presents with flaccid, fluid-filled vesicles and blisters. These easily burst leaving raw skin, and eventually form thin, flat, brown-to-golden crusts. Tends to involve the axillae and neck folds, Lesions are usually painful, are often multiple and spread rapidly.

## When to investigate

Skin swabs are not necessary to diagnose impetigo.

Take a swab (for bacterial identification and sensitivity) if the infection is: very extensive or severe; recurrent (consider nasal swab for staphylococcal carriage); suspected as being a community outbreak; suspected as being caused by MRSA.

Advise the person to attend a follow-up appointment if there is no significant improvement after 7 days.

## How to respond to a positive lab result

Review any culture results and ensure that an appropriate antibiotic is being used.

## General advice

Advise that hygiene measures are important to aid healing and stop the infection spreading to other sites on the body and to other people.

## Treatment choices

<table>
<thead>
<tr>
<th>Small localised infections (topical antibiotics):</th>
<th>More generalized/widespread infections (oral antibiotics):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fusidic Acid 2% topically tds for 5 days</td>
<td>If MRSA isolated: Mupirocin 2% ointment topically tds to affected area(s) for 5 days</td>
</tr>
<tr>
<td></td>
<td>Flucloxacillin 500mg qds for 7 days*</td>
</tr>
<tr>
<td></td>
<td>If penicillin allergic: Clarithromycin 250-500mg bd for 7 days*</td>
</tr>
</tbody>
</table>

## Evidence

Topical antibiotics are reserved for treatment of very localised lesions because fusidic acid is an antibiotic that is also used systemically and there are concerns that widespread use will lead to increased resistance. If a topical antibiotic is used, a short course (such as 5 days) reduces exposure and the risk of resistance.

* Flucloxacillin & Clarithromycin will not cover for MRSA so either go by sensitivities or discuss with a specialist.

## References

3. BNF 72 (Accessed March 2017)
## When to treat

The main symptom is generalised itch – especially at night. Characteristic silvery lines may be seen in the skin where mites have burrowed. Erythematous papular or vesicular lesions are often associated with the burrows.1 Typical sites include the interdigital folds, wrists, elbows and around the nipples in women.2 Simultaneously (within 24 hours) treat the infected person and all members of the household, close contacts and sexual contacts even in the absence of symptoms.1 Pregnant and Breastfeeding women should also be treated with insecticide.1 Scabies persists indefinitely if not treated.1 Treat scabies that has become infected with an antibiotic.1 Scabies is rare in children under 2 months of age. Seek specialist advice (e.g. from a paediatric dermatologist) if treatment is required for this age group.1

## When to investigate

Finding the mite or its products confirms, but is not necessary for making a diagnosis of scabies.1 Review if symptoms have not cleared within 6 weeks after the first application of treatment.1 Refer institutionalised outbreaks of scabies (e.g. schools, long-stay nursing homes) to the PHE.1

## Treatment choices

<table>
<thead>
<tr>
<th>Treatment choice</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permethrin5% 5% cream.</td>
<td>Apply as described below, in two applications, 7 days apart.3 Wash off after 8-12 hours.1</td>
</tr>
<tr>
<td>If allergy: Malathion0.5% aqueous liquid.</td>
<td>Apply as described below, in two applications, 7 days apart.3 Wash off after 24 hours.1</td>
</tr>
</tbody>
</table>

Apply the treatment to the whole body including the scalp, neck, face and ears paying special attention to the areas between the fingers and toes and under the nails. If treatment is washed off during the treatment period (e.g. hand washing), it should be reapplied.1

## General advice

Itch may persist for several weeks.1 Consider symptomatic treatment for itching (e.g. crotamiton 10% cream).1 Machine wash (at 50°C or above) clothes, towels, and bed linen, on the day of application of the first treatment.1 If recurrence occurs where all contacts were treated simultaneously and treatment was applied correctly, give a course of a different insecticide.1

## Evidence

There is more evidence for the effectiveness of permethrin than malathion.1 Benzyl benzoate is regarded as too irritant, and crotamiton is ineffective compared to the recommended options.2

Crusted scabies usually only occurs in people who are immunocompromised or who have other risk factors and does not present in the same way as classic scabies.1 There are hyperkeratotic, warty crusts, which are usually on the hands and feet but all areas of the skin may be involved.1 Seek specialist advice from a consultant dermatologist for the management of anyone presenting with crusted scabies; admission may be required.1

## References

<table>
<thead>
<tr>
<th><strong>Skin &amp; Soft Tissue Infections – Eczema</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When to treat</strong></td>
</tr>
<tr>
<td><strong>General advice</strong></td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
</tr>
</tbody>
</table>
### Skin & Soft Tissue Infections – Acne vulgaris

#### When to treat

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>Predominantly consists of non-inflammatory comedones (open and closed)</td>
</tr>
<tr>
<td>Moderate</td>
<td>Consists of a mixture of non-inflammatory comedones and predominating inflammatory papules and pustules.</td>
</tr>
<tr>
<td>Severe</td>
<td>Characterized by presence of widespread nodules and cysts together with preponderance of papules and pustules. Complications include scarring, (although rare in mild acne), psychological problems and hyperpigmentation. Treatment should be started early to avoid scarring.</td>
</tr>
</tbody>
</table>

#### When to investigate

- Refer to psychiatry: people who have severe psychosocial problems, including a morbid fear of deformity
- Refer to dermatology: 1) Severe acne: urgently people with severe variant with systemic symptoms (i.e. acne fulminans), refer (soon) all other people 2) Moderate acne: features that make the diagnosis uncertain; those at risk of developing scarring despite treatment; acne that has failed to respond adequately to treatment (over a period of at least 6 months).
- Refer to endocrinology or gynaecology, women suspected of having an underlying endocrinological cause of acne.

#### General advice

Advise not to wash more than twice a day, use a mild soap or cleanser and lukewarm water, not to use vigorous scrubbing when washing acne-affected skin and not to attempt to ‘clean’ blackheads. Treatments are effective but take time to work (typically 8-12 weeks) and may irritate the skin, especially at the start of treatment.

#### Treatment choices

<table>
<thead>
<tr>
<th>Level</th>
<th>Treatment</th>
</tr>
</thead>
</table>
| Mild/moderate | Topical Retinoid OR Benzoyl Peroxide  
Second line: Azelaic Acid |
| Moderate (at risk of scarring) | Topical antibiotic PLUS  
Benzoyl Peroxide OR Topical Retinoid  
Moderate (if extensive/significant risk of scarring)/severe (awaiting referral):  
First line: (Oxy)tetracycline 500mg bd  
Second line: Lymecycline 408mg od OR  
Doxycycline 100mg od  
Alternative regimen: Erythromycin 500mg bd PLUS Topical Retinoid OR Benzoyl Peroxide |

**Treatment notes:** Oral antibiotics: follow up at 6-8 weeks: i) Good response- continue for additional 4-6 months (consider halving dose for latter half of treatment period) then stop; ii) Inadequate response – Continue for a minimum of 3 months before assuming treatment ineffective (consider referral at this stage). Continue topical treatment after stopping oral antibiotic; also consider combination of topical retinoid plus benzoyl peroxide (though may be poorly tolerated). Do not use oral antibiotic treatment alone. Do not combine topical and oral antibiotic treatments. Topical retinoids are contraindicated in pregnancy.

Consider prescribing a standard combined oral contraceptive or co-cyprindiol (Dianette) for women who require contraception.

#### Evidence

Topical antibiotics are no more effective than benzoyl peroxide and heavy reliance on them, particularly with erythromycin, has caused significant emergence of resistant strains of bacteria. Minocycline is not recommended as first-line treatment as other tetracyclines are regarded as being as effective, less expensive and with better safety profiles.

#### References

**Skin & Soft Tissue Infections – Acne Rosacea**

**When to treat**

Initial management in primary care includes lifestyle advice (such as avoidance of triggers), medication review (some drugs can aggravate acne rosacea) and assessing the impact of the condition on the person’s quality of life including management of any psychosocial complications that may be present.¹

**When to refer**

Refer to a dermatologist if there is persistent flushing and telangiectasia that does not respond to lifestyle changes.¹ Refer prominent rhinophyma to a plastic surgeon.¹ People with symptoms of keratitis (eye pain, blurred vision, sensitivity to light) should be referred urgently to an ophthalmologist.¹ Refer to an ophthalmologist if ocular symptoms are resistant to optimal treatment.¹

**General advice**

Advise daily and frequent application of high-factor sunscreen (minimum sun-protection factor 30) to the affected skin and use of a hypoallergenic moisturiser for dry skin.¹ If flushing is problematic, advise the avoidance of trigger factors (where practical) such as extremes of temperature, sunlight, strenuous exercise, stress, spicy foods, caffeine, cheese, alcohol and hot drinks.¹

British Association of Dermatologists (BAD) Patient Information Leaflet (PIL) for Acne rosacea.

**Treatment choices**

- **Mild/moderate papulopustular acne rosacea – azelaic acid 15% gel BD OR metronidazole 0.75% gel BD for 6-9 weeks¹,²**
- **Ivermectin 1% cream OD³ (specialist recommendation only) for up to 4 months (review and discontinue if no response at 12 weeks) is an alternative consideration²,³**
- **Extensive papules, pustules, or plaques – oxytetracycline 500 mg BD for a trial course of 6-12 weeks¹**
  (doxycycline 100mg OD is an off label alternative in impaired renal function, erythromycin 500mg BD is an off label alternative for pregnant or breastfeeding women or when tetracyclines are contraindicated.¹)
- **Predominant erythema – brimonidine 0.5% gel OD¹,⁴ (consider only if lifestyle changes are ineffective, telangiectasia may be accentuated as general redness is reduced). Treatment should be initiated at a low dose for at least a week and gradually increased to the maximum recommended dose of 1g/day⁵**
- **Ocular rosacea, consider eyelid hygiene measures, artificial tears or ocular lubricants (for dry eye symptoms) and If symptoms are moderate to severe oral antibiotics as above¹**

**Evidence²**

There was high quality evidence to support the effectiveness of topical azelaic acid, topical ivermectin, topical brimonidine, and oral doxycycline for rosacea. Moderate quality evidence was available for topical metronidazole and oral tetracycline.

**References**

1. NICE CKS Rosacea – acne January 2016 Rosacea - acne - NICE CKS
3. Interventions for rosacea - van Zuuren - 2015 - The Cochrane Library - Wiley Online Library
5. Mirvaso 3mg/g Gel - Summary of Product Characteristics (SPC) - (eMC)
Cellulitis presents with an acute onset of red, painful, hot, swollen, and tender skin, with possible blister or bullae formation. The leg is the most commonly affected site, presentation is usually unilateral. Often (but not always) associated with a break in the skin (portal entry).

If patient afebrile and healthy other than cellulitis, can be managed in primary care.

When to investigate

If patient febrile and ill, admit for IV treatment

Consider admission for patients with severe or rapidly deteriorating cellulitis; an uncertain diagnosis with sinister signs or symptoms (e.g. possible necrotizing fasciitis); severe systemic illness; comorbidities that may complicate or delay healing; facial* or periorbital cellulitis; lymphoedema; or for the very young, elderly or frail people.

*Mild facial cellulitis can be managed in primary care (see treatment below)

If river or sea water exposure, discuss with microbiologist

Consider taking a swab for culture and sensitivity testing if there is a visible portal of entry for bacteria (e.g. an open wound); other investigations are not usually necessary.

How to respond to a positive lab result

Alter treatment in response to culture and sensitivity results of potential pathogens.

Refer people who fail to respond to oral antibiotics or have frequent recurrence of cellulitis, for example more than two episodes at the same site.

General advice

Before treatment, draw around the extent of the infection with a permanent marker pen for future comparison. Advise patient to have an adequate fluid intake.

Elevation of the affected area speeds improvement by promoting gravity drainage of the oedema/inflammatory substances.

In patients with lymphoedema antibiotic prophylaxis should be offered to patients who have two or more attacks of cellulitis per year.

<table>
<thead>
<tr>
<th>Treatment choices</th>
<th>First Line: Flucloxacillin 500mg - 1g qds for 7 days</th>
<th>If penicillin allergic: Clarithromycin 500mg bd for 7 days</th>
<th>If penicillin allergic and taking statins: Doxycycline 200mg stat then 100mg od for 7 days</th>
</tr>
</thead>
</table>

If slow response continue antibiotics for a further 7 days.

If known MRSA carrier, or swab positive for MRSA, contact the local microbiologist (or member of the infection-control team) for advice regarding treatment (such as antibiotics and wound care). Do not routinely treat with oral or topical antibiotics, unless directed by microbiology.

Cautions

* High risk for C Difficile infection. Stop clindamycin if diarrhoea occurs. Flucloxacillin, clarithromycin and co-amoxiclav will not cover for MRSA so either treat according to sensitivities or discuss with a specialist.

Evidence

Expert consensus that people with no signs of systemic toxicity and no uncontrolled co-morbidities can usually be managed with oral antibiotics.

References

Skin & Soft Tissue Infections – Leg Ulcers

When to treat

Signs of an infected leg ulcer include enlarging ulcer with abnormal, bleeding or bridging granulation tissue, increased exudate, increased disproportionate pain, pyrexia, systemic inflammatory response syndrome, sepsis, foul odour or cellulitis, lymphangitis and lymphadenopathy. Leg ulcers are always colonised and antibiotics will only promote healing during active infection. If the patient has an active infection, start empirical antibiotics after taking a wound swab for cultures and sensitivity.

When to investigate

Ulcers should not be routinely swabbed unless there is clinical evidence of infection. Treat the patient, NOT culture results. Take a swab from all infected leg ulcers before prescribing an antibiotic. Use a swab with transport medium, to aid survival of fastidious organisms. Clean the ulcer with a sterile solution to remove debris, pus or other foreign material first, and gently pass the swab over the area in a zig zag motion ensuring it is turned in a circular motion so that the entire swab is covered. Swab from the centre to the outside of the wound ensuring any exudate is thoroughly absorbed onto the swab. Ensure that a full history is given when sending the swab to the pathology department.

How to respond to a positive lab result

Swab results determine organisms present and antimicrobial susceptibilities, they do not determine the presence of infection. Inclusion of antibiotic susceptibilities in a microbiology report does not necessarily mean an organism is significant or that it requires antibiotic treatment. Group A ß-haemolytic streptococci can be associated with significant infection and delay healing. Significance of other organisms depends on presence of the clinical criteria above. Review antibiotics after culture results. Seek local microbiology advice if colonised with MRSA. The use of topical antibiotics in the management of infected wounds should be avoided in order to minimise the risk of allergy and the emergence of bacterial resistance.

General advice

Advise patients to keep mobile, elevate legs when immobile, avoid trauma and wear appropriate footwear, use an emollient frequently even after the ulcer has healed, examine legs regularly for deterioration and wear compression bandages or stockings as advised.

Treatment choices

First line if evidence of active infection:

- **Flucloxacillin** 500mg-1g (dependant on BMI) QDS for 7 days.
  - If slow response continue for a further 7 days
- If cellulitis is persistent, **Clindamycin** 300-450mg QDS is an alternative. Stop clindamycin if diarrhoea develops

If penicillin allergic: **Clarithromycin** 500mg BD for 7 days. If slow response continue for a further 7 days

If penicillin allergic and on statin: **Doxycycline** 200mg stat then 100mg daily for 7 days.
  - If slow response continue for a further 7 days

Non-healing: antimicrobial reactive oxygen gel may reduce bacterial load. This product is not readily available.

Note: Flucloxacillin & Clarithromycin will not cover for MRSA. Discuss treatment/antibiotic choice with local microbiologist if MRSA.

Evidence

Available evidence suggests that no differences in complete wound healing were detected when silver-impregnated dressings, povidone iodine or honey-based preparations were compared with non-antimicrobial dressings for venous leg ulcers (Check with tissue viability specialist if deemed appropriate). More research study participants were healed when given cadexomer iodine compared with standard care but cadexomer iodine dressings should only be used when there is evidence of heavy bacterial load/local wound infection and these dressings should be stopped once local infection has been controlled and for no longer than 3 months continuously.

References

3. SIGN Management of Chronic Venous Leg Ulcers a national clinical guideline 120. August 2010 Available from: [http://www.sign.ac.uk/assets/sign120.pdf](http://www.sign.ac.uk/assets/sign120.pdf)
# Skin & Soft Tissue Infections – Diabetic Foot Ulcer

## When to treat
- Antibiotics should not be used for foot ulcers without signs of infection as they do not enhance healing or prevent infection.\(^1\)\(^,\)\(^2\)\(^,\)\(^3\)
- The clinical diagnosis of foot infection is based on ≥ two of the following: purulent discharge from an ulcer or signs of inflammation (i.e. erythema, pain, tenderness, warmth or induration).\(^2\) Other signs may include foul odour, non-purulent secretions, friable or discoloured granulation tissue, undermining of wound edges.\(^2\)
- Ideally refer anyone with new diabetic foot infection to a multidisciplinary foot-care team within 24 hours.\(^2\)\(^,\)\(^3\)\(^,\)\(^4\) If this is not possible and the infection is superficial and non-limb-threatening, consider taking swabs then start empirical antibiotic treatment.\(^3\)^\(^,\)\(^4\)
- Mild infections are those where the cellulitis or erythema extends > 0.5cm but ≤ 2cm around the ulcer, and infection is limited to the skin or superficial subcutaneous tissues and there are no other local complications or systemic illness.\(^2\)^\(^,\)\(^3\)^\(^,\)\(^5\)
- Moderate infections (erythema > 2cm, or involving structures deeper than skin and subcutaneous tissues e.g., abscess, fasciitis; and no systemic inflammatory response signs – SIRS) should be referred for inpatient management in the presence of complications e.g. severe peripheral arterial disease.\(^2\)^\(^,\)\(^3\)^\(^,\)\(^5\)
- If the infection is severe (> 2 SIRS criteria), refer for urgent inpatient management.\(^2\) Patients with any of the following should be referred for urgent inpatient management: pink or pale, painful, pulseless foot (indicating critical ischaemia); spreading cellulitis, lymphangitis; crepitus; lack of response of infection to oral antibiotics; suspicion of bone involvement or deep seated infection; immunocompromised patients or those with poor diabetic control.\(^2\)^\(^,\)\(^3\)

## When to investigate
Swabs should be taken from the deepest part of the cleaned wound after removal of surface contamination and exudate.\(^2\) Ensure that the person is reviewed within 48 hours.\(^5\)

## How to respond to a positive lab result
Patients should be reassessed 24 to 72 hours after initiating empiric antibiotic therapy to evaluate their response and modify the antibiotic regimen, if indicated by early culture results.\(^3\)^\(^,\)\(^4\) Clinical failure of appropriate antibiotics may be due to patient non-adherence, antibiotic resistance, superinfection, undetected abscess, osteomyelitis or severe tissue ischaemia.\(^1\)

## General advice
Care of people with foot ulcers should include re-distribution of foot pressures, investigating vascular insufficiency, optimising glycaemic control and wound management.\(^1\)^\(^,\)\(^4\)
Advising them to seek urgent medical attention if their symptoms or general condition become worse.\(^4\) Elevation of the affected area speeds improvement by promoting gravity drainage of the oedema/inflammatory substances.\(^1\)

## Treatment choices

<table>
<thead>
<tr>
<th></th>
<th>Mild infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Line</td>
<td><strong>Flucloxacillin</strong> 1000mg <strong>QDS</strong> and <strong>Metronidazole</strong> 400mg <strong>TDS</strong> for 7 days</td>
</tr>
</tbody>
</table>

- **Consider continuing antibiotics for a further 7 days depending on speed of response to treatment.**\(^3\)^\(^,\)\(^5\)

<table>
<thead>
<tr>
<th></th>
<th>Moderate infection without complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Line(^3)^(^,)(^5):</td>
<td><strong>Co-amoxiclav</strong>*: 625mg <strong>TDS</strong> for 14 days</td>
</tr>
<tr>
<td></td>
<td><strong>If penicillin allergic</strong>: <strong>Clindamycin</strong>*: 450mg <strong>QDS PLUS</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Moxifloxacin</strong>*: 400mg <strong>OD</strong> for 14 days</td>
</tr>
<tr>
<td></td>
<td>* High risk for <strong>C Difficle infection</strong></td>
</tr>
</tbody>
</table>

**If known to be infected/colonised with MRSA within the last year:** seek advice from a Microbiologist as may require inpatient management

## Evidence
Consider continuing antibiotics for a further 7 days depending on severity of infection and speed of response to treatment.\(^2\)^\(^,\)\(^3\)

## References
5. HHFT antimicrobial guidelines [http://microguide.horizonsp.co.uk/viewer/HHFT](http://microguide.horizonsp.co.uk/viewer/HHFT)
7. Cochrane Database of Systematic Reviews. Topical antimicrobial agents for treating foot ulcers in people with diabetes June 2017 Jo C Dumville, Benjamin A Lipsky, Christopher Hoey, Marco Cruzian, Marta Fiscon, Jun Xia

* Evidence Consider continuing antibiotics for a further 7 days depending on severity of infection and speed of response to treatment.\(^2\)^\(^,\)\(^3\)

Continue antibiotic therapy until the infection has resolved but not necessarily until a wound has healed.\(^2\)

Several antibiotics have been shown to be effective, but no single regimen has shown superiority.\(^1\)

### Antibiotics should not be used for foot ulcers without signs of infection as they do not enhance healing or prevent infection.\(^1\)^\(^,\)\(^2\)\(^,\)\(^3\)

### The clinical diagnosis of foot infection is based on ≥ two of the following: purulent discharge from an ulcer or signs of inflammation (i.e. erythema, pain, tenderness, warmth or induration).\(^2\) Other signs may include foul odour, non-purulent secretions, friable or discoloured granulation tissue, undermining of wound edges.\(^2\)

### Ideally refer anyone with new diabetic foot infection to a multidisciplinary foot-care team within 24 hours.\(^2\)^\(^,\)\(^3\)^\(^,\)\(^4\) If this is not possible and the infection is superficial and non-limb-threatening, consider taking swabs then start empirical antibiotic treatment.\(^3\)^\(^,\)\(^4\)

### Mild infections are those where the cellulitis or erythema extends > 0.5cm but ≤ 2cm around the ulcer, and infection is limited to the skin or superficial subcutaneous tissues and there are no other local complications or systemic illness.\(^2\)^\(^,\)\(^3\)^\(^,\)\(^5\)

### Moderate infections (erythema > 2cm, or involving structures deeper than skin and subcutaneous tissues e.g., abscess, fasciitis; and no systemic inflammatory response signs – SIRS) should be referred for inpatient management in the presence of complications e.g. severe peripheral arterial disease.\(^2\)^\(^,\)\(^3\)^\(^,\)\(^5\)

### If the infection is severe (> 2 SIRS criteria), refer for urgent inpatient management.\(^2\) Patients with any of the following should be referred for urgent inpatient management: pink or pale, painful, pulseless foot (indicating critical ischaemia); spreading cellulitis, lymphangitis; crepitus; lack of response of infection to oral antibiotics; suspicion of bone involvement or deep seated infection; immunocompromised patients or those with poor diabetic control.\(^2\)^\(^,\)\(^3\)
Skin & Soft Tissue Infections – MRSA (meticillin-resistant *Staphylococcus aureus*)

**When to treat**

For **MRSA colonisation**, prescribe suppression regimen for patients with positive cultures awaiting elective procedures.1,2

MRSA infection occurs when MRSA causes harm (for example boils, wound infections, chest and urinary infections) by entering tissues, for example through a cut or wound, and requires treatment. For patients with **active MRSA infection** that has been confirmed by laboratory tests contact a local microbiologist (or member of the infection control team) for advice regarding treatment (such as antibiotics and wound care).3,4 Do not give systemic antibiotics to patients with minor skin and soft tissue infections or small abscesses (<5 cm). Incise and drain small abscesses without cellulitis and do not give antibiotic therapy.5

Consider admitting people who are MRSA positive if they have worsening signs of infection (e.g. sepsis, worsening cellulitis, fever, or tachycardia), particularly if they are likely to require parenteral antibiotic therapy and/or surgical drainage.3

**When to investigate**

Screening for colonisation: GPs or pre-admission clinics should screen patients awaiting elective admissions to high risk units (or as defined by local policy) and patients previously identified as colonised with or infected by MRSA.1 Local or national exceptions may apply. Swabs should be taken from the nose and any skin lesions or wounds.3

**Diagnosing active infection:** Swab for pathogens including MRSA, or obtain a specimen if appropriate, if the person has an active infection and one or more of the following risk factors: elderly or debilitated people with critical or chronic illness; surgical wounds, open ulcers, intravenous lines, or catheter lines; infected pressure sore; history of MRSA colonisation or infection; recent surgery; recent hospital discharge; regular nursing home contact or a nursing home resident; recent antibiotic use (especially cephalosporins, fluoroquinolones, and macrolides); dialysis; permanent urinary catheter.3

**Panton-Valentine Leukocidin (PVL)** is a toxin produced by 20.8-46% of *S. aureus* from boils/abcesses.4 PVL strains are rare in healthy people but can cause severe invasive infections.4 Send swabs if **recurrent boils/abscesses**. At risk: recurrent skin infections, invasive infection, MSM, if there is more than one case in a home or close community (school children, military personnel, nursing home resident, household contacts).4

**How to respond to a positive lab result**

Suppression of colonisation should take place within the 5 days prior to operation.2 For active MRSA infection contact a local microbiologist for antibiotic sensitivities to guide treatment.3,4

**General Advice**

Give patient MRSA leaflets/literature. [http://mrsaactionuk.net/pdfs/MRSA_Advice.pdf](http://mrsaactionuk.net/pdfs/MRSA_Advice.pdf) MRSA to be recorded as an active problem in the patient’s medical/GP records. Ask patient to inform future healthcare providers of their MRSA diagnosis (in case antibiotics are needed).

**Treatment choices**

**SUPPRESSION:** Treat underlying skin conditions (e.g. eczema), remove and/or replace invasive devices and treat skin breaks. Suppression therapy for PVL should only be started after the primary infection has resolved as ineffective if lesions are still leaking.4 **Use both nasal and skin regimens.**

**Nasal:** Mupirocin in paraffin base- apply to anterior nostrils TDS (8 hourly) for 5 days.2 If resistant to mupirocin Naseptin nasal cream, apply to anterior nostrils QDS for 10 days (contra-indicated: if patient is allergic to peanut, soya or chlorhexidine)

**Skin:** 4% Chlorhexidine gluconate body-wash/shampoo daily for 5 days. Ensure that hair is washed twice using the same solution during the treatment period. If allergic to chlorhexidine/sensitive skin/child: Octenidine wash lotion (Octenisan®) - use once daily as whole body wash for 5 days, allow 3 minute contact time – (Unlicensed product, classed as cosmetic. Available on prescription).6

**ORAL ACTIVE TREATMENT:**3,4 or MRSA confirmed by laboratory result contact local microbiologist.

**References**

2. Hampshire Hospitals NHS Trust Microbiology - Hampshire Hospitals NHS Foundation Trust
# Skin & Soft Tissue Infections – Animal Bite

## When to treat
Prescribe prophylactic antibiotics if the wound is less than 48 hours old, and there is a high infection risk*. Antibiotics are not usually needed if the wound is more than 48 hours old and there is no sign of local or systemic infection.

*High Infection risk: bite to the hand, foot, and face; puncture wounds; all cat bites; wounds requiring surgical debridement; wounds involving joints, tendons, ligaments, or suspected fractures; wounds that have undergone primary closure; wounds to people who are at risk of serious wound infection (e.g. those who are diabetic, cirrhotic, asplenic, immunosuppressed, people with a prosthetic valve or a prosthetic joint). Refer to A&E for further assessment and management if wound closure is necessary.

Admit anyone who has severe infection or who is systemically unwell as IV antibiotics may be required.

### Assess risk of tetanus and rabies
If any risk of rabies contact the Virus Reference Department of the Health Protection Agency (HPA telephone 020 8327 6017).

## When to investigate
Where infection suspected, send a pus or deep wound swab for culture (state on form that swab is from an infected animal bite).

## When to admit
Admit anyone who has a severe infection or who is systemically unwell as intravenous antibiotics may be required.

## How to respond to a positive lab result
Alter treatment in response to culture and sensitivity results.

For bites from animals not covered in this guidance, seek microbiology advice for the most appropriate treatment.

## General advice
If the wound has just occurred, remove any foreign bodies from the wound and encourage it to bleed. Clean and irrigate the wound.

## Treatment choices
### Cat or Dog bite first line prophylaxis or treatment:
- **Co-amoxiclav**: 375-625mg tds for 7 days

### Cat or Dog bite prophylaxis or treatment if penicillin allergic:
- **Metronidazole**: 400mg tds PLUS **Doxycycline**: 100mg bd for 7 days

## Cautions
Antiseptic cleansers are not necessary, and there is some concern that they damage tissue and delay wound healing.

* High risk antibiotic for *C Difficile*. Co-Amoxiclav will not cover for MRSA.

## Evidence
Co-amoxiclav recommended first line for treatment or prophylaxis of animal bites because it is a broad-spectrum antibiotic that is effective against the most commonly isolated organisms from animal bites (including *Pasteurella*). Macrolides are not recommended for animal bites because they do not adequately cover *Pasteurella*.

## References
**Skin & Soft Tissue Infections – Human Bite**

<table>
<thead>
<tr>
<th><strong>When to treat</strong>&lt;sup&gt;1,2&lt;/sup&gt;</th>
<th>Prescribe prophylactic antibiotics for all human bite wounds less than 72 hours old, even if there is no sign of infection. Refer to A&amp;E for further assessment and management if wound closure is necessary. Admit anyone who has severe infection or who is systemically unwell as IV antibiotics may be required. <strong>Assess risk of tetanus, HIV, Hepatitis B&amp;C:</strong> Seek immediate advice from a consultant in microbiology or infectious diseases for anyone considered to be at risk of HIV, hepatitis B or C. Consider all people to be at risk unless the current status of the biter is known (rare). Consider if tetanus prophylaxis is required.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>When to investigate</strong>&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Where infection suspected, send a pus or deep wound swab for culture before cleaning the wound and starting antibiotics (state on form that swab is from an infected human bite).</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>How to respond to a positive lab result</strong></th>
<th>Alter treatment in response to culture and sensitivity results.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>General advice</strong>&lt;sup&gt;1&lt;/sup&gt;</th>
<th>If the wound has just occurred remove any foreign bodies from the wound and encourage it to bleed. Clean and irrigate the wound thoroughly with warm running water.</th>
</tr>
</thead>
</table>

| **Treatment choices**<sup>2</sup> | **Prophylaxis or treatment:**
Co-amoxiclav* 375-625mg tds for 7 days |
|---|---|

**Prophylaxis or treatment if penicillin allergic:**
Metronidazole 400mg tds **PLUS** Doxycycline 100mg bd for 7 days
**OR** Metronidazole 200-400mg tds **PLUS** Clarithromycin 250-500mg bd for 7 days

*High risk for *C difficile* infections. Co-amoxiclav will not cover for MRSA.*

<table>
<thead>
<tr>
<th><strong>Cautions</strong></th>
<th>Antiseptic cleansers are not necessary and there is some concern that they damage tissue and delay wound healing.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Evidence</strong>&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Co-amoxiclav recommended first line for treatment or prophylaxis of human bites because it is a broad-spectrum antibiotic that is effective against the most commonly isolated organisms from human bites.</th>
</tr>
</thead>
</table>

## Skin & Soft Tissue Infections – Insect bites

### When to treat\(^1,2\)
Transient and large local reactions to insect bites can occur and treatment should recommend local measures (cold compress, elevation of limb), analgesia and antihistamines. Antimicrobials should only be prescribed where there is evidence that a secondary infection has occurred e.g. increasing pain, swelling, increasing redness and pus.

If patient afebrile and healthy other than cellulitis, can be managed in primary care.\(^2\)

### When to investigate\(^1,2\)

**If patient febrile and ill, admit for IV treatment**
Consider admission for patients with severe or rapidly deteriorating cellulitis; an uncertain diagnosis with sinister signs or symptoms (e.g. possible necrotizing fasciitis); severe systemic illness; comorbidities that may complicate or delay healing; facial* or periorbital cellulitis; lymphoedema; or for the very young, elderly or frail people.

*Mild facial cellulitis can be managed in primary care (see cellulitis guideline)

**If river or sea water exposure, discuss with microbiologist**
Consider taking a swab for culture and sensitivity testing if there is a visible portal of entry for bacteria (e.g. an open wound); other investigations are not usually necessary.

Consider Lyme disease if there is history of tick bite and/or if rash suggestive of erythema chronicum migrans.

### How to respond to a positive lab result
Alter treatment in response to culture and sensitivity results of potential pathogens.

### General advice
Before treatment, draw around the extent of the infection with a permanent marker pen for future comparison.\(^1\) Advise patient to have an adequate fluid intake.\(^1\)

Elevation of the affected area speeds improvement by promoting gravity drainage of the oedema/inflammatory substances.\(^3\)

### Treatment choices (if evidence of secondary infection)\(^2\)

**First Line:**
- *Flucloxacillin* 500mg *qds* for 7 days\(^C\)

**If penicillin allergic:**
- *Clarithromycin* 500mg *bd* for 7 days

**If penicillin allergic and taking statins:**
- *Doxycycline* 200mg stat then 100mg daily for 7 days

If slow response continue antibiotics for a **further 7 days**.

### Cautions
Flucloxacillin and clarithromycin will not cover for MRSA.

### Evidence\(^2\)
Expert consensus that people with no signs of systemic toxicity and no uncontrolled co-morbidities can usually be managed with oral antibiotics.

### References
3. Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections: 2014 Update by the Infectious Diseases Society of America | Clinical Infectious Diseases | Oxford Academic
### Skin & Soft Tissue Infections – Fungal Infection – Skin

#### When to treat
Treat fungal skin infections with topical or oral antifungals depending on their severity and location (see below).\(^1\) Scalp infections: discuss with specialist especially in children (oral antifungal required).\(^2\)

#### When to investigate
Samples are not needed for uncomplicated athlete’s foot, mild infections of the groin and mild skin ringworm.\(^2\)
Take samples if oral treatment is being considered; in severe or extensive skin fungal infections; for skin infections refractory to initial treatment or when the diagnosis is uncertain.\(^2\)
Scrape skin from the advancing edge of lesion. Use a blunt scalpel blade or similar. 5mm\(^2\) of skin flakes are needed for microscopy and culture. Do not refrigerate.\(^2\)

#### How to respond to a positive lab result
Treat if positive lab cultures. Susceptibility testing of dermatophytes is not required, as antifungal resistance is unusual and there is no known correlation between antifungal susceptibilities and outcome.\(^2\)
For non-dermatophyte moulds other than Candida spp, seek the advice of a microbiologist or dermatologist.\(^2\)

#### General advice
Wash the affected skin daily and dry thoroughly afterwards, wash clothes and bed linen frequently, don’t share towels and wash them frequently, wear loose-fitting clothes made of cotton.\(^1\)

#### Treatment choices

<table>
<thead>
<tr>
<th>Dermatophyte infection: Skin or foot:</th>
<th>Candida infection: Azole cream 1% od - bd for 4-6 weeks after healing(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topical 1% Terbinafine(^{a+b}) od - bd for 7-14 days(^{a+})</td>
<td></td>
</tr>
<tr>
<td>Groin or foot:</td>
<td></td>
</tr>
<tr>
<td>Use a 1% Azole cream od - bd for 4-6 weeks</td>
<td></td>
</tr>
<tr>
<td>Alternative for foot only:</td>
<td></td>
</tr>
<tr>
<td>Topical Undecanoates (Mycota(^{a+b})bd</td>
<td></td>
</tr>
<tr>
<td>continued for 1-2 weeks after healing</td>
<td></td>
</tr>
</tbody>
</table>

If intractable, send skin scrapings before starting oral treatment:\(^3\)

<table>
<thead>
<tr>
<th>Terbinafine 250mg oral od(^4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin: 4 weeks Groin: 2-4 weeks Foot: 2-6 weeks(^4)</td>
</tr>
</tbody>
</table>

OR Itraconazole\(^{4*}\)

<table>
<thead>
<tr>
<th>Skin or groin: either 100mg oral daily for 15 days, or 200mg od for 7 days(^4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot: either 100mg oral once daily for 30 days or 200mg twice daily for 7 days(^4)</td>
</tr>
</tbody>
</table>

#### Cautions
Baseline LFTs before starting terbinafine, discontinue if symptoms of liver toxicity.
*Following reports of heart failure, caution is advised when prescribing itraconazole to patients at high risk of heart failure.\(^4\) Do not give a corticosteroid preparation alone.\(^1\) Topical ketoconazole, itraconazole and terbinafine not licensed for use in children.

#### Evidence
As terbinafine is fungicidal, one week is as effective as 4 weeks azole which is fungistatic.\(^{4a-}\)
A Cochrane review found little difference between terbinafine and azoles in standard courses at 2 weeks after baseline however at 6 weeks, treatment failure was lower with terbinafine.\(^3\)

#### References
(possibly September 2017).
### Skin & Soft Tissue Infections – Fungal Infection – Fingernail or Toenail

#### When to treat
Start therapy only if infection is confirmed by laboratory. Only 50% of nail dystrophy are fungal. 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.

#### When to investigate
Always send samples before starting lengthy treatment. Send specimens of nail clippings or scrapings for fungal microscopy and culture. False-negative rates are high (about 30%). Therefore repeat the test if the result is negative, and there is high clinical suspicion that the nail is infected.

#### How to respond to a positive lab result
For infections with dermatophytes use oral terbinafine or intraconazole. Terbinafine is more effective than azoles.

If candida or non-dermatophyte infection confirmed, use oral itraconazole.

#### General advice
Liver reactions 0.1-1% with oral antifungals. Monitor liver function and discontinue if LFTs raised or symptoms of liver toxicity. For children (under 18), seek specialist advice if oral treatment is considered necessary as fungal nail infection is rare in children, and the preferred treatments are not licensed for use in children.

#### Treatment choices

<table>
<thead>
<tr>
<th>Superficial only: Amorolfine 5% nail lacquer</th>
<th>Fingernails: 6 months</th>
<th>Toenails: 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>First line: Terbinafine 250mg oral od</td>
<td>Fingernails: 6 weeks</td>
<td>Toenails: 12 weeks</td>
</tr>
<tr>
<td>Second line: Itraconazole 200mg oral bd for 7 days each month.</td>
<td>Fingernails: 2 courses</td>
<td>Toenails: 3 courses</td>
</tr>
</tbody>
</table>

Stop treatment when continual, new, healthy, proximal nail growth.

To prevent recurrence: apply weekly 1% topical antifungal cream to entire toe area.

#### Evidence
Treatment does not always cure the infection. Cure rates range between approximately 60-80%.

The PHE Mycology Reference Laboratory recommends itraconazole for non-dermatophyte infections because although some of the infecting organisms are not particularly susceptible to this agent in vitro, it does reach high concentrations in nail tissue. It can be given as a pulse therapy regimen rather than continuous treatment.

#### References
## Skin & Soft Tissue Infections – Varicella Zoster (chicken pox), Herpes Zoster (shingles) & Cold Sores

### When to treat

**Chicken pox:** Consider treatment if started <24h of rash onset & one of the following: >14 years of age; severe pain; dense/oral rash; 2º household case, steroids, smoker or people with chronic skin disorder, severe lung or cardiovascular disease. In a review in children and adolescents, aciclovir within 24h of rash onset shortened fever by approximately one day and reduced the maximum number of lesions but did not reduce the complication rate.1

**Shingles:** Treat if >50 years old and if <72 h of rash onset or if one of the following: non-truncal involvement; active ophthalmic; Ramsey-Hunt; eczema; moderate/severe pain or rash. If is not possible to start treatment within 72 hours, antiviral treatment can be considered up to 1 week after rash onset, especially if the person is at higher risk of severe shingles or complications. Treat and/or urgently refer patients with ophthalmic involvement. Immunocompetent children: antivirals not recommended.3

**Cold sore:** Resolve after 7-10 days without treatment. Topical antivirals applied prodromally reduce duration by 12-18hrs.1

### When to test

**Chicken pox:** Laboratory tests can be used for confirmation but are rarely required in primary care.2

**Shingles:** Seek specialist advice for anyone who is thought to be immunocompetent and has had two episodes of shingles or if there is diagnostic uncertainty.3

### General advice2,3

Prescribe appropriate analgesia where necessary. Consider offering paracetamol if pain or fever associated with chicken pox is causing distress (avoid nonsteroidal anti-inflammatory drugs). Note that oral paracetamol is not licensed for use in children less than 2 months of age. Consider chlorphenamine for treating itch associated with chicken pox in patients 1 year of age or older.2

### Treatment choices

**First line chicken pox/shingles:**
- Aciclovir1B+ 800mg orally five times a day for 7 days1B+
- Cold sore: Topical Aciclovir 5% 4-hourly during waking hours for 5-10 days4

**Second line for shingles if compliance a problem (as more expensive)**
- Valaciclovir1B+ 1g orally TDS for 7 daysB+
- OR
- Famciclovir1B+ 500mg orally TDS or 750mg orally BD for 7 daysB+

### Evidence

Evidence from RCTs supports treatment for all those over 50 years to prevent the incidence of post-herpetic neuralgia. Pregnant women are at greater risk of varicella pneumonia, and there is a risk to the foetus of foetal varicella syndrome if exposure occurs during the first 28 weeks of pregnancy, and severe disease in the neonate if varicella is contracted a week before delivery.

### References

When to treat

The approach to treatment of scarlet fever is the same as that of pharyngitis; no additional treatment is warranted for the skin rash. Symptoms include:
- sore throat, headache, fever, nausea and vomiting. After 12 to 48 hours the characteristic fine red rash develops (feels like sandpaper). Typically, it first appears on the chest and stomach, rapidly spreading to other parts of the body. On more deeply-pigmented skin, the scarlet rash may be harder to spot, although the ‘sandpaper’ feel should be present
- Fever over 38.3°C (101°F) or higher is common
- White coating on the tongue, which peels a few days later, leaving the tongue looking red and swollen (known as ‘strawberry tongue’)
- Swollen glands in the neck
- Feeling tired and unwell
- Flushed red face, but pale around the mouth. The flushed face may appear more ‘sunburnt’ on darker skin
- Peeling skin on the fingertips, toes and groin area, as the rash fades.

When to admit

- Have pre-existing valvular disease
- Are significantly immunocompromised (for example with clinically-apparent HIV infection or chickenpox/ varicella).
- Have a severe complication of scarlet fever (such as acute rheumatic fever, invasive suppurative complication, toxic shock syndrome (symptoms might include confusion, vomiting or diarrhoea) or streptococcal glomerulonephritis).

General advice

Scarlet fever can occur at any age, but is most common in children age 2-8 years (see guidance page 83), most frequent in winter-spring. It is a notifiable infectious disease caused by toxin producing strains of the group A streptococcus (Streptococcus pyogenes, GAS). Scarlet fever potentially could be confused with measles (rhinorrhea, cough, conjunctivitis), parvovirus (“slapped cheek syndrome”), EBV reaction to Amoxicillin or enterovirus/adenovirus infection with rash. The primary site of infection with S. pyogenes is usually the throat, where it causes symptoms of pharyngitis. In rare circumstances, scarlet fever can also originate from other sites (for example an infected wound). Reassure the person that scarlet fever is no longer a serious condition and that symptoms usually last for 1 week.

Advise the person to: stay away from school or work for 1 day after starting antibiotic treatment, wash their hands frequently, avoid sharing eating utensils and towels, dispose of handkerchiefs promptly, and avoid contact with anyone at particular risk of infection (e.g. people with valvular disease or who are immunocompromised). Offer Ibuprofen or paracetamol for symptom relief. Encourage the person to rest and drink adequate fluids.

Advise to return for follow up if symptoms have not improved or have worsened after 7 days.

Treatment choices

First line: Phenoxymethylpenicillin for 10 days
Adult: 500mg every 6 hours, increased up to 1g every 6 hours if necessary;

Second line (if allergic to penicillin):
Erythromycin for 10 days (doses may be doubled in severe infection):
Adult: 250-500mg every 6 hours OR 0.5-1g every 12 hours;
OR Clarithromycin (doses may be doubled in severe infection) for 5 days
Adult and child over 12 years: 250mg every 12 hours.
OR Azithromycin: for 5 days
Child over 12 years and Adult: 500mg once daily

References

1. CKS NICE/Scarlet Fever October 2015 Scarlet fever - NICE CKS Accessed June 2017
3. BNF April 17
**Skin & Soft Tissue Infections – Boils, Carbuncles and Staphylococcal Carriage**

### When to treat

A **boil (or furuncle)** is an infection of the hair follicle where there is purulent extension into the subcutaneous tissue in which a small abscess forms. A **carbuncle** occurs when several adjacent boils join beneath the skin. It is an inflammatory mass that drains pus through many follicular orifices. Boils and carbuncles are mostly caused by *Staphylococcus aureus* (*S. aureus*). Sometimes rarer strains of *S. aureus*, such as methicillin-resistant *Staphylococcus aureus* (MRSA) and Panton-Valentine leukocidin (PVL-SA), can cause boils and carbuncles. Urgent same-day incision and drainage should be arranged for all fluctuant boils (unless they are small in which case they will usually drain spontaneously after application of moist heat) and all fluctuant carbuncles. Admission for intravenous antibiotics should be considered if the person is systemically unwell, has cellulitis, is immunocompromised or has an infection in an area where complications can be serious (such as the face). If the boil or carbuncle is not fluctuant and admission is not required application of moist heat 3-4 times a day helps to alleviate pain and hasten draining of the pus; the person should be advised to seek medical advice if the boil or carbuncle becomes fluctuant, or they become systemically unwell. A course of antibiotics should be prescribed if there is cellulitis, fever, a facial lesion or severe pain, a carbuncle is present or there are other comorbidities, such as diabetes or immunosuppression. Staphylococcal carriage (colonization) refers to the asymptomatic carriage of *S. aureus* on a person’s skin or mucous membranes. The most common site of colonization by *S. aureus* is the nose. Staphylococcal carriage is a risk factor for recurrent boils and carbuncles.

### When to investigate

Consider taking a swab of pus from the contents of the lesion if the boil or carbuncle is not responding to treatment or if persistent or recurrent in order to exclude atypical mycobacteria or PVL-SA. Consider taking a swab if there are multiple lesions or if the patient is immunocompromised, is known to be colonised with MRSA or has diabetes. **If PVL-SA is suspected, this should be mentioned specifically on the laboratory form.** Swabs of the nose should be taken to test for staphylococcal carriage if recurrent boils are in the facial area. If recurrent boils are more extensive, swabs should also be taken from the perineum, groin, axilla and umbilicus.

### How to respond to a positive lab result

If PVL-SA or MRSA is confirmed in lesion swab, management should be discussed with microbiology. If staphylococcal carriage is confirmed, the person should be prescribed nasal and skin decolonization. Decolonization should not be started until the acute infection has resolved. For managing close contacts (household, nursing homes, care homes) please discuss with the local Health Protection Unit.

### General advice

Self-care advice should be offered e.g. **British Association of Dermatologists – Patient Information Leaflets (PILs)**. Patient can take paracetamol or ibuprofen as required for pain relief.

### Treatment choices

- **First choice for adults and children older than 10 years**: oral flucloxacillin 500mg QDS for 7 days
- **For adults and children older than 12 year with penicillin allergy**: oral clarithromycin 500mg BD for 7 days
- **For pregnant or breast-feeding women**: oral erythromycin 500mg QDS for 7 days. Erythromycin is preferred for pregnant and breastfeeding women as there is more experience with its use than with clarithromycin and most studies do not suggest an association with erythromycin use in pregnancy and adverse effects on the foetus.

**Nasal carriage elimination**: **First choice Naseptin® cream QDS for 10 days. Patients with peanut or soya allergy: Mupirocin 2% nasal ointment TDS for 5 days. If both mupirocin and Naseptin® are ineffective or unsuitable** seek specialist advice

**Skin treatment**: Use an antiseptic preparation (such as chlorhexidine 4% body wash/shampoo or Triclosan 2%) daily as liquid soap in the bath, shower, or sink for 5 days. Use as a shampoo on the first, third and fifth day. Consider Dermol® for people with skin conditions or delicate skin.

### Evidence

This guideline is based on NICE CKS information.

### References

1. [https://cks.nice.org.uk Boils, carbuncles, and staphylococcal carriage - NICE CKS revised January 2017](https://cks.nice.org.uk)
### Skin & Soft Tissue Infections – Pilonidal Sinus

#### When to treat
Consider treatment with antibiotics if cellulitis is suspected.¹

#### When to investigate
Arrange for urgent same-day incision and drainage for most people with acute pilonidal abscess or discharging pilonidal sinus disease.²,³,⁶

The recommendation to offer referral for consideration of surgery for a person who has discharging pilonidal sinus disease is based on a number of guidelines.⁷

#### General advice
- Advise a ‘watch and wait’ approach for a person with asymptomatic pilonidal sinus disease, and reassure that treatment is not necessary.²
- Advise the person about meticulous perianal hygiene with regular baths or showers.²,⁵
- **Offer paracetamol for pain and/or fever.** If the response is insufficient, also offer a nonsteroidal anti-inflammatory drug (NSAID) such as ibuprofen or naproxen (unless not tolerated or contraindicated).⁴

#### Treatment choices⁷
- **Flucloxacillin** 500mg QDS for 7 days
- **Clarithromycin** 500mg BD for 7 days (in penicillin allergic patients)
- **Erythromycin** 500mg QDS for 7 days (in penicillin allergic patients who are pregnant or breastfeeding)

---

**PLUS Metronidazole** 400mg TDS for 7 days

---

#### Evidence²
This guideline is based on NICE CKS information.

#### References
7. [https://cks.nice.org.uk/pilonidal-sinus-disease](https://cks.nice.org.uk/pilonidal-sinus-disease)
Skin & Soft Tissue Infections – Surgical Site Infection (SSI)

<table>
<thead>
<tr>
<th>Rationale</th>
<th>People who develop an infection need to receive the treatment that is most likely to be effective in order to minimise associated morbidity. It is also important that they are not given more treatment than they need, because antibiotic therapy carries risks of adverse reactions, the development of resistant bacteria and <em>Clostridium difficile</em>-associated disease. Taking into account local resistance patterns and the results of microbiological tests will help to ensure that people receive the most appropriate treatment.¹</th>
</tr>
</thead>
</table>
| When to treat | Any SSI may cause redness, delayed healing, fever, pain, tenderness, warmth, or swelling. These are the additional signs and symptoms for specific types of SSI:  
- A superficial incisional SSI may produce purulent discharge from the wound site but may not need antibiotic treatment.  
- A deep incisional SSI may also produce pus. The wound site may reopen on its own.  
- An organ or space SSI may show a discharge of pus coming from a drain placed through the skin into a body space or organ (abscess).¹ ² |
| General advice | Not all SSIs require antibiotic treatment: minor infections may respond to drainage of pus (for example, by removal of sutures) and topical antisepsis. Antibiotic therapy carries with it the risk of adverse drug reactions and the development of resistant bacteria with the associated risk of *C. difficile* diarrhoea.² Send culture to microbiology. |
| Treatment choices | When surgical site infection is suspected (i.e. cellulitis), either de novo or because of treatment failure, give the patient an antibiotic that covers the likely causative organisms. Consider local resistance patterns and the results of microbiological tests in choosing an antibiotic.¹ |
| References | ¹. NICE clinical guideline CG 74 – Surgical site infections prevention and treatment. Updated February 2017. Surgical site infections: prevention and treatment | Guidance and guidelines | NICE  
**Skin & Soft Tissue Infections – Mastitis**

### When to treat
Prescribe an oral antibiotic for lactating women if the women has a nipple fissure that is infected, symptoms have not improved (or are worsening) after 12-24 hours despite effective milk removal and/or breast milk culture is positive. Prescribe an oral antibiotic for all women with non-lactational mastitis.\(^1\)

Advise women to continue to breastfeed (including a breast feeding specialist if required), including on the affected breast or express milk by hand/pump from the affected breast to ensure effective milk removal.\(^1\) Maintaining lactation when a woman has mastitis or breast abscess is important both for her own recovery, to prevent further complications, and for her infant's health.\(^2,3\)

Other conservative measures include reassurance that her breast should return to normal size, shape and function, simple analgesics such as paracetamol and ibuprofen for pain and discomfort and warm compresses on the breast or bathe/shower in warm water.\(^1\)

Arrange hospital admission if there are signs of sepsis, the infection is progressing rapidly, patient is haemodynamically unstable or immunocompromised or breast abscess is suspected. A referral should be made if there is an underlying mass or breast cancer suspected.\(^1\)

### When to investigate
Laboratory investigations and other diagnostic procedures are not routinely carried out for mastitis. Breast milk culture and sensitivity testing should only be considered in the following cases; • no response to antibiotic treatment within two days; • recurrent mastitis; • a hospital acquired infection; • severe and unusual cases.\(^1,3\)

### How to respond to a positive lab result
Review any culture results and ensure that an appropriate antibiotic is being used.

### General advice
Identify and manage any pre-disposing factors for mastitis including poor infant attachment to the breast, nipple damage, smoking and/or underlying breast abnormality. Give advice on hygiene measures, such as thorough and frequent hand washing, rinsing the nipple area with water before and after each feed, ensuring potentially contaminated topical nipple products are discarded and removal of nipple rings.\(^1\)

### Treatment choices

**Lactating women\(^1\):**

**First line:** If breast milk culture available, treat according to sensitivities otherwise

- **Flucloxacillin** 500mg QDS for 10-14 days
- **If allergic to penicillin:** **Erythromycin** 250mg: 500mg QDS **OR** **Clarithromycin** 500mg BD for 10-14 days

**Non-lactating women\(^1\):**

**First line:** **Co-amoxiclav** 625mg TDS for 10-14 days

**If allergic to penicillin:** **Erythromycin** 250mg: 500mg QDS **OR** **Clarithromycin** 500mg BD plus **Metronidazole** 500mg TDS for 10-14 days

**Lactating women\(^1\):**

**Second line:** If symptoms fail to settle after 48 hours of first line treatment, send sample of breast milk for microscopy, culture and sensitivities. Prescribe **Co-amoxiclav** 625mg TDS for 10-14 days and review after breast milk culture results

### Evidence
A Cochrane systematic review\(^4\) found insufficient evidence to confirm or refute the effectiveness of antibiotic therapy for the treatment of lactational mastitis however guidelines from WHO do recommend them for women with infectious lactational mastitis. Use erythromycin and clarithromycin with caution in breastfeeding as limited published evidence of safety.\(^5\)

### References
1. CKS NICE Mastitis and breast abscess August 2015. Mastitis and breast abscess - NICE CKS
### Skin & Soft Tissue Infections – Lyme Disease (Lyme borreliosis)\(^1\)

#### When to treat

Lyme disease or Lyme borreliosis (LB) is a bacterial infection spread to humans when they are bitten by a tick infected with *Borrelia burgdorferi* (Bb). The most common early symptoms in adults are flu-like symptoms of aching, fever, headaches, fatigue, sweating, joint pain, light and sound sensitivity, abnormal skin sensations. Facial palsy, headache and fever in tick season (April to October) have been shown to predict Lyme disease in children. Patients seen by a GP with an erythema migrans rash should be treated with antibiotics as Lyme disease. Patients without a rash but with symptoms suggestive of Lyme disease and a credible risk of tick exposure should have serum taken and sent to an NHS laboratory for testing. Up to a third of Lyme disease cases do NOT have a classical rash, if any at all, and absence of rash or any recollection of a tick bite does not exclude the diagnosis.

#### When to investigate

Before diagnostic tests are requested, a patient’s risk of exposure to ticks should be properly assessed and the clinical history evaluated for features compatible with LB. Tests should not be requested if there is no significant risk of a patient having LB. It is important that relevant clinical information is provided when samples are submitted for testing. The most commonly used tests look for antibodies to Bb the organism that causes LB. The antibody response takes several weeks to reach a detectable level, so antibody tests in the first few weeks of infection may be negative. It is rare for patients to have negative antibody tests in longstanding infections.

#### How to respond to a positive NHS lab result

Patients with tests that are positive should be treated if presenting symptoms are compatible with active Lyme disease. If an initial test is negative but symptoms persist it is worth sending a repeat sample 3-4 weeks after the initial test. Early treatment is important to prevent spread to other tissues and to avoid late complications.

#### General advice

GPs can obtain advice from Rare and Imported pathogens Laboratory (RIPL) staff in working hours on 01980 612348

Symptoms may persist for several weeks after treatment for Lyme disease and if gradually improving do not need treatment. If symptoms persist or get worse then the Lyme disease serology should be repeated on fresh samples. Relapses have been documented. Longstanding neuroborreliosis may be slow to respond to treatment as damaged nerve tissue is slow to heal.

Help and advice for patients is available from [www.lymediseaseaction.org.uk](http://www.lymediseaseaction.org.uk), and through the NHS Choices [www.nhs.uk](http://www.nhs.uk) and PHE ([www.gov.uk/phe](http://www.gov.uk/phe)) websites.

#### Treatment choices

**Erythema migrans +/- focal symptoms**, duration of treatment is for 21 days. Oral antibiotics recommended are:

- **First line**: *Doxycycline*\(^*\) 100mg *BD* or 200mg *OD*

  *Doxycycline use is contra-indicated for children aged under 12 years and for pregnant and breastfeeding women. The use of doxycycline for children aged 9 years and above in infections where doxycycline and azithromycin is considered first line in adult practice is accepted specialist practice. The prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See NICE guideline for full information on children under 12\(^2\).*

- **Second line**: *Amoxicillin 1g TDS OR Azithromycin 500mg od* for 17 days.

  Erythromycin is not recommended for treating any stage of LB as it has a high failure rate. Newer macrolides such as clarithromycin or azithromycin may be used if first line antibiotics are contra-indicated but patients should be carefully followed up clinically as treatment failures can occur with these agents.

  | Intravenous treatment with Ceftriaxone 2g *bd* for 21 days | (for more details see NICE Guidance ng95) |

#### Evidence

This guideline is based on PHE information.

#### References

1. Lyme disease: diagnosis and treatment - GOV.UK
2. Lyme disease NICE guideline [NG95] [https://www.nice.org.uk/guidance/ng95](https://www.nice.org.uk/guidance/ng95)
**Eye Infections – Infective Conjunctivitis**  
*(FOR PAEDIATRIC GUIDELINES see page 93)*

### When to treat

Acute infective conjunctivitis may affect one or both eyes. It usually presents with eye irritation or a vague foreign body sensation accompanied by tear production, discharge (which may stick the eyelids together upon waking) and red eye.\(^1\)

Infective conjunctivitis may be viral or bacterial – it is difficult to clinically distinguish between the two.\(^1\)

Acute infective conjunctivitis is usually self-limiting therefore a ‘wait and see’ or delayed prescribing approach is likely to be most appropriate.\(^1\) Consider starting treatment if no improvement after 3 days.\(^1\)

Consider offering a topical antibiotic if the conjunctivitis is severe (consider to be severe when the person considers the symptoms to be distressing or the signs are judged to be severe from clinical experience).\(^2\)

Clinical resolution occurs within 2-5 days in 65% of confirmed bacterial conjunctivitis cases treated with placebo.\(^1\)

### When to investigate

If any of the following symptoms are present, refer the patient for specialist same-day assessment to exclude acute glaucoma, keratitis, iritis or orbital cellulitis:

- Significant photophobia
- Reduced visual acuity
- Pain deep in the eye
- Recent eye surgery
- Absent or sluggish pupil response
- Irregular pupils
- Corneal damage or opacity on fluorescein staining
- Restricted or painful eye movements
- History of head/eye trauma

Swab the eye to identify the infective cause when infective conjunctivitis is hyper-acute or persistent. This is not usually considered useful for people with acute infective conjunctivitis.\(^2\)

Patients should be advised to seek medical advice if symptoms do not settle within 7 days, or if there is visual disturbance, significant eyelid swelling, photophobia or pain in the eye.\(^1\)

### Treatment choices

**First line:**

Chloramphenicol\(^{+}\) 0.5% drop 2-hourly for 2 days then 4-hourly (whilst awake). Add 1% ointment at night for severe infections or if slow to respond\(^0\) (incurs additional prescription charge). Continue for 48h after symptom resolution.

**Second line:**

Fusidic acid 1% gel (modified-release eye drops) \(bd\)\(^{-}\) Continue for 48h after symptom resolution.

### General advice

Self-management: Bathe eyes with tepid water, wiping away from the bridge of the nose to the side. Avoid contact lenses until symptoms have cleared. Exercise hand hygiene and avoid sharing towels or pillows.\(^1\) Public Health England (PHE) advises that it is not necessary to stay away from work or school unless the patient is feeling particularly unwell. [https://www.nhs.uk/conditions/conjunctivitis/#work-and-school](https://www.nhs.uk/conditions/conjunctivitis/#work-and-school)

### Evidence

Fusidic acid has less Gram-negative activity than chloramphenicol.\(^3\)

A double-blind placebo-controlled RCT in children showed, at day 7, 83% clinical cure with placebo compared with 86% with chloramphenicol.\(^4\) Minimum difference in duration of moderate symptoms was observed between patients given immediate and treatment delayed by 3 days.\(^5\) Delayed prescribing of antibiotics appears to reduce antibiotic use (almost 50%) with similar symptom control to immediate prescribing.\(^5\)

### References

3. Management of Infection Guidance for Primary Care, PHE & BIA, Jan 2012  
## Eye Infections – Blepharitis

### When to treat
The diagnosis of blepharitis is suggested by characteristic symptoms such as itchy, burning, and sticky eyes, the presence of associated conditions such as acne rosacea and seborrheic dermatitis and the presence of dry eye syndrome. Blepharitis is a chronic condition. Treatment can control symptoms and prevent complications, however, periodic relapses and exacerbations can occur. Success is dependent on compliance with treatment. Good eye lid hygiene is the mainstay of treatment. Investigations such as eye swabs for culture are not usually required in primary care.

### When to investigate
Referral for same-day ophthalmological assessment should be arranged if:
- The person experiences sudden onset of visual loss, or
- There are symptoms of corneal disease (such as pain or blurred vision). The eye becomes acutely painful and red.

Referral (urgency depending on clinical judgement) should be arranged if:
- There is persistent localized disease or marked eyelid asymmetry (to exclude eyelid malignancy).
- There is associated disease, such as Sjögren’s syndrome.
- Vision deteriorates. Depending on clinical judgement, the person can be referred to an appropriately trained optometrist.
- There are ongoing symptoms despite optimal treatment in primary care.
- The diagnosis is uncertain.

### Treatment choices

<table>
<thead>
<tr>
<th>First line</th>
<th>Second line</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lid hygiene for symptom control, including:</strong></td>
<td><strong>Topical antibiotics if hygiene measures are ineffective after 2 weeks.</strong></td>
</tr>
<tr>
<td>- warm compresses;</td>
<td>- Chloramphenicol 1% eye ointment BD for 6 week trial</td>
</tr>
<tr>
<td>- lid massage and scrubs;</td>
<td><strong>Consider oral antibiotics if signs of meibomian gland dysfunction or acne rosacea.</strong></td>
</tr>
<tr>
<td>- gentle washing;</td>
<td>- Oxytetracycline 500mg BD initial 4 weeks then 250mg BD maintenance for 8 weeks</td>
</tr>
<tr>
<td>- avoiding cosmetics.</td>
<td>- Doxycycline 100mg OD initial</td>
</tr>
</tbody>
</table>

### General advice
Many patients with blepharitis have evaporative and aqueous tear deficiency; artificial tears may improve symptoms when used as an adjunct to eyelid cleansing and medications. When the use of artificial tears is more than four times a day, a preservative free product should be used to avoid preservative toxicity.

### Evidence
The rationale for the use of tetracyclines is based in part on small clinical trials that report efficacy of the drugs in improving symptoms in patients with ocular rosacea and improving tear break up time in patients with rosacea and meibomian gland disease.

### References
### Dental Infections – Mucosal Ulceration and Inflammation (Simple Gingivitis)

#### When to treat

Where possible manage precipitating factors. (Oral Trauma, anxiety or stress, certain foods & stopping smoking.)  
Ask about frequency and duration of episodes and severity of any pain.  
Ask about any previously tried treatments.  
Offer symptomatic treatment for pain, discomfort, and swelling, especially when ulcers are causing problems with eating.  
If ulcers are infrequent, mild, and not interfering with daily activities (for example eating), treatment may not be needed.

#### When to refer

Referral is recommended for people with a suspected underlying cause of aphthous-like ulceration, to identify and manage any underlying disease.  
**Refer urgently anyone with:**  
- Unexplained ulceration of the oral mucosa or mass persisting for more than 3 weeks.  
- Unexplained red and white patches (including suspected lichen planus) of the mucosa which are painful, swollen, or bleeding.  
- Symptoms or signs related to the oral cavity that persist for >6 weeks if a definitive diagnosis of a benign lesion cannot be made.

**Make a non-urgent referral for anyone with:**  
- Unexplained red and white patches (including suspected lichen planus) of the mucosa that are not painful, swollen, bleeding.  
- A suspected underlying cause of aphthous-like ulceration, suggested by history, examination, or results of investigations.  
- Particularly painful and disabling aphthous ulceration or if recurrences are frequent and severe and not adequately relieved by symptomatic treatments.

#### General advice

Temporary pain and swelling relief can be attained with saline mouthwash.  
Chlorhexidine is the antimicrobial mouthwash of choice if severe pain limits oral hygiene or to prevent secondary infection.

#### Treatment choices

<table>
<thead>
<tr>
<th>Simple saline mouthwash</th>
<th>Chlorhexidine 0.2% mouthwash</th>
<th>Hydrogen peroxide mouthwash 6%</th>
</tr>
</thead>
</table>
| ½ tsp salt dissolved in glass warm water | (Do not use within 30mins of toothpaste)  
Rinse mouth with 10ml for 1 minute *bd.*  
Can be diluted 1:1 with water with no loss in efficacy.  
Discoloration of the teeth may occur | Rinse mouth for 2-3 minutes with 15ml diluted in half a glass of warm water *tds* |

**Spit out mouthwash after rinsing.**  
Use until lesions have resolved or less pain allows oral hygiene.

#### Evidence

Evidence on antimicrobial mouthwashes for the management of aphthous ulcers is poor.  
The quality of studies is poor and results are not consistent.  
The recommendations are consistent with expert opinion from medical literature (Sculy et al 2003).  
Antimicrobial mouthwashes may reduce the duration and severity (degree of pain) of an ulcer episode, and increase the number of ulcer-free days between episodes.  
However, antimicrobial mouthwashes do not seem to reduce the incidence of ulceration (number of new ulcers).

#### References

1. CKS Clinical Knowledge Summaries – Aphthous Ulcer  
2. Scottish Dental Clinical Effectiveness Programme Drug Prescribing For Dentistry May 2016  
3. BNF April 17  
[Accessed Jun 17]  
# Dental Infections – Acute Necrotising Ulcerative Gingivitis (ANG) and Pericoronitis (PC)

<table>
<thead>
<tr>
<th>When to treat and General advice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ANG:</strong> Refer urgently to a dentist. While the patient is waiting for referral to a dentist prescribe analgesia for pain relief. Commence antibiotics (see below) and chlorhexidine (0.12% or 0.2 %) or hydrogen peroxide 6 % mouthwash. Offer advice on oral hygiene and in the acute phase, suggest a soft toothbrush to clean their teeth.¹</td>
</tr>
<tr>
<td><strong>PC:</strong> Refer to dentist urgently for irrigation and debridement. Antibacterial treatment required only in presence of systemic features of infection, or of trismus or persistent swelling despite local treatment. Tooth brushing, flossing, and mouthwashes have an effect only above and slightly below the gum level. They are therefore ineffective in treating PC, as plaque continues to accumulate below the gum line within periodontal pockets. Mouthwashes are not recommended as the only therapy because they may mask the symptoms while underlying destruction of the periodontal supporting tissue continues.¹</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>**First line:**²,³ Metronidazole 400mg tds for 3 days in conjunction with dental treatment.</td>
</tr>
<tr>
<td>**Second line:**²,³ Amoxicillin 500mg tds for 3 days in conjunction with dental treatment (irrigation or incision and debridement).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no consensus about which mouthwash should be recommended for people with ANUG. CKS expert reviewers have recommended chlorhexidine or hydrogen peroxide 6% mouthwashes. A review found several small observational studies to support the use of antibiotics (Metronidazole and Penicillin) for ANUG [Hartnett and Shiloh, 1991] CKS recommends metronidazole because it is effective against anaerobes, there are some supportive case reports, and it widely recommended by experts for the treatment of ANUG. [Hartnett and Shiloh, 1991; Coventry et al, 2000; American Academy of Periodontology, 2005; BNF 63, 2012] CKS found no evidence that Metronidazole is more (or less) effective than amoxicillin.¹</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. BNF April 2017 (Accessed Jun 17)</td>
</tr>
</tbody>
</table>
**Dental Infections – Dental Abscess**

<table>
<thead>
<tr>
<th>When to treat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular analgesia should be first option until a dentist can be seen for urgent drainage, as repeated courses of antibiotics for abscess are not appropriate. Repeated antibiotics alone, without drainage are ineffective in preventing spread of infection. Antibiotics are only recommended if there are signs of severe infection, systemic symptoms or high risk of complications. Severe odontogenic infections; defined as cellulitis plus signs of sepsis, difficulty in swallowing, impending airway obstruction, Ludwig's angina. Refer urgently for admission to protect airway, achieve surgical drainage and IV antibiotics. The empirical use of cephalosporins, co-amoxiclav, clarithromycin, and clindamycin do not offer any advantage for most dental patients and should only be used if no response to first line drugs when referral is the preferred option.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide advice regarding food and drink to reduce the pressure and pain of the dental abscess: avoid food or drink that may be too hot or cold; consume cool, soft foods. Encourage regular use of analgesics (ibuprofen and/or paracetamol is recommended if no contra-indications). Warn the individual not to exceed the recommended or prescribed dose. Analgesics should not be used to delay appropriate dental treatment but to relieve the symptoms. Advise the patient that antibiotic therapy is prescribed to reduce the spread of infection; NOT a substitute for dental treatment.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>**First line:**2,4 review at 3 days4 Amoxicillin 500mg -1g tds OR Phenoxymethylpenicillin 500mg -1g qds for up to 5 days If spreading infection (lymph node involvement, or systemic signs, i.e. fever or malaise) ADD Metronidazole(^4) 400mg tds for 5 days4</td>
</tr>
<tr>
<td><strong>Penicillin Allergy: First line:</strong> Metronidazole 400mg tds for 5 days</td>
</tr>
<tr>
<td><strong>Penicillin Allergy: Second line</strong> Clarithromycin 500mg bd for up to 5 days, review at 3 days4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not routinely provide repeat prescriptions or switch antibiotics in people who fail to respond to first-line treatment. Instead advise the person to see a dental practitioner urgently. The failure of the antibiotic is not usually due to microbial resistance.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>The recommendations are based on guidance issued by the Faculty of General Dental Practitioners.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. BNF 73, April 2017 (Accessed Jun 2017)</td>
</tr>
</tbody>
</table>
## Dental Infections – Bacterial Parotitis

### When to treat
Usually unilateral swelling of parotid gland with potential abscess formation. Parotitis can be associated with poor dental hygiene, dental caries and dehydration. The most common cause is Staph aureus (including Meticillin resistant Staph aureus – MRSA ), however anaerobes and mixed infections are increasingly being identified.\(^1\) Bacterial parotitis must be differentiated from viral parotitis which is most commonly caused by mumps.\(^1\)

### General advice
Good oral hygiene, including regular and thorough tooth brushing. Eating soft food items, drinking lots of fluids, avoiding tobacco or smoking.

### When to investigate
Take a parotid duct pus swab for bacterial culture if pus seen parotid duct. Blood cultures if systemically unwell. Severe infections may require IV antibiotics.

### Treatment choices

<table>
<thead>
<tr>
<th>First line:</th>
<th>Penicillin allergy:</th>
<th>If known MRSA carrier:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flucloxacillin</strong> Oral 500 mg QDS for 5 days</td>
<td><strong>Clindamycin</strong> 300-450 mg QDS for 5 days. <em>High risk for C Difficile infection</em></td>
<td><strong>Doxycyline</strong> 200mg OD oral for 5 days</td>
</tr>
</tbody>
</table>

If anaerobic infection suspected
ADD **Metronidazole** Oral 400 mg TDS for 5 days

If symptoms are slow to resolve further days of antibiotics may be necessary, up to 14 days.

### Cautions
Surgical drainage and decompression of the gland are occasionally required if spontaneous drainage does not occur.\(^1\)

### Evidence
*Staphylococcus aureus* is the most common organism in community-acquired parotitis and first-line antibiotic therapy should include antistaphylococcal antibiotic.\(^1\) MRSA coverage should be considered if the patient has a history of recurrent cutaneous MRSA abscesses, residence in a nursing home with endemic MRSA, or other predisposing condition.\(^1\)

### References
IV/IM Drugs
in the Community
### IV/IM Ceftriaxone – For treatment of pneumonias, UTI’s and skin and soft tissue infection

| When to treat | It is beyond the scope of these guidelines to make recommendations for IV/IM antibiotic use. However in some community rapid response teams, doses of IM antibiotics such as ceftriaxone are given as part of an enhanced service to prevent hospital admissions. In these cases the locally approved guideline should be followed including the dose. |
Ear, Nose and Throat Infections – Acute Rhinosinusitis (CHILDREN)

**When to treat**

Generally Antibiotics are not required as 80% resolve within 14 days without treatment (NNT 15). Offer adequate analgesia ([https://www.nice.org.uk/guidance/ng79](https://www.nice.org.uk/guidance/ng79)). Consider treating if most of the following are present:

- symptoms for more than 10 days
- marked deterioration after an initial milder phase
- fever
- unremitting purulent nasal discharge

**Treatment choices**

<table>
<thead>
<tr>
<th>First line:</th>
<th>If treatment with amoxicillin in preceding 4 weeks:</th>
<th>If allergic to penicillin:</th>
</tr>
</thead>
</table>
| **Amoxicillin**<sup>3</sup> 40mg/kg *bd* (max 1g per dose) 12 hourly for 5 days if no previous treatment in preceding 4 weeks | **Co-amoxiclav**<sup>4</sup> *tds* for 5 days  
*For child 1 year-5 years: co-amoxiclav*  
125/31 5 mL 3 times a day  
*For child 6-11 years: co-amoxiclav* 250/62 5 mL 3 times a day  
*Child 12-17 years: co-amoxiclav tablets* (500/125 mg) every 8 hours or **co-amoxiclav** 250/62 10 mL 3 times a day | **Azithromycin**<sup>3</sup> 10mg/kg *od* for 3 days  
(max per dose 500mg)  
*For Child 6 months-17 years:*  
(body-weight 15-25 kg) 200 mg once daily.  
*For Child 6 months-17 years:*  
(body-weight 26-35 kg) 300 mg once daily  
*For Child 6 months-17 years:*  
(body-weight 36 kg and above) 500 mg once daily |
| 3-11 months: 250mg *bd*  
1 year-4 years: 500mg *bd*  
5-11 years: 750mg *bd*  
>12 years: 1 gram *bd* |

**Cautions**


Aim to use an antibiotic that minimises dosing frequency<sup>1</sup> and is palatable (if suspension prescribed<sup>2</sup>) to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children.

**References**

3. cBNF Sept17-18
### Ear, Nose and Throat Infections – Acute Otitis Externa (CHILDREN)

**When to treat**
If cellulitis and disease extending outside ear canal, start oral antibiotics based on sensitivities.

**Treatment choices**

<table>
<thead>
<tr>
<th>First line:</th>
<th>Acetic acid 2% one spray tds for 7 days (unlicensed use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second line:</td>
<td>Neomycin with corticosteroid ear drops, three drops tds for 7-14 days</td>
</tr>
</tbody>
</table>

If cellulitis and disease extending outside ear canal, start oral antibiotics based on sensitivities.

**Empirical treatment with Cefalexin**
- **3-11 months**: 125mg tds
- **1 year-4 years**: 250mg tds
- **5-11 years**: 500mg tds
- **>12 years**: 1 gram tds

If allergic to penicillin/cephalosporins: **Azithromycin**
- **For Child 6 months-17 years**: (body-weight 15–25 kg) 200 mg once daily.
- **For Child 6 months-17 years**: (body-weight 26–35 kg) 300 mg once daily.
- **For Child 6 months-17 years**: (body-weight 36–45 kg) 400 mg once daily.
- **For Child 6 months-17 years**: (body-weight 46 kg and above) 500 mg once daily.

**Evidence**
Cure rates similar at 7 days for topical acetic acid or antibiotic +/- steroid.

**Cautions**

Aim to use an antibiotic that minimises dosing frequency and is palatable (if suspension prescribed) to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children.

**References**
3. cBNF Sept17-18
Ear, Nose and Throat Infections – Acute Otitis Media (AOM) (CHILDREN)

When to treat

Acute otitis media resolves in 60% by 24 hours without antibiotics, acute complications are rare. Antibiotics only marginally reduce pain at 2 days (NNT 15) and do not prevent deafness. Need to treat 4800 with antibiotics to avoid 1 case of mastoiditis. Antibiotics make little difference to rates of recurrence of infection and perforated ear drum.

Only consider starting oral antibiotics if any of the following criteria are met in a child presenting with AOM (bulging ear drum or discharge):
• Symptoms for 4 days or more
• Purulent discharge from ear canal (not due to otitis externa)
• Systemically unwell
• Under 6 months of age with presumed acute OM.

In child 6 months-2 years old:
• Bilateral OM
• Unilateral OM and symptom score of >8 (0=no symptoms; 1=a little; 2=a lot) for the following criteria:
  - fever (>39 degrees = score of 2)
  - tugging ears
  - crying more
  - irritability
  - difficulty sleeping
  - less playful
  - eating less.

When to consider back-up prescription

Consider a back-up / watchful waiting or no prescription in children who do not fit the criteria above, including those with no otorrhoea. It is considered that most children will fall into this category, i.e. not require an immediate prescription.

Treatment choices

First line if antibiotics indicated:
**Amoxicillin**: 40mg/kg 12 hourly (max 1g per dose) 12 hourly for 5 days.
3-11 months: 250mg bd
1 year-4 years: 500mg bd
5-11 years: 750mg bd
>12 years: 1 gram bd

If failed treatment with amoxicillin, **Co-amoxiclav**: tds for 5 days
For child 1 year-5 years: co-amoxiclav 125/31 5 mL 3 times a day
For child 6-11 years: co-amoxiclav 250/62 5 mL 3 times a day
Child 12-17 years: co-amoxiclav tablets (500/125 mg) every 8 hours or co-amoxiclav 250/62 10 mL 3 times a day

If allergic to penicillin:
**Azithromycin**: 10mg/kg od for 3 days
For Child 6 months-17 years: (body-weight 15–25 kg) 200 mg once daily
For Child 6 months-17 years: (body-weight 26–35 kg) 300 mg once daily.
For Child 6 months-17 years: (body-weight 36–45 kg) 400 mg once daily
For Child 6 months-17 years: (body-weight 46 kg and above) 500 mg once daily

Cautions


Aim to use an antibiotic that minimises dosing frequency and is palatable (if suspension prescribed) to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children.

References
1. NICE, Otitis media (acute): antimicrobial prescribing [NG91], March 2018 https://www.nice.org.uk/guidance/ng91 Date accessed 25.5.18
6. SPC, Amoxicillin 250mg/5ml oral suspension https://www.medicines.org.uk/emc/product/2137/smPC Date accessed 24.5.18
7. cBNF Sept17-18
Ear, Nose and Throat Infections – Tonsillitis (CHILDREN)

When to treat
Most young children presenting with tonsillitis have a viral aetiology. No significant difference in pain score at day 3 in children treated with antibiotics compared to those treated with placebo.1,2 Need to treat >4000 children with antibiotics to prevent one case of quinsy.3 Base decision to treat on FeverPAIN score4 (1 point for each of fever, purulence, attend within 3 days of onset or less, severely Inflamed tonsils, no cough or coryza):

- **score 0-1**: 18% likelihood of isolating streptococcus: use NO antibiotics
- **score 2-3**: 34-40% likelihood of isolating streptococcus, use back up/delayed antibiotic or NO antibiotic
- **score ≥4**: 62-65% likelihood of isolating streptococcus, use immediate antibiotic or back-up antibiotic.

Score validated in children 3 years and over – younger children are less likely to have a bacterial aetiology and are less likely to develop complications.

When to investigate
Most children with tonsillitis do not require a throat swab.

Treatment choices
For children unable to swallow tablets:

- **Amoxicillin**: 40mg/kg bd (max 1g per dose) 3-11 months: 250mg bd
  - 1 year-4 years: 500mg bd
  - 5-11 years: 750mg bd
  - >12 years: 1 gram bd for 7 days.5,6

For children able to swallow tablets:

- **Penicillin V**: if age 6-12 years, 500mg bd
  - if age >12 years, 1g bd for 7 days.5,6

If allergic to penicillin:

- **Azithromycin**: 10mg/kg od for 5 days
  - For Child 6 months-17 years: (body-weight 15–25 kg)
    - 200 mg once daily
  - For Child 6 months-17 years: (body-weight 26–45 kg)
    - 300 mg once daily
  - For Child 6 months-17 years: (body-weight 46 kg and above) 500 mg once daily

Cautions

Aim to use an antibiotic that minimises dosing frequency8 and is palatable (if suspension prescribed)9 to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children.

References
10. BNF Sept 17-18
11. NICE, Sore throat (acute): antimicrobial prescribing. [NG 84] January 2018 https://www.nice.org.uk/guidance/ng84 Date accessed June 2018
### Ear, Nose and Throat Infections – Cervical Lymphadenitis (CHILDREN)

#### When to treat

If cervical lymphadenopathy is bilateral, non-erythematous, non-tender, with node size less than 3cm, and child systemically well, consider a no treatment, watchful waiting approach. Low threshold for treatment if child immunocompromised.

#### When to investigate


#### Treatment choices

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Cefalexin dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-11 months</td>
<td>125mg tds</td>
</tr>
<tr>
<td>1 year-4 years</td>
<td>250mg tds</td>
</tr>
<tr>
<td>5-11 years</td>
<td>500mg tds</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>1 gram tds</td>
</tr>
</tbody>
</table>

If allergic to penicillin:

- **Clarithromycin**: bd for 7 days

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Clarithromycin dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child 1 month-11 years:</td>
<td>Body-weight up to 8kg: 7.5mg/kg</td>
</tr>
<tr>
<td></td>
<td>Body-weight 8-11kg: 62.5mg bd</td>
</tr>
<tr>
<td></td>
<td>Body-weight 12-19kg: 125mg bd</td>
</tr>
<tr>
<td></td>
<td>Body-weight 20-29kg: 187.5mg bd</td>
</tr>
<tr>
<td></td>
<td>Body-weight 30-49kg: 250mg bd</td>
</tr>
<tr>
<td>Child 12-17 years:</td>
<td>250mg bd or 500mg m/r od</td>
</tr>
</tbody>
</table>

#### Cautions

Provide safety netting information (verbal and written) – Safety netting documents for parents: Healthier Together


Aim to use an antibiotic that minimises dosing frequency and is palatable (if suspension prescribed) to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children.

#### References


3. cBNF Sept17-18
# Respiratory Tract Infections – Community Acquired Pneumonia (CAP) (CHILDREN)

## When to treat

Most lower respiratory tract infections are of viral aetiology - consider bacterial pneumonia if persistent/recurrent fever over preceding 24-48 hours with chest wall recession and tachypnoea. Presence of generalised wheeze makes viral aetiology far more likely.

## When to investigate

If severe or complicated pneumonia (O2 sats<85%, haemodynamic instability/septicaemia, immunocompromised, chronic lung disease, congenital heart disease, empyema, necrotising pneumonia), for urgent review in hospital – call paediatrician.

## Treatment choices

### First line:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-11 months</td>
<td>250mg bd</td>
</tr>
<tr>
<td>1 year-4 years</td>
<td>500mg bd</td>
</tr>
<tr>
<td>5-11 years</td>
<td>750mg bd</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>1 gram bd</td>
</tr>
</tbody>
</table>

12 hourly for 5 days

### If no response to amoxicillin:

For child 1 year-5 years:

- **Co-amoxiclav** 125/31.5 mL 3 times a day

For child 6-11 years:

- **Co-amoxiclav** 250/62.5 mL 3 times a day

Child 12-17 years:

- **Co-amoxiclav** tablets (500/125 mg) every 8 hours or **co-amoxiclav** 250/62 10 mL 3 times a day

### Treatment for atypical infections should only be considered in severe infection if no response to first line empirical therapy/ if allergic to penicillin:

Use **Azithromycin** for 3 days

For child 6 months-17 years:

- (body-weight 15–25 kg) 200 mg once daily
- (body-weight 26–35 kg) 300 mg once daily
- (body-weight 36–45 kg) 400 mg once daily
- (body-weight 46 kg and above) 500 mg once daily

## Cautions

Provide safety netting information (verbal and written) – Safety netting documents for parents: Healthier Together

Aim to use an antibiotic that minimises dosing frequency and is palatable (if suspension prescribed) to optimise adherence. Penicillin V and flucloxacillin suspensions qds are not well tolerated by children.

## References

3. cBNF Sept 17-18
Urinary Tract Infections – UTI in Children

When to treat

Consider UTI in any sick child and every young child with unexplained fever. Consider differential diagnoses: sepsis, meningitis, GI obstruction, appendicitis, gastroenteritis. Other differentials for dysuria/discomfort include vulvovaginitis and threadworms.

UTIs in children require prompt treatment to minimise the risk of renal scarring.4

Child < 3 months with temp ≥38°C: refer urgently to secondary care for assessment.4,5

Child 3 months - 3 years: send MSU for culture.4,5

Child ≥ 3 years: use positive dipstick to indicate antibiotics and send MSU for culture.4,5

If nitrites and/or leuk +ve on dipstick and temp ≥38°C, assume upper UTI4 and empirically start treatment. Delay the decision about treating with an antibiotic until the results of urine culture are available for children who have no specific symptoms for UTI, and are at intermediate risk for severe illness (and the urine dipstick tests for nitrite and leukocyte esterase are negative) or low-risk for serious illness.

Send pre-treatment MSU for all children ≥3 months.5

Imaging: only refer if child <6 months, recurrent or atypical UTI.4


When to investigate

Whenever possible a specimen of urine should be collected for culture and sensitivity testing before starting antibacterial therapy – clean catch if possible.5

QuickWee method of stimulating suprapubic area with saline-soaked gauze significantly reduces the time taken to successfully collect a urine sample in infants:

Treatment choices

>3 months of age with lower UTI/cystitis:

Trimethoprim1 4mg/kg 12 hourly (max 200mg/dose). For 3 days

• For Child 6 weeks-5 months:
  4 mg/kg twice daily (max. per dose 200 mg), alternatively 25 mg twice daily.

• For Child 6 months-5 years:
  4 mg/kg twice daily (max. per dose 200 mg), alternatively 50 mg twice daily.

• For Child 6-11 years:
  4 mg/kg twice daily (max. per dose 200 mg), alternatively 100 mg twice daily.

• For Child 12-17 years: 200 mg twice daily.

If previous treatment with trimethoprim in preceding 3 months, use Nitrofurantoin1 immediate release 750mcg/kg qds (if able to swallow tablets)

Child 12-17 years 100mg m/r bd

OR Cefalexin1 (double if severe infection) 12.5mg/kg 8 hourly:

3-11 months: 125mg tds, 1 year- 4 years: 250mg tds,
5-11 years: 500mg tds, >12 years: 1 gram tds

If confirmed severe penicillin allergy and unable to tolerate oral antibiotics or systemically unwell (suggestive of bacteraemia), requires review in hospital for consideration of IV antibiotics – call paediatrician.

>3 months of age with upper UTI/pyelonephritis (all children with a febrile UTI should be considered to have pyelonephritis) Duration of antibiotic course 7 days:

Treat empirically with Cefalexin1 12.5mg/kg 8 hourly unless unable to tolerate oral antibiotics or systemically unwell (suggestive of bacteraemia).

3-11 months: 125mg tds, 1 year- 4 years: 250mg tds,
5-11 years: 500mg tds, >12 years: 1 gram tds

If confirmed severe penicillin allergy:

Ciprofloxacin1 10mg/kg bd (double dose in severe infection) max 750mg bd

If unable to tolerate oral antibiotics or systemically unwell (suggestive of bacteraemia), requires review in hospital for consideration of IV antibiotics – call paediatrician.

continued overleaf
## Urinary Tract Infections – UTI in Children (continued)

### Treatment (contd.) Preventing recurrence:
- Address dysfunctional elimination syndromes and constipation.\(^4\)
- Encourage children to drink an adequate amount.\(^4\)
- Emphasize the importance of not delaying voiding. Children should have ready access to clean toilets.\(^4\)

### Cautions

Aim to use an antibiotic that minimises dosing frequency\(^1\) and is palatable (if suspension prescribed)\(^2\) to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children.

### Risk factors for recurrent UTIs
- Constipation
- Poor fluid intake
- Infrequent voiding especially at school (holding on)
- Irritable bladder (can happen following UTI)
- Neuropathic bladder
  - examine spine
- Genitourinary abnormalities
  - examine genitalia

### Evidence
This guideline cites a range of studies, that suggest that all infants and children who have bacteriuria and either fever of 38°C or higher, or loin pain/tenderness, should be considered to have acute pyelonephritis/upper urinary tract infection. All other infants and children who have bacteriuria, but no systemic symptoms or signs, should be considered to have cystitis/lower urinary tract infection.\(^4,5\) Findings indicated that shorter courses of antibiotics (seven to 10 days) improved compliance, decreased antibiotic-related adverse events, and diminished the emergence of resistant organisms. Antibiotics with low local resistance patterns have therefore been chosen.\(^4\) Nitrofurantoin is now contraindicated in patients with an estimated glomerular filtration rate (eGFR) of less than 45 ml/min. However may be used with caution in certain patients with an eGFR of 30 to 44 ml/min.\(^6\) if a short course (max 7 days) is prescribed.

### References
3. cBNF Sept 17-18
Skin & Soft Tissue Infections – Cellulitis & Impetigo (CHILDREN)

**When to treat**

Cellulitis presents with an acute onset of red, painful, hot, swollen, and tender skin, with possible blister or bullae formation. The leg is the most commonly affected site, presentation is usually unilateral. Often (but not always) associated with a break in the skin (portal entry).

If patient afebrile and tolerating oral antibiotics, can be managed in primary care. Caution with immunocompromised patients. Most children with infected eczema do not benefit from antibiotic therapy (oral or topical) - except those with a severe infection. Optimisation of topical steroids is the mainstay of treatment in these patients.¹

**When to investigate**

Most children with cellulitis or impetigo do not require skin swabs sent, unless portal of entry, extensive infection, not responding to treatment or recurrent episodes. If recurrent or severe staph aureus infection, consider requesting PVL testing.

**Treatment choices**

- **If mild/moderate infection:**
  - Cefalexin¹ ² ³ ⁴ ⁵ ⁶  12.5mg/kg 8 hourly (max 1g per dose) for 5 days.
  - Double if severe infection
  - 3-11 months: 125mg tds
  - 1 year-4 years: 250mg tds
  - 5-11 years: 500mg tds
  - >12 years: 1 gram tds

- **If facial cellulitis:**
  - Co-amoxiclav for 5 days
  - For child 1 year-5 years: co-amoxiclav 125/315 mL 3 times a day
  - For child 6-11 years: co-amoxiclav 250/625 mL 3 times a day
  - Child 12-17 years: co-amoxiclav tablets (500/125 mg) every 8 hours or co-amoxiclav 250/625 10 mL 3 times a day

- **If allergic to penicillin:**
  - Clarithromycin¹  4 bd for 5 days
  - Child 1 month - 11 years
  - Body-weight up to 8kg: 7.5mg/kg
  - Body-weight 8-11kg: 62.5mg bd
  - Body-weight 12-19kg: 125mg bd
  - Body-weight 20-29kg: 187.5mg bd
  - Body-weight 30-49kg: 250mg bd
  - Child 12-17 years, 250mg bd or 500mg m/r od

**Evidence**

Provide safety netting information (verbal and written) –


Aim to use an antibiotic that minimises dosing frequency² and is palatable (if suspension prescribed)³ to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children.

**References**

4. cBNF Sept17-18
**Skin & Soft Tissue Infections – Scarlet Fever (Scarlatina) (CHILDREN)**

**When to treat**
The rash begins with papular lesions on the body that then spread to the neck, arms and. The rash is often accentuated in flexural creases but tends to spare the palms and soles of the feet. The rash is not pruritic but has a characteristic sand-paper feel to it.

Associated symptoms include:
- Sore throat/tonsillitis
- Fever
- Painful cervical lymphadenopathy
- Strawberry tongue

The presence of coryzal symptoms, cough or diarrhoea, make a diagnosis of scarlet fever unlikely.

**General advice**
Advise the family to keep child away from school/nursery for 1 day after starting antibiotic treatment, wash their hands frequently, avoid sharing eating utensils and towels, dispose of handkerchiefs promptly, and avoid contact with anyone at particular risk of infection (e.g. people with valvular disease or who are immunocompromised).

**Treatment choices**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Antibiotic Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-11 months</td>
<td><strong>Amoxicillin</strong>¹ 40mg/kg bd (max 1g per dose) for 7 days.¹²</td>
</tr>
<tr>
<td>1 year-4 years</td>
<td>250mg bd</td>
</tr>
<tr>
<td>5-11 years</td>
<td>500mg bd</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>1 gram bd</td>
</tr>
</tbody>
</table>

For children able to swallow tablets:
- **Age 6-12 years**, Penicillin V¹ 500mg bd; Age >12 years, Penicillin V 1g bd for 7 days.¹²

If allergic to penicillin:
- **Azithromycin**³ 12 mg/kg od for 5 days

For Child 6 months-17 years:
- (body-weight 15–25 kg) 200 mg once daily
- (body-weight 26–35 kg) 300 mg once daily
- (body-weight 36–45 kg) 400 mg once daily
- (body-weight 46 kg and above) 500 mg once daily

**Evidence**

Aim to use an antibiotic that minimises dosing frequency³ and is palatable (if suspension prescribed)⁴ to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children.

**References**
5. cBNF Sept17-18
<table>
<thead>
<tr>
<th><strong>Eye infections – Infective Conjunctivitis (CHILDREN)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When to treat</strong></td>
</tr>
<tr>
<td><strong>Treatment choices</strong></td>
</tr>
<tr>
<td><strong>General Advice</strong></td>
</tr>
</tbody>
</table>
Scan this QR code with your smartphone to find out about website and e-book versions of these guidelines.