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)
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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 and Berkshire East and West. 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

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<td>Brember</td>
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<td>Melody</td>
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<td>Catherine</td>
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<td>Helen</td>
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<td>Jo</td>
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<td>Jennie</td>
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<td>Sheridan</td>
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<td>Kieran</td>
<td>Hand</td>
<td>Vanessa</td>
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<tr>
<td>Michaela</td>
<td>Hooper</td>
<td>Lenka</td>
<td>Strakova</td>
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<td>Matthew</td>
<td>Inada-Kim</td>
<td>Julian</td>
<td>Sutton</td>
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<td>Carys</td>
<td>Jones</td>
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<td>Graeme</td>
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<td>Hayley</td>
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<td>Taryn</td>
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<td>Wilson</td>
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<td>Catriona</td>
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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

Implications:
- The guidance should lead to more appropriate antimicrobial use
- Use of this guidance may influence laboratory workload, which may have financial implications for laboratories and primary care

Principles of treatment:
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.
10. Child doses are provided when appropriate, and can be accessed through the 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 Antimicrobial Quality Premium. The required performance in 2017/19 is: a 10% reduction (or greater) in the number of E. coli blood stream infections across the whole health economy; 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>History of infection with resistant microorganism. Recent antibiotic exposure. Immunocompromised.</td>
</tr>
<tr>
<td>Older patients (over 65yr) &amp; antibiotic exposure within previous 2 months</td>
<td></td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>Infection acquired in healthcare environment</td>
</tr>
<tr>
<td>Contact with patients with <em>Clostridium difficile</em> or recent hospital admission</td>
<td></td>
</tr>
<tr>
<td><strong>Action</strong></td>
<td>Consider second-line antibiotics from the following tables</td>
</tr>
<tr>
<td>Withhold antibiotics if safe to do so (watchful waiting). Avoid high risk antibiotics (the 4 Cs):</td>
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<tr>
<td>Cephalosporins</td>
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<tr>
<td>Ciprofloxacin &amp; quinolones</td>
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<tr>
<td>Co-amoxiclav</td>
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<tr>
<td>Clindamycin</td>
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Evidence Grading

<table>
<thead>
<tr>
<th>Study design</th>
<th>Recommendation grade</th>
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<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>
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</table>
SEPSIS SCREENING & ACTION TOOL

Aligned Wessex Sepsis definition

NEWS

0-2

3-4

≥ 5

Sepsis unlikely
Follow NEWS protocol as per organisation

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

*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

YES
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 is in hospital
- If in Community, Time Zero is arrival in hospital

NO

https://www.rcplondon.ac.uk/projects/outputs/national-early-warning-score-news-2
## Ear Nose and Throat Infections – Acute Sore Throat
(Patient Information Leaflet available from TARGET)
FOR PAEDIATRIC GUIDELINES see page 77

### When to treat

Avoid antibiotics as 82% resolve in 7 days without, and pain only reduced by 16 hours.\(^1\)^\(^2\). See attached sore throat clinical scoring system (FeverPain).

- **If Fever Score 0 or 1:** do not offer antibiotics
- **If Fever score 2 or 3:** consider 2 or 3-day delayed antibiotics.\(^1\)^\(^A\)
- **If Fever Score 4 or more:** offer immediate antibiotics if severe or offer a delayed prescription

Average total length of illness is one week.\(^2\) Complications are rare: antibiotics to prevent quinsy NNT >4000.\(^B\)^\(^1\)^\(^2\). Antibiotics to prevent otitis media NNT 200.\(^1\)^\(^A\)

### When to investigate

Throat swabs or rapid antigen tests should not be carried out routinely in the investigation of acute sore throat.\(^2\)^\(^3\) Suspect glandular fever in a person with a sore throat that fails to improve, or becomes worse, after several days.\(^3\)

### Treatment choices

**First line:** Phenoxymethylpenicillin\(^B\) 500mg qds OR 1g bd\(^A\) for 7 days\(^5\)^\(^A\)

(a bd dosing is as effective as a tds or qds dosing, if total daily dose remains the same, and may be more convenient)\(^6\)

**If allergic to penicillin:**
- Clarithromycin 250-500mg bd for 5 days\(^A\)^\(^A\)
- **If allergic to penicillin and pregnant:**
  - Erythromycin 500mg qds for 5 days\(^A\)^\(^A\)

Prescribing amoxicillin or ampicillin will produce a generalized, itchy maculopapular rash in over 90% of people with glandular fever.\(^3\)

### Cautions

Admit immediately anyone who has:
- Stridor or respiratory difficulty.
- Respiratory distress, drooling, systemically very unwell, painful swallowing, muffled voice: suspect acute epiglottitis. Do not examine the throat of anyone who has suspected epiglottitis.
- Upper airway obstruction.
- Dehydration or reluctance to take any fluids.
- 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.
- Signs of being markedly systemically unwell and at risk of immunosuppression.
- Suspected Kawasaki disease, Diphtheria or profoundly unwell with cause unknown or rare cause suspected e.g. Stevens-Johnson syndrome.

### Evidence

- **A (2009)** meta-analysis shows short-course (including 5 days clarithromycin) broad-spectrum antibiotics are as efficacious as 10-day penicillin for sore throat symptom treatment and GABHS eradication. Evidence suggests the use of broader spectrum antibiotics will drive the emergence of bacterial resistance; increases the risk of developing *Clostridium difficile* associated disease; and is associated with more adverse drug reactions. 5-days clarithromycin should be reserved for those with true penicillin allergy.\(^1\)
- Glomerulonephritis is a rare condition, (2.1 per 100,000 children per year) and treating acute sore throat with antibiotics doesn’t prevent it occurring.\(^1\)
- A retrospective study confirmed the low incidence of Rheumatic Fever in the UK, (0.6 per 100,000 children per year). The risk of developing Rheumatic Fever was not reduced in this study by treating sore throats with antibiotics.\(^1\)

### References

3. NICE CKS Sore Throat – Acute Sore throat - acute - NICE CKS (Accessed Dec 17)
4. BNF 72 September 2016
5. [http://bcp.org/content/early/2017/08/14/bjgp17X692333](http://bcp.org/content/early/2017/08/14/bjgp17X692333) Influence of the duration of penicillin prescriptions on outcomes for acute sore throat in adults: the DESCARTE prospective cohort study in UK general practice
6. Review: twice daily dosing of penicillin V is as effective as more frequent dosing for streptococcal tonsillopharyngitis [http://ebm.bmj.com/content/5/6/168](http://ebm.bmj.com/content/5/6/168)
# Sore Throat Clinical Scoring System (FeverPAIN) to predict streptococcal infection

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.

<table>
<thead>
<tr>
<th>FeverPAIN – one point each for:</th>
<th>Suggested actions:</th>
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<tbody>
<tr>
<td>Fever during the last 24 hours</td>
<td>Score 0-1: 13-18% streptococci - no antibiotic.(^a)</td>
</tr>
<tr>
<td>Purulence on tonsils</td>
<td>Score 2-3: 34-40% streptococci - 3-day delayed antibiotic.(^b)</td>
</tr>
<tr>
<td>Attend rapidly (short prior illness duration of 3 days or less)</td>
<td>Score 4-5: 62-65% streptococci - if severe, immediate antibiotic, or 48-hour delayed antibiotic</td>
</tr>
<tr>
<td>Inflamed (severely) tonsils</td>
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<tr>
<td>No cough or coryza ('runny nose’)</td>
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\(^a\) Approximately one third of patients in the original study population had a FeverPAIN score of ≤ 1.

\(^b\) 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 76**

| **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 tds$^2$  
If allergic to penicillin: Clarithromycin$^D$ for 5 days$^{A+}$  
250mg bd (double in severe infection)$^{A+}$  
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  
2. NICE Clinical Knowledge Summary, Otitis media – acute.  
https://cks.nice.org.uk/otitis-media-acute  
https://www.nice.org.uk/guidance/cg69 |
<table>
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<th><strong>Ear Nose and Throat Infections – Acute Otitis Externa (FOR PAEDIATRIC GUIDELINES see page 75)</strong></th>
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<td><strong>When to treat</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
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<td><strong>Treatment choices</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
|  | First-line: ear drops / spray **Acetic acid** (EarCalm spray®) 2% one spray tds for 7 days.<sup>1,2</sup>  
|  | Or ear drops / spray **Neomycin + steroid** three drops tds for 7-14 days.<sup>1,2</sup> |
|  | **Oral antibiotics are rarely indicated**<sup>2</sup>  
|  | 2nd line:  
|  | **Flucloxacillin** (adult dose) 250-500mg qds for 7 days.<sup>1,2</sup>  
|  | **Ciprofloxacin** may be needed in pseudomonal infections which may occur if the patient has diabetes or is immunocompromised.<sup>3</sup>  
|  | If Penicillin allergic:  
|  | **Clarithromycin** (adult dose) 250mg bd for 7 days<sup>2,3</sup> |
| **Cautions**<sup>4</sup> | 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.<sup>1</sup> 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%).<sup>1</sup> 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.<sup>1</sup> |
|  | 3. BNF 74 September 2017 |
### Ear Nose and Throat Infections – Acute **Rhinosinusitis** (Patient Information Leaflet available from TARGET) FOR PAEDIATRIC GUIDELINES see page 74

#### When to treat

Avoid antibiotics as 80% resolve in 14 days without, and they only offer marginal benefit after 7 days (NNT15). 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 placebo 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.

**For patients with symptoms of around 10 days or more with no improvement.** 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 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.
- Recommending 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.

#### 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** 600mg gds (or 1g bd) for 5 days. If **penicillin allergic or intolerant**: **Doxycycline** 200mg stat then 100mg od for 5 days or **Or Clarithromycin** 500mg bd for 5 days.

**Self-care**: paracetamol or ibuprofen for pain/fever

Consider high-dose nasal steroid if >12 years. **Mometasone 200mcg BD** for 14 days

Nasal decongestants or saline may help some.

**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 or.

*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.

#### Cautions

Admit to hospital if there is severe systemic infection (sepsis, or if a complication of sinusitis is suspected. *S*uspect 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. *S*uspect 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). *C*onsider 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. *D*oxycycline is contra-indicated in children <12 years.

#### 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 93.6%.

#### References


# Ear Nose and Throat Infections – Oral Candidiasis

## When to treat¹
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 investigate¹
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 Advice¹
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 choices¹,²
**First line for immunocompetent adult and children older than 2 years of age:**
- **miconazole** oral gel 2.5mls applied qds (hold in mouth after food) for at least 7 days after lesions have healed or symptoms have cleared.³ Children aged 4–24 months: miconazole oral gel 1.25 mls (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 an infant born pre-term. If miconazole oral gel is unsuitable or not tolerated, **nystatin** suspension (unlicensed for use in neonates) 100,000 units (1ml) qds usually for 7 days, and continued for 48 hours after lesions have resolved.³

**Second line 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 **fluconazole** 50mg od for 7-14 days (100mg od² if HIV or immunocompromised). For children younger than 16 years of age, or if fluconazole is contraindicated, specialist advice should be sought.

## Cautions¹
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;¹ consider undiagnosed risk factors, including HIV.

## Evidence¹
**Topical azoles** are more effective than topical nystatin.³

## References
3. BNF 72 September 2016
# Respiratory Tract Infections – Acute Cough, Bronchitis

(Patient information Leaflet Available from [TARGET](http://cksn.nice.org.uk/cough))

## 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; 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.\(^3\)

## 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:**\(^3\)

- **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

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.\(^1,2\) 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.\(^3,4\) Alternative treatments include bronchodilators and oral steroids (see CKS2).

**When to investigate**
Sending sputum samples for culture is not recommended in routine practice.\(^1\) Pulse oximetry is of value if there are clinical features of a severe exacerbation.\(^1\)

**Treatment choices\(^1,2,3\)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amoxicillin</strong></td>
<td>500mg tds for 5 days</td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>If allergic to penicillin:</td>
</tr>
<tr>
<td><strong>Doxycycline</strong></td>
<td>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).(^5)</td>
</tr>
<tr>
<td><strong>OR Clarithromycin</strong></td>
<td>500mg bd for 5 days(^A)</td>
</tr>
</tbody>
</table>

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\(^6\):
- 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.\(^1\) 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 10,638 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).\(^5\)

Resistance data from [www.bsacsurv.org](http://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.\(^6\)

**References**
**Respiratory Tract Infections – Community-Acquired Pneumonia (CAP) FOR PAEDIATRIC GUIDELINES see page 79**

### 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.

**CRB65 score is calculated by giving 1 point for each of the following prognostic features:**
- 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.

General practitioners should consider use of pulse oximeters allow for simple assessment of oxygenation.

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. If CRP ≥20mg/L do not routinely offer antibiotic therapy. Patients must have had symptoms for at least 24-36 hours.

### Treatment choices

If CRB-65 score is 0 (low severity), prescribe monotherapy:
- **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.

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** monotherapy 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).

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

### Cautions

"Give immediate IM Benzylpenicillin 1.2g or Amoxicillin 1g po (IM Cefotaxime in non-severe penicillin allergy) if delayed admission/life threatening. 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. 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.

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. 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%).

### Reference

Central Nervous System Infections – Meningitis or Suspected Meningococcal Disease

When to treat
Transfer all patients to hospital immediately.\textsuperscript{1}
If time before admission, and non-blanching rash, give IV cefotaxime or benzylpenicillin\textsuperscript{3b-}, unless allergic, i.e. history of difficulty breathing, collapse, loss of consciousness, or rash.\textsuperscript{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.\textsuperscript{1b}

Treatment choices

<table>
<thead>
<tr>
<th>IV or IM Cefotaxime\textsuperscript{7}</th>
<th>OR IV or IM Benzylpenicillin\textsuperscript{4}</th>
<th>If history of immediate allergic reactions to penicillin or cephalosporins\textsuperscript{5}, IV Chloramphenicol</th>
</tr>
</thead>
</table>
| \textbf{Child: 1 month - 11yrs:} 50mg/kg (max 1g)  
\textbf{Child: 12-18yrs:} 1g  
\textbf{Adult:} 1g | \textbf{Neonate} 50mg/kg  
\textbf{Child: 1 month - 1yr:} 300mg  
\textbf{Child: 1yr - 9yrs:} 600mg  
\textbf{Child: 10-18yrs:} 1.2g  
\textbf{Adult:} 1.2g  
Give IM if vein cannot be found.\textsuperscript{1} | \textbf{Child: 1 month - 18 yrs:} 25mg/kg IV  
\textbf{Adult:} 25mg/kg IV |

Prevention of secondary case of meningitis.\textsuperscript{5} Only prescribe following advice from \textbf{Public Health Doctor}: 9am - 5pm \textbf{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 septicaemia), 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.\textsuperscript{4}
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.\textsuperscript{5}

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.\textsuperscript{2} Cefotaxime should be the first line antibiotic in meningococcal sepsis.\textsuperscript{4}

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

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Women 18-65y with only one of the three symptoms/signs: perform dipstick test (see below) to guide treatment decision (morning specimen most reliable). <strong>Women 18-65y with none of the three symptoms/signs:</strong> consider dipstick test; 67% will be culture-negative. <strong>Women &gt;65y:</strong> asymptomatic bacteriuria is common in older patients (32% in nursing home residents). <strong>Treat does not reduce mortality or prevent symptomatic episodes, but does increase side-effects and antibiotic resistance.</strong> Consider dipstick test to exclude UTI in symptomatic patients only.</td>
</tr>
</tbody>
</table>

### 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 and blood, indicates probable UTI (81% will be culture-positive).**

- **Women >65y:** Dipstick for symptomatic patients only. If both nitrites positive and leucocytes negative, UTI is unlikely (78% culture-negative). If both nitrites 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.

### 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 immunosuppressed.

### How to respond to a positive lab report

<table>
<thead>
<tr>
<th>Positive lab report</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single organism ≥ 10⁵ colony forming units (CFU)/mL or ≥ 10⁴ 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 10⁴ CFU/mL and be positive if White cells ≥ 10⁶/mL are considered to represent inflammation. In adults ‘no white cells present’ indicates no inflammation &amp; reduces culture significance.</td>
<td>If first line unsuitable or GFR&lt;45ml/min: Pivmecillinam 400mg stat then 200mg tds for 3 days (400mg tds for 3 days if high resistance risk or known previous resistance)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>If organism susceptible:</strong></th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin 500mg tds for 3 days <strong>If high resistance risk:</strong></td>
<td>Fosfomycin 3g single dose <strong>Epithelial cells/mixed growth indicates perineal contamination, reducing significance of culture.</strong></td>
</tr>
</tbody>
</table>

### Treatment choices

<table>
<thead>
<tr>
<th>First line: Nitrofurantoin</th>
<th>If organism susceptible: Amoxicillin</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mg m/r bd for 3 days <strong>If first line unsuitable or GFR&lt;45ml/min:</strong></td>
<td>500mg tds for 3 days <strong>If high resistance risk:</strong></td>
</tr>
<tr>
<td><strong>OR if low risk of resistance</strong>: Trimethoprim</td>
<td>Fosfomycin 3g single dose <strong>Cautions</strong></td>
</tr>
<tr>
<td>200mg bd for 3 days <strong>If organism susceptible:</strong></td>
<td><strong>If high resistance risk:</strong></td>
</tr>
</tbody>
</table>

**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. **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.

### 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 (3-7 days) is prescribed. Prescribe for lower UTI where the benefits outweigh the risk of side effects.

**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. **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

3. SIGN 88 UTI 2012 http://www.sign.ac.uk/assets/sign88.pdf [Accessed June 2017]

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<table>
<thead>
<tr>
<th>References</th>
<th>Action</th>
</tr>
</thead>
</table>
## 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]. A recent 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.1

### When to investigate
MSU should be performed routinely at the first antenatal visit. If bacteriuria is reported, it should be confirmed with a second MSU. 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 report
Single organism ≥ 10^3 colony forming units (CFU)/mL or ≥ 10^3 mixed growth with one predominant organism or E. coli or Staphylococcus saprophyticus ≥ 10^3 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

### Treatment choices

<table>
<thead>
<tr>
<th>First line:</th>
<th>Nitrofurantoin (unless at term) 100mg m/r bd or 50mg i/r QDS if GFR &gt;45ml/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second line:</td>
<td>Trimethoprim 200mg bd (off-label). Give folic acid (5mg daily) if first trimester. Avoid trimethoprim if low folate status or on folate antagonist</td>
</tr>
<tr>
<td>Third line:</td>
<td>Cefalexin* 500mg bd for 7 days</td>
</tr>
</tbody>
</table>

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.13

### 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.5 In women with normal folate status, who are well nourished, trimethoprim is unlikely to cause folate deficiency.4 However, it should be avoided 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.6

*High-risk drug for Clostridium difficile infection and should be avoided in at-risk patients, however risk in pregnancy is generally low3

### Evidence
Nitrofurantoin has been associated with haemolysis in people with G6PD deficiency. However, the risk seems very small because placental transfer is so low.5 There is only one reported case of haemolytic anaemia in a newborn whose mother was treated at term with nitrofurantoin.7 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.¹

In elderly men (over 65 years of age), treatment of asymptomatic bacteriuria does not reduce mortality or significantly reduce symptomatic episodes.¹ Antibiotic treatment significantly increases the risk of adverse events, such as rashes and gastrointestinal symptoms (NNTH 3).¹

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).¹²

Send pre-treatment MSU³ OR if symptoms mild/non-specific, use negative dipstick (both nitrite & leucocytes) to exclude UTI.³⁴

**How to respond to a positive lab report²**

Follow up after 48 hours (or according to the clinical situation) to check response to treatment and the urine culture results.⁴

Obtaining a clean-catch sample of urine in men is easier than in women and a colony count of ≥10³ 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.¹

**Treatment choices**

<table>
<thead>
<tr>
<th>First line (if aflebrile)³⁴</th>
<th>Treat for 7 days³⁴ C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrofurantoin⁵⁶</td>
<td>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>Treat for 14 days⁸</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>500mg bd</td>
</tr>
</tbody>
</table>

If first line unsuitable or GFR<45ml/min²²A⁺

* 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: Amoxicillin²²A⁺ 500mg tds for 7 days

If high resistance risk**: Fosfomycin 3g stat then repeat 3 days later (unlicensed)³³

**Cautions**

* Avoid nitrofurantoin if eGFR<45ml/min, (risk of peripheral neuropathy; ineffective due to inadequate urine concentrations;⁵⁶⁵), 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.⁷ **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.¹

**References**

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

<table>
<thead>
<tr>
<th>When to treat</th>
<th>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.2,3 Catheter in situ: antibiotics will not eradicate asymptomatic bacteriuria; only treat if systematically unwell or pyelonephritis likely.4b–5b. 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 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.1 Consider changing the catheter to manage the UTI1 If an indwelling catheter has been in place for &gt;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.10 Obtain urine specimen for culture from the freshly-placed catheter before initiating antibiotic therapy.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>When to investigate</td>
<td>Symptomatic catheter-associated UTI (CA-UTI) cannot be differentiated from UTI asymptomatic bacteriuria on the basis of urine analysis with dipstick tests.7 Dipstick testing should not be used to diagnose UTI in catheterised patients.1 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.3 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.5 Culture specimens should not be obtained from the drainage bag.</td>
</tr>
<tr>
<td>How to respond to a positive lab report</td>
<td>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.</td>
</tr>
<tr>
<td>Treatment choices</td>
<td>**Lower UTI.**6 Nitrofurantoin 100mg m/r bd OR 50mg I/R qds for 7 days or Trimethoprim 200mg bd for 7 days if culture sensitive <strong>ONLY TREAT IF SYMPTOMATIC</strong> **Upper UTI (fever or loin pain).**6 See Pyelonephritis</td>
</tr>
<tr>
<td>Cautions</td>
<td>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 patients with an eGFR of 30 to 44 ml/min.8 Treatment may need to be extended to 10-14 days in patients with a delayed response.1,5b,8</td>
</tr>
<tr>
<td>Evidence</td>
<td>When changing catheters in patients with a long-term indwelling urinary catheter: do not offer antibiotic prophylaxis routinely.1 Consider antibiotic prophylaxis for patients with a history of symptomatic UTI after catheter change or who experience trauma during catheterisation.4b</td>
</tr>
</tbody>
</table>

**References**

7. BNF 73, April 2017 (Accessed June 2017)
# Urinary Tract Infections – Recurrent UTI in Non-Pregnant Women – Prophylaxis (Patient information Leaflet available from TARGET UTI)

## 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. 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

<table>
<thead>
<tr>
<th>Non-antibiotic treatment:</th>
<th>Second Line:</th>
<th>Long-term low dose prophylaxis for 3-6 months then review recurrence rate and need:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hydration(1.5L/day) and ibuprofen for symptom relief</td>
<td>STAND-BY OR</td>
<td>Methenamine hippurate 7A+ 1g bd for 6 months (consider adding in Ascorbic Acid to possibly enhance acidity of urine) OR</td>
</tr>
<tr>
<td>• Cranberry products may reduce the recurrence rate of cystitis, and are available from shops. These products work for some women</td>
<td>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)</td>
<td>• Nitrofurantoin 100mg m/r caps stat</td>
</tr>
<tr>
<td>• Cranberry products should not be taken if warfarin is being used.</td>
<td>First line: Nitrofurantoin 100mg m/r</td>
<td>If recent culture sensitive: Trimethoprim 100mg at night</td>
</tr>
<tr>
<td>• High strength capsules (containing at least 200mg of cranberry extract) are recommended because they may be more effective than cranberry juice.</td>
<td>Second line: Ciprofloxacin 500mg stat</td>
<td>• Ciprofloxacin 100mg at night</td>
</tr>
<tr>
<td>• Probiotics containing lactobacilli (oral or vaginal)</td>
<td>If recent culture sensitive:</td>
<td>500mg at night 1.3 – check with micro</td>
</tr>
</tbody>
</table>

## 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 months (consider adding in Ascorbic Acid to possibly enhance acidity of urine) OR • Nitrofurantoin 100mg m/r at night 1.3 If recent culture sensitive: Trimethoprim 100mg at night • Ciprofloxacin 500mg at night 1.3 – check with micro

## References

4. BNF 73. Apr 2017 (Accessed June 2017)
### 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 leukocyte esterase and nitrite in non-catheterised patients ≥70y for evidence of a UUTI. (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 leukocyte esterase test, a UTI is highly (90%) likely.
- If the leukocyte esterase test alone is positive, a UTI is moderately (50%) likely.
- If both nitrites and leukocytes 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) and on advice from a microbiologist, consider IV antibiotic via OPAT.

If organism sensitive:
- Ciprofloxacin 500mg bd for 7 days
- *Co-amoxiclav 625mg tds 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; I²=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
1. SIGN 88 UTI 2012 (Accessed Aug 2017)
# 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:

1. <25yrs
2. No / inconsistent condom use
3. Recent (<12mth) or frequent change of sexual partner
4. Previous STI
5. Symptomatic partner
6. MSM

## Diseases

1. Syphilis – always refer to GUM/Sexual Health Services
2. Gonorrhoea – always refer to GUM/Sexual Health Services
3. 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

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<th>Genital Tract Conditions – Vulvovaginal Candidiasis</th>
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</tbody>
</table>
### 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)\(^1\); women undergoing some surgical procedures\(^5\); and some pregnant women\(^1\).

Symptomatic pregnant women should be treated in the usual way\(^1\) 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.\(^1\)

#### Treatment choices

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

- **Metronidazole** 400mg oral bd for 7 days\(^4+\) (preferred over 2g stat for efficacy and also in pregnancy)\(^5\)
- **OR Metronidazole** 2g stat\(^4+\) (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\(^4+\)
- **OR Clindamycin** 2% vaginal cream, 5g applicatorful at night for 7 days\(^4+\)

#### Cautions

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

#### Evidence

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

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

#### References

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<tr>
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<td><strong>Evidence</strong></td>
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</tbody>
</table>
## Genital Tract Conditions – Trichomoniasis

<table>
<thead>
<tr>
<th>When to treat</th>
<th>Treat only laboratory confirmed diagnosis.(^1) Patients with <em>T. vaginalis</em> seen on cytology should have lab confirmation before treatment. Sexual partner(s) should be treated simultaneously.(^1,2) Refer to GUM/Sexual Health Services clinic.(^3) Oral treatment needed as extravaginal infection common.(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>When to investigate</td>
<td>All symptomatic patients.(^4) Yellow, green frothy discharge. Fishy/offensive odour +/- pruritis, vaginitis, dysuria.(^5) Screening of asymptomatic patients is not recommended.(^4) Screening for co-existent sexually transmitted infections should be undertaken in both men and women.(^1,3)</td>
</tr>
<tr>
<td>General advice</td>
<td>Patients should be advised to avoid sexual intercourse (including oral sex) until they and their partner(s) have completed treatment and follow-up.(^2)</td>
</tr>
</tbody>
</table>
| Treatment choices | **First line:** Metronidazole\(^*\) 400mg bd for 5-7 days\(^3\) OR Metronidazole 2g stat\(^*\) (consider suspension formulation at night for better tolerability\(^0\) avoid 2g dose in pregnancy/breastfeeding\(^3\))  
Symptomatic relief (not cure) if metronidazole declined:\(^3\)  
Clotrimazole pessary\(^*\) 100mg each night for 6 nights |
| 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.\(^2\) |
| Evidence | Treating partners does not reduce relapse.\(^*\)\(^6\) 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%.\(^2\) |
## 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). Delaying treatment may increase the risk of long term sequelae such as ectopic pregnancy, infertility and pelvic pain. Because of this, and the lack of definitive diagnostic criteria, a low threshold for empiric treatment of PID is recommended.  
Start treatment and refer woman & contacts to GUM service.

### When to investigate
Always test for gonorrhoea & chlamydia as positive result supports PID diagnosis. However, a negative result does not exclude PID. All patients should be offered a pregnancy test when required to exclude pregnancy. Refer woman & contacts to GUM service to screen for sexually transmitted infections.

### General advice

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

### Treatment choices
**If low risk of Gonococcal infection**
- **Metronidazole 400mg bd PLUS Ofloxacin 400mg bd**
- All for 14 days

**If high risk of Gonococcal infection**
- **Ceftriaxone 500mg IM stat** (seek expert advice if history of severe penicillin allergy) PLUS
- **Metronidazole 400mg bd PLUS Doxycycline 100mg bd**. Both for 14 days

### Cautions
PID in pregnancy requires parenteral treatment – refer to specialist.

**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.

**Metronidazole** is included in some regimens to improve coverage for anaerobic bacteria. 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.

### Evidence
Use ceftriaxone regime if gonorrhoea likely as resistance to quinolones is high, 25% of gonorrhoea isolates in 2014 were resistant to ciprofloxacin.

### 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.¹
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.¹ (An STI is much more likely in men <35 years. Send first-catch urine for NAATs).²
Admit to hospital if the man is unable to take oral antibiotics, has acute urinary retention or is severely ill.¹
Refer urgently if the man has a pre-existing urological condition and consider urgent referral if the man has diabetes or is immunocompromised.¹ |
| **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.¹
If there is deterioration or failure to respond to oral therapy, urgent admission and parenteral therapy should be arranged;¹ prostatic abscess may need to be excluded or treated.¹
Treatment of sexual partners is not required.² |
| **General advice** | Adequate hydration should be maintained, rest encouraged and analgesics such as non-steroidal anti-inflammatory drugs if required.¹
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).¹
Following recovery, refer for investigation to exclude structural abnormality of the urinary tract.¹ |
| **Treatment choices** | **First line:**³
  - Ciprofloxacin* 500mg bd for 28 days  OR
  - 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:**³
  - 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.⁴ |
| **Evidence** | Quinolones achieve higher prostate levels than trimethoprim.³
UK guidelines recommend treatment for at least 4 weeks to prevent the development of chronic prostatitis.¹ |
## Genital Tract Conditions – Balanitis

### When to treat

When this condition is suspected or where symptoms are troublesome or do not resolve with good hygiene.

### When to investigate

A sub-preputial swab is not necessary to make a diagnosis, but can be useful for identifying the underlying cause. Take a sub-preputial swab if balanitis is severe, recurrent or persists despite treatment.

- Check blood glucose levels or urine for glycosuria if balanitis is severe, persistent, or recurrent (especially if Candidal balanitis is present).
- Only swab for Gardnerella-associated balanitis if this is suspected clinically.
- If penile cancer is suspected, refer urgently to genitourinary medicine (GUM) or urology.
- If ulceration, urethritis or inguinal lymphadenopathy is present, refer to GUM.
- If balanitis is recurrent and associated with inability to retract the foreskin, refer to urology.
- If balanitis is recurrent and no underlying cause can be identified, or balanitis persists despite treatment, refer to GUM or urology, depending on the most likely underlying cause.

### How to respond to a positive lab report

- If symptoms are worsening or do not start to improve within 7 days, advise patient to stop hydrocortisone, if prescribed, and take a sub-preputial swab (if not already done) to exclude or confirm a fungal or bacterial infection, and adjust treatment (if indicated), or seek specialist advice.
- Screening should be offered to partners where a sexually transmissible agent is found.

### General advice

- Advise daily cleaning under the foreskin with lukewarm water, followed by gentle drying. Soap or other irritants should not be used on the genitalia. Consider prescribing an emollient (such as hydromol ointment) as a soap substitute.

### Treatment choices

**For suspected non-specific dermatitis, with or without candidal colonization:**

- **Clotrimazole** 1% or **Miconazole** 2% cream bd until symptoms settle
- **OR**
  - **Fluconazole** 150mg stat if severe symptoms

**If suspected / confirmed **Gardnerella**-associated:**

- **Metronidazole** 400mg bd for 7 days

**If suspected / confirmed **Streptococcal balanitis:**

- **Flucloxacillin** 500mg qds for 7 days
- **OR** if penicillin allergic:
  - **Clarithromycin** 250mg bd for 7 days
- **OR** according to reported sensitivities

If inflammation is causing discomfort consider prescribing **Hydrocortisone** 1% cream or ointment for up to 14 days in addition to treatment.

### Cautions

Advise about effect on condoms if creams are being applied.

### Evidence

3. Sexually Transmitted Infections in Primary Care 2013 (British Association for Sexual Health and HIV (BASHH)) [https://www.bashh.org/documents/Sexually%20Transmitted%20Infections%20in%20Primary%20Care%202013.pdf](https://www.bashh.org/documents/Sexually%20Transmitted%20Infections%20in%20Primary%20Care%202013.pdf) (accessed September 2017)

### References

3. Sexually Transmitted Infections in Primary Care 2013 (British Association for Sexual Health and HIV (BASHH)) [https://www.bashh.org/documents/Sexually%20Transmitted%20Infections%20in%20Primary%20Care%202013.pdf](https://www.bashh.org/documents/Sexually%20Transmitted%20Infections%20in%20Primary%20Care%202013.pdf) (accessed September 2017)
# Genital Tract Conditions – Epididymo-Orchitis

## When to treat

Have a very low threshold for admitting immediately to exclude testicular torsion.¹ Consider other causes, such as mumps orchitis (may be parotid swelling), Behçet's syndrome (if recurrent epididymitis), tuberculosis, and amiodarone.²,³

If symptoms are severe or the man or boy is very unwell, consider admitting to hospital, particularly if he has diabetes or is immunocompromised.¹

Ideally refer for same-day or next-day assessment by a sexual health specialist.¹ If this is not possible: Obtain a mid-stream urine for dipstick, microscopy, and culture and test for sexually transmitted infections.² Empirical therapy should be given to all patients with epididymo-orchitis before laboratory results are available.²

## When to investigate

All patients with sexually transmitted epididymo-orchitis should be screened for other sexually transmitted infections.²

If a urinary tract infection is confirmed, refer to a urologist to investigate for an underlying structural abnormality or urinary tract obstruction.¹

## How to respond to a positive lab report

Tailor treatment according to culture and sensitivity results.

If the patient was gonorrhoea positive, they should be referred to a GUM clinic.

## General advice

Bed rest, scrotal elevation (such as with supportive underwear), and analgesia.¹ If symptoms worsen, or do not begin to improve within 3 days, return for reassessment.¹

## Treatment choices

<table>
<thead>
<tr>
<th>If sexually transmitted organism related, including gonorrhoea:⁴</th>
<th>Most probably due to chlamydia or other non-gonococcal organism (no risk factors for gonorrhoea) consider:⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ceftriaxone</strong> 500mg stat IM (See PID monograph for reconstitution and administration) PLUS Doxycycline 100mg bd for 14 days.</td>
<td><strong>Doxycycline</strong> 100mg bd for 14 days OR <strong>Ofloxacin</strong> 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>

All causes, but patient is allergic to tetracyclines and/or cephalosporins:⁵

| **Ofloxacin** 200mg bd for 14 days |
| **If due to an enteric organism (for example, Escherichia coli):⁴** |
| **Ofloxacin** 200mg bd for 14 days OR **Ciprofloxacin** 500mg bd 10 days |

## 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.¹

## Evidence

Cefixime 400mg oral as a single dose may be an alternative to ceftriaxone where IM route is contraindicated or refused.⁵ Observations in Asia have raised concern over the adequacy of 400mg cefixime for the treatment of genital gonorrhoea.⁵

## References

3. Amiodarone SPC Amiodarone 200mg Tablets - Summary of Product Characteristics (SPC) - (eMC)
<table>
<thead>
<tr>
<th>Genital Tract Conditions – Genital Herpes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When to treat</strong></td>
</tr>
</tbody>
</table>
| **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 Famiclovir 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 Famiclovir 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. CKS recommends that oral aciclovir should be prescribed first-line, as it is the least expensive option. |
2. Clinical Knowledge Summaries (CKS). Herpes simplex – genital. Revised April 2017  
<table>
<thead>
<tr>
<th>Genital Tract Conditions – Bartholin’s Cyst</th>
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<td><strong>When to treat</strong></td>
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<td>Refer to secondary care</td>
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<th>Genital Tract Conditions – post TOP Endometritis</th>
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<tr>
<td><strong>When to treat</strong></td>
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<tr>
<td>Refer to treating Consultant</td>
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</table>

<table>
<thead>
<tr>
<th>Genital Tract Conditions – Gonorrhoea</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When to treat</strong></td>
</tr>
<tr>
<td>Antibiotic resistance is now very high. Use IM ceftriaxone and oral azithromycin, refer to GUM and test of cure is essential. <strong>Ceftriaxone</strong> 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.</td>
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</table>

<table>
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<tr>
<th><strong>Treatment Choices</strong>^1</th>
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</thead>
<tbody>
<tr>
<td><strong>Ceftriaxone</strong> 500mg <strong>IM stat</strong> (seek expert advice if history of severe penicillin allergy) PLUS <strong>Azithromycin</strong> 1g <strong>oral stat</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>References</th>
</tr>
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</table>
# Gastro-intestinal infections - Eradication of Helicobacter pylori

## When to treat: test and treat approach

Patients 55 and older, with recent onset, unexplained & persistent (over 4-6 weeks) dyspepsia, should be referred urgently for endoscopy, to exclude cancer 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.

Test in the following situations:
- 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 & 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, preferably by UBT, but SAT is an alternative.
- Withhold re-testing for at least 2 weeks after PPI or 4 weeks after antibiotic/bismuth treatment.
- If poor compliance or local high resistance rates
- Patients with complicated peptic ulcer or MALTOMA
- Patients requiring aspirin or NSAID
- Family history of gastric cancer
- Patients with severe recurrent symptoms after initial improvement with HP eradication and which are not typical of GORD
- In eradication failure, re-assess need for HP treatment.
- In GORD or NUD patients with no family history of cancer of PUD, PPI maintenance may be appropriate, after discussion with patient

Refer for Helicobacter culture & susceptibility testing at endoscopy:
- Patients in whom choice of antibiotic is limited by allergy, high local resistance or previous use within one year
- Patients who have received two courses of antibiotic treatment and remain HP positive

## 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

- 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 **OR Amoxicillin** 1g and **Metronidazole (MZ)** 400mg BD

#### Second-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
- **Levofloxacin** 250 mg BD for 10 days

### Penicillin-allergic:

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

#### Second-line:
PPI twice daily PLUS **bismuth subsalicylate** 525 mg QDS PLUS **Tetracycline** 500 mg QDS PLUS **Levofloxacin** 250mg BD for 10 days

### Penicillin-allergic:

#### First-line:
Ongoing symptoms after first line:
- PPI **PLUS Amoxicillin PLUS** antibiotic not used first-line for 7 days

#### Second-line:
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

### No penicillin allergy:

#### First-line:
Ongoing symptoms after first line:
- PPI **PLUS Amoxicillin PLUS** antibiotic not used first-line for 7 days
### Gastro-intestinal infections - Eradication of Helicobacter pylori (continued)

<table>
<thead>
<tr>
<th>Cautions</th>
<th>If diarrhoea develops, consider <em>Clostridium difficile</em> infection and review need for treatment.¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence</td>
<td>Helicobacter test &amp; 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 usefulness⁵</td>
</tr>
</tbody>
</table>
| References | 1. Test and treat for *Helicobacter pylori* in dyspepsia – Quick reference guide for primary care. PHE 2017  
http://gut.bmj.com/content/66/1/6.full.pdf+html?sid=aaa8a635-3394-433a-a977-c1d459ee697a  
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  
https://www.nice.org.uk/guidance/CG184 (accessed 6 December 2016)  
4. BNF December 2016 (accessed 8 December 2016) |
### 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. >1week).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 & 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 5-7days if treated early (within 3 days).3C

#### 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.5

#### References
1. PHE 2015 Infectious diarrhoea Quick reference guide for primary care
2. Management of Infection Guidance for Primary Care, PHE & BIA, September 2017
### 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  
### Gastro-intestinal infections - Clostridium difficile Infection

#### When to treat

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Asymptomatic carriage does not require treatment</td>
<td></td>
</tr>
<tr>
<td>People with mild disease may improve with cessation of precipitating antibiotics alone</td>
<td></td>
</tr>
<tr>
<td>If the patient has features of severe or life-threatening CDI, or their condition is rapidly deteriorating, admit to hospital</td>
<td></td>
</tr>
<tr>
<td><strong>Mild CDI</strong>: Typically associated with &lt;3 episodes of loose stools/day, no or mild abdominal discomfort, no increased white cell count (WCC)</td>
<td></td>
</tr>
<tr>
<td><strong>Moderate CDI</strong>: Typically associated with 3–5 loose stools per day, moderate abdominal discomfort / cramping, increased WCC but &lt;15 x 10⁹/L</td>
<td></td>
</tr>
<tr>
<td><strong>Severe CDI</strong>: The number of stools may be a less reliable indicator of severity, severe abdominal discomfort / cramping / distension, WCC &gt;15 x 10⁹/L, or an acutely rising serum creatinine (&gt;50% above baseline), or a temperature &gt;38.5°C, or evidence of severe colitis</td>
<td></td>
</tr>
</tbody>
</table>

#### When to investigate

Consider CDI in patients with liquid/loose stool with recent exposure to antibiotics, Proton Pump Inhibitors (PPI) or recent hospitalisation. 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.

- 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.

#### 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.

- Screening test negative (Negative Predictive Value = 98.9%) CDI very unlikely to be present
- 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
- Screening test positive AND Toxin EIA positive (Positive Predictive Value = 91.4%) – CDI highly likely and associated with poor outcome
  - 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, discontinue other drugs that might cause diarrhoea
- 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 H₂ Receptor Antagonist (H₂RA).

#### General advice and Cautions

- Review the person daily and monitor for signs of increasing severity of disease as they may deteriorate rapidly
- Give advice on hand hygiene with soap and water to minimize the spread of possible infection, avoid alcohol hand rubs
- 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
- Antimotility agents (such as loperamide) should be avoided in acute infection due to the risk of precipitating toxic megacolon
- If possible, avoid other drugs with anti-peristaltic effects (such as opioids)

Administration of currently available probiotics is not recommended to prevent CDI or antibiotic associated diarrhoea.
### Gastro-intestinal infections - *Clostridium difficile* Infection (continued)

#### Treatment choices

<table>
<thead>
<tr>
<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:</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><strong>Metronidazole</strong> 400-500mg TDS for 10-14 days</td>
<td><strong>Oral Vancomycin</strong> 125mg QDS for 10-14 days then taper.</td>
<td><strong>Oral Vancomycin</strong> 125-500*mg QDS for 10-14 days. Higher doses can be used where there is no response to 125mg therapy to increase intraluminal concentration. Tapering followed by pulsed doses of Vancomycin may be of value: 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>For patients with recurrent CDI that have failed to respond to antibiotics. Consult your Clinical Commissioning Group for commissioning / referral guidelines.</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

8. NICE [ESMPB1]. *Clostridium difficile* infection: risk with broad-spectrum antibiotics. March 2015.
<table>
<thead>
<tr>
<th><strong>Gastro-intestinal infections - Travellers’ Diarrhoea (Stand-by or Prophylactic Treatment)</strong></th>
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<tr>
<td><strong>When to treat</strong></td>
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<td><strong>When to investigate</strong></td>
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<tr>
<td><strong>General advice</strong></td>
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<td><strong>Treatment choices</strong></td>
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<td><strong>Evidence</strong></td>
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<td><strong>Gastro-intestinal infections - Threadworms</strong></td>
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<td><strong>When to treat</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td><strong>When to investigate</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td><strong>General advice</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
| **Treatment choices** | **First line for adults and children aged >6 months:**<sup>2</sup>  
Mebendazole 100mg stat chewable tablet (off label if <2yrs)  
Repeat in 2 weeks if infestation persists<sup>2</sup>  
**For children aged <6 months:**<sup>1</sup>  
6 weeks strict hygiene (alone) to prevent faecal-oral re-infection<sup>2</sup> |
| **Cautions**<sup>1</sup> | 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. |
| **Evidence**<sup>1,3</sup> | 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-rate<sup>3</sup>, however it has few contraindications and post-marketing surveillance has revealed no serious safety concerns.<sup>1</sup>  
Hygiene measures, plus physical removal advice is based on expert opinion.<sup>1</sup> |
| **References** | 1. CKS Threadworm Dec 2011  
2. Management of Infection Guidance for Primary Care. Date accessed September 2017  
3. NHS Choices Threadworms. Available at  
   [Threadworms - Treatment - NHS Choices](https://www.nhs Choices.co.uk/conditions/threadworms) |
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<thead>
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<td><strong>When to treat</strong></td>
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<td><strong>When to investigate²</strong></td>
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<tr>
<td><strong>General advice</strong></td>
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</tbody>
</table>

**References**
# Skin & Soft Tissue Infections – Impetigo (adults) (FOR PAEDIATRIC GUIDELINES see page 82)

## 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>If penicillin allergic: Clarithromycin 250-500mg bd for 7 days *</td>
<td>Flucloxacillin 500mg qds 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)
**Skin & Soft Tissue Infections – Scabies**

| 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.  
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.  
Pregnant and Breastfeeding women should also be treated with insecticide.  
Scabies persists indefinitely if not treated.  
Treat scabies that has become infected with an antibiotic.  
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. |
| --- | --- |
| When to investigate | Finding the mite or its products confirms, but is not necessary for making a diagnosis of scabies.  
Review if symptoms have not cleared within 6 weeks after the first application of treatment.  
Refer institutionalised outbreaks of scabies (e.g. schools, long-stay nursing homes) to the PHE. |
| Treatment choices | **Permethrin**\(^A\) 5% cream. Apply as described below, in two applications, 7 days apart.  
Wash off after 8-12 hours.  
**If allergy: Malathion**\(^C\) 0.5% aqueous liquid. Apply as described below, in two applications, 7 days apart.  
Wash off after 24 hours.  |
| General Advice | Itch may persist for several weeks.  
Consider symptomatic treatment for itching (e.g. crotamiton 10% cream).  
Machine wash (at 50°C or above) clothes, towels, and bed linen, on the day of application of the first treatment.  
If recurrence occurs where all contacts were treated simultaneously and treatment was applied correctly, give a course of a different insecticide. |
| Evidence | There is more evidence for the effectiveness of permethrin than malathion.  
Benzyl benzoate is regarded as too irritant, and crotamiton is ineffective compared to the recommended options.  
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.  
There are hyperkeratotic, warty crusts, which are usually on the hands and feet but all areas of the skin may be involved  
Seek specialist advice from a consultant dermatologist for the management of anyone presenting with crusted scabies; admission may be required. |
## Skin & Soft Tissue Infections – Eczema

### When to treat

If **no visible signs of infection**, use of antibiotics (alone or with steroids) encourages resistance and does not improve healing. In eczema with **visible signs of infection**, use treatment as in impetigo.

Admit to hospital urgently if eczema herpeticum (disseminated herpes simplex virus infection) suspected. Signs of eczema herpeticum are:

- rapidly worsening, painful eczema;
- clustered blisters
- punched-out erosions which may coalesce to form larger areas of erosion that can extend over the entire body;
- possible fever, lethargy, or distress.

Refer urgently (within 2 weeks) to a dermatologist if infected eczema has not responded to treatment. Refer to a dermatologist if recurrent secondary bacterial infection.

### General advice

- Flares can usually be controlled with emollient and/or topical steroid treatment. If persistent, severe itch or urticaria: consider a one-month trial of non-sedating antihistamines. If severe, extensive eczema: consider a short course of oral corticosteroids (with oral antibiotics if signs of infection).

### Evidence

- Oral antibiotics were not associated with benefit in small trials of eczema without visible signs of infection.

### References

## Skin & Soft Tissue Infections – Acne Vulgaris

### When to treat
- **Mild acne**: Predominantly consists of non-inflammatory comedones (open and closed)
- **Moderate acne**: Consists of a mixture of non-inflammatory comedones and predominating inflammatory papules and pustules.
- **Severe acne**: 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.

### 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
#### Topical Treatment
<table>
<thead>
<tr>
<th>Mild/moderate: First line: Topical Retinoid OR Benzoyl Peroxide Second line: Azelaic Acid Moderate acne (at risk of scarring): Topical antibiotic PLUS Benzoyl Peroxide OR Topical Retinoid</th>
</tr>
</thead>
</table>

#### 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 antibiotics should be limited to 12 weeks treatment where possible. Topical retinoids are contraindicated in pregnancy.

### 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.  

#### When to refer

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

#### 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. 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.  

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

#### Treatment choices

<table>
<thead>
<tr>
<th>Type of Rosacea</th>
<th>Treatment</th>
</tr>
</thead>
</table>
| Mild/moderate papulopustular acne rosacea – azelaic acid | 15% gel BD or metronidazole 0.75% gel BD for 6-9 weeks.  
Ivermectin 1% cream OD (specialist recommendation only) for up to 4 months (review and discontinue if no response at 12 weeks) is an alternative consideration. |
| Extensive papules, pustules, or plaques - oxytetracycline 500 mg BD for a trial course of 6-12 weeks (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.) |
| Predominant erythema – brimonidine 0.5% gel OD (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/day. |
| 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 above. |

#### Evidence

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  
3. NICE guidance Inflammatory lesions of papulopustular rosacea:ivermectin 10mg/g cream Jan 2016  
4. NICE guidance Facial erythema of rosacea:brimonidine tartrate gel July 2014  
5. Mirvaso 3mg/g Gel - Summary of Product Characteristics (SPC) – eMC
# Skin & Soft Tissue Infections – Cellulitis (Adults) (FOR PAEDIATRIC GUIDELINES see page 82)

## When to treat

If patient febrile 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.

## Treatment choices

**First Line:**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flucloxacillin</strong></td>
<td>500mg-1G qds for 7 days</td>
</tr>
</tbody>
</table>

*If penicillin allergic:*

- **Clarithromycin** 500mg bd for 7 days

*If penicillin allergic and taking statins:*

- **Doxycycline** 200mg stat then 100mg od for 7 days

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mild facial cellulitis:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Co-amoxiclav</strong></td>
<td>625mg tds for 7 days</td>
</tr>
</tbody>
</table>

If unresolving: **Clindamycin** 300 QDS (6 hourly) for 7 days or **Co-trimoxazole** 960mg BD

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.

## 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 result. 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 β-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

Advises patients to keep mobile, elevate legs when 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.

*High risk for C Difficile infection

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.

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
### 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)4,5 Other signs may include foul odour, non-purulent secretions, friable or discoloured granulation tissue, undermining of wound edges.6
- Ideally refer anyone with new diabetic foot infection to a multidisciplinary foot-care team within 24 hours.7,8 If this is not possible and the infection is superficial and non-threatening, consider taking swabs then start empirical antibiotic treatment9
- 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.9,10
- 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.7,11
- If the infection is severe (> 2 SIRS criteria), refer for urgent inpatient management.7 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.9,12

**When to investigate**

Swabs should be taken from the deepest part of the cleaned wound after removal of surface contamination and exudate.9 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 empirical 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 redistribution of foot pressures, investigating vascular insufficiency, optimising glycaemic control and wound management.1,4

Advise 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>• Mild infection</th>
<th>First Line: Fluoroaxillin 1000mg QDS and Metronidazole 400mg TDS for 7 days 4,5</th>
<th>If penicillin allergic OR known to be infected/colonised with MRSA within the last year: Doxycycline 100mg BD 2,3,5, and Metronidazole 400mg TDS for 7 days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consider continuing antibiotics for a further 7 days depending on speed of response to treatment 2,5</td>
<td></td>
</tr>
<tr>
<td>• Moderate infection without complications</td>
<td>First Line 2,3,5: Co-amoxiclav* 625mg TDS for 14 days If penicillin allergic 2,3,5: Clindamycin* 450mg QDS PLUS Moxifloxacin* 400mg OD for 14 days * High risk for C Difficile infection</td>
<td>If known to be infected/colonised with MRSA within the last year: seek advice from a Microbiologist as may require inpatient management</td>
</tr>
</tbody>
</table>

**Evidence**

Several antibiotics have been shown to be effective, but no single regimen has shown superiority.1 Continue antibiotic therapy until the infection has resolved but not to heal a wound which typically takes longer. 2,3 Prolonged antibiotic therapy (6 weeks) may be required for osteomyelitis.1 The certainty of the evidence provided by trials was too low to be certain of the benefits and harms of topical antimicrobial treatments for treating foot ulcers in people with diabetes. More, larger and better-designed randomised controlled trials should be carried out in this area.2

**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, Mario Cruciani, Marta Fiscon, Jun Xia

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**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.

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.\(^5\)

### 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 patient 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, tracheostomies, 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.\(^6\)

**Panton-Valentine Leukocidin (PVL)** is a toxin produced by 20.8-46% of S. aureus from boils/abscesses.\(^4\) PVL strains are rare in healthy people but can cause severe invasive infections.\(^3\) 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).\(^6\)

### 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.**\(^6\)

<table>
<thead>
<tr>
<th>Nasal: Mupirocin in paraffin base</th>
<th>Apply to anterior nostrils TDS (8 hourly) for 5 days.(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If resistant to mupirocin</td>
<td>Naseptin nasal cream, apply to anterior nostrils QDS for 10 days (contra-indicated: if patient is allergic to peanut, soya or chlorhexidine)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skin: 4% Chlorhexidine gluconate</th>
<th>Body-wash/shampoo daily for 5 days. Ensure that hair is washed twice using the same solution during the treatment period.</th>
</tr>
</thead>
<tbody>
<tr>
<td>If allergic to chlorhexidine/sensitive skin/child</td>
<td>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).(^5)</td>
</tr>
</tbody>
</table>

### ORAL ACTIVE TREATMENT:\(^3\)\(^4\) for 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

<table>
<thead>
<tr>
<th>Cat or Dog bite first line prophylaxis or treatment:</th>
<th>Cat or Dog bite prophylaxis or treatment if penicillin allergic:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Co-amoxiclav</strong> 375-625mg tds for 7 days</td>
<td><strong>Metronidazole</strong> 400mg tds <strong>PLUS Doxycycline</strong> 100mg bd for 7 days</td>
</tr>
</tbody>
</table>

#### 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

#### When to treat

Prescribe prophylactic antibiotics for all human bite wounds less than 72 hours old, even if there is no sign of infection. 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, HIV, Hepatitis B&C:** 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.

#### When to investigate

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).

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

Alter treatment in response to culture and sensitivity results.

#### 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 thoroughly with warm running water.

#### Treatment choices

**Prophylaxis or treatment:**

<table>
<thead>
<tr>
<th>Co-amoxiclav*</th>
<th>375-625mg tds for 7 days</th>
</tr>
</thead>
</table>

**Prophylaxis or treatment if penicillin allergic:**

| Metronidazole 400mg tds PLUS Doxycycline 100mg bd for 7 days |
| 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.

#### Cautions

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

#### Evidence

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.

#### References

### Skin & Soft Tissue Infections – Insect bites

#### When to treat¹,²

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 investigate¹,²

**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 ³

**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.

#### Evidence²

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 – 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. 5mm² 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

**Dermatophyte infection:**

- **Skin or foot:**²
  - Topical 1% Terbinafine⁴ od - bd for 7-14 days.²
  - **Groin or foot:**²
  - Use a 1% Azole cream od - bd for 4-6 weeks
  - Alternative for foot only:³
    - **Topical Undecanotes (Mycota)²** bd continued for 1-2 weeks after healing

**Candida infection:**

- **Azole cream 1% od - bd continued for 1-2 weeks after healing¹**

**If intractable, send skin scrapings before starting oral treatment:**³

- **Terbinafine 250mg oral od²**
- **Skin:** 4 weeks
  - **Groin:** 2-4 weeks
  - **Foot:** 2-6 weeks
- **OR Itraconazole⁶**
  - **Skin or groin:** either 100mg oral daily for 15 days, or 200mg od for 7 days⁴
  - **Foot:** either 100mg oral once daily for 30 days or 200mg twice daily for 7 days⁴

### Cautions

Baseline LFTs before starting terbinafine, discontinue if symptoms of liver toxicity,³

*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.

### References

2. PHE Fungal skin and nail infections 2011.
4. BNF 72 September 2016 - March 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 itraconazole. 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: Amorolfin 5% nail lacquer b 1-2x / weekly 1</th>
<th>First line: Terbinafine A+ 250mg oral od Finger nails: 6 weeks Toenails: 12 weeks</th>
<th>Second line: Itraconazole A 200mg oral bd for 7 days each month. Finger nails: 2 courses Toenails: 3 courses</th>
</tr>
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<tbody>
<tr>
<td>Toenails: 12 months</td>
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</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

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Chicken pox</strong></td>
<td>Consider treatment if started &lt;24h of rash onset &amp; one of the following: &gt;14 years of age; severe pain; dense/oral rash; 2 or more household cases, 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.</td>
<td></td>
</tr>
<tr>
<td><strong>Shingles</strong></td>
<td>Treat if &gt;50 years old and if &lt;72h 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.</td>
<td></td>
</tr>
<tr>
<td><strong>Cold sore</strong></td>
<td>Resolve after 7-10 days without treatment. Topical antivirals applied prodromally reduce duration by 12-18hrs.</td>
<td></td>
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</tbody>
</table>

## When to test

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</thead>
<tbody>
<tr>
<td><strong>Chicken pox</strong></td>
<td>Laboratory tests can be used for confirmation but are rarely required in primary care.</td>
<td></td>
</tr>
<tr>
<td><strong>Shingles</strong></td>
<td>Seek specialist advice for anyone who is thought to be immunocompetent and has had two episodes of shingles or if there is diagnostic uncertainty.</td>
<td></td>
</tr>
</tbody>
</table>

## General advice

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.

## Treatment choices

<table>
<thead>
<tr>
<th><strong>First line chicken pox/shingles:</strong></th>
<th><strong>Second line for shingles if compliance a problem (as more expensive)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aciclovir* 800mg orally five times a day for 7 days</td>
<td>Valaciclovir 1g orally TDS for 7 days</td>
</tr>
<tr>
<td>Cold sore: Topical Aciclovir 5% 4-hourly during waking hours for 5-10 days</td>
<td>Famciclovir 500mg orally TDS or 750mg orally BD for 7 days</td>
</tr>
</tbody>
</table>

## 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 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

# Skin & Soft Tissue Infections – Scarlet Fever (Scarlatina) (FOR PAEDIATRIC GUIDELINES see page 83)

## 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 darkly-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 (rhinothrea, 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 daysomo 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

<table>
<thead>
<tr>
<th>When to treat</th>
<th>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 <em>Staphylococcus aureus</em> (<em>S. aureus</em>). Sometimes rarer strains of <em>S. aureus</em>, such as methicillin-resistant <em>Staphylococcus aureus</em> (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.</th>
</tr>
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<tr>
<td></td>
<td>Staphylococcal carriage (colonization) refers to the asymptomatic carriage of <em>S. aureus</em> on a person’s skin or mucous membranes. The most common site of colonization by <em>S. aureus</em> is the nose. Staphylococcal carriage is a risk factor for recurrent boils and carbuncles.</td>
</tr>
<tr>
<td>When to investigate</td>
<td>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.</td>
</tr>
<tr>
<td>How to respond to a positive lab result</td>
<td>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.</td>
</tr>
<tr>
<td>General advice</td>
<td>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.</td>
</tr>
<tr>
<td>Treatment choices</td>
<td>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.</td>
</tr>
<tr>
<td>Evidence</td>
<td>This guideline is based on NICE CKS information</td>
</tr>
</tbody>
</table>
### 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

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flucloxacillin</strong></td>
<td>500mg QDS for 7 days (for penicillin allergic patients)</td>
</tr>
<tr>
<td><strong>Clarithromycin</strong></td>
<td>500mg BD for 7 days (for penicillin allergic patients who are pregnant or breastfeeding)</td>
</tr>
<tr>
<td><strong>Erythromycin</strong></td>
<td>500mg QDS for 7 days (for penicillin allergic patients who are pregnant or breastfeeding)</td>
</tr>
<tr>
<td><strong>Metronidazole</strong></td>
<td>400mg TDS for 7 days</td>
</tr>
</tbody>
</table>

#### Evidence
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)

### Rationale

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 *Clostridium difficile*-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

### 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).¹²

### 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

### 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.

Advise women to continue to breastfeed (involving 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. 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.

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.

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.

#### 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

#### 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.

#### Treatment choices

<table>
<thead>
<tr>
<th>Lactating women¹</th>
<th>Non-lactating women¹</th>
<th>Lactating women¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First line:</strong></td>
<td><strong>First line:</strong> Co-amoxiclav 625mg TDS for 10-14 days</td>
<td><strong>Second line:</strong></td>
</tr>
<tr>
<td>If breast milk culture available, treat according to sensitivities otherwise</td>
<td>If allergic to penicillin: Erythromycin 250mg-500mg QDS or Clarithromycin 500mg BD for 10-14 days</td>
<td>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</td>
</tr>
<tr>
<td><strong>If allergic to penicillin:</strong> Erythromycin 250mg-500mg QDS or Clarithromycin 500mg BD for 10-14 days</td>
<td><strong>Second line:</strong> 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</td>
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#### Evidence
A Cochrane systematic review 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.

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

### 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
Duration of treatment is for 14 days for erythema migrans. Facial palsy and other complications need longer treatment of 3-4 weeks.
Oral antibiotics recommended are :
First line: **Doxycycline** *100mg BD*
*Doxycycline use is contra-indicated for children aged under 12 years and for pregnant and breastfeeding women.
Second line: **Amoxicillin 500mg TDS** OR **Cefuroxime axetil 500mg BD**.
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 daily for 2 weeks** is recommended for some neurological presentations.

### Evidence
This guideline is based on PHE information

### References
1. Lyme disease: diagnosis and treatment - GOV.UK
## Eye infections – Infective Conjunctivitis (FOR PAEDIATRIC GUIDELINES see page 84)

### 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.

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.\(^1\)

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\(^{[8]}\)** 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\(^[8]\) (incurs additional prescription charge).
- Continue for 48h after symptom resolution.

**Second line:**

- **Fusidic acid** 1% gel (modified-release eye drops) bd\(^{[4]}\)
- 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

# 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 main stay of treatment. Investigations such as eye swabs for culture are not usually required in primary care.

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

### First line

lid hygiene for symptom control, including:
- warm compresses;
- lid massage and scrubs;
- gentle washing;
- avoiding cosmetics.

### Second line:

- topical antibiotics if hygiene measures are ineffective after 2 weeks.
- **chloramphenicol** 1% eye ointment BD for 6 week trial
  
  Consider oral antibiotics if signs of meibomian gland dysfunction or acne rosacea.
- **Oxytetracycline** 500mg BD initial 4 weeks then 250mg BD maintenance for 8 weeks
- **Doxycycline** 100mg OD initial for 4 weeks then 50mg OD maintenance for 8 weeks

## 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>
<tbody>
<tr>
<td>½ tsp salt dissolved in glass warm water</td>
<td>(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.</td>
<td>Rinse mouth for 2-3 minutes with 15ml diluted in half a glass of warm water tds.</td>
</tr>
</tbody>
</table>

**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. 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
3. BNF April 17 (Accessed Jun 17)
4. www.Medicines.org.uk/chlorhexidine
# Dental Infections – Acute Necrotising Ulcerative Gingivitis (ANG) and Pericoronitis (PC)

## When to treat & General advice

| ANG: Refer urgently to a dentist. While the patient is waiting for referral to a dentist prescribe analgesia for pain relief,\(^1\) 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.\(^1\) |
| PC: Refer to dentist urgently for irrigation and debridement.\(^2\) Antibacterial treatment required only in presence of systemic features of infection, or of trismus or persistent swelling despite local treatment.\(^2\) Tooth brushing, flossing, and mouthwashes have an effect only above and slightly below the gum level.\(^1\) They are therefore ineffective in treating PC, as plaque continues to accumulate below the gum line within periodontal pockets.\(^1\) Mouthwashes are not recommended as the only therapy because they may mask the symptoms while underlying destruction of the periodontal supporting tissue continues.\(^1\) |

## Treatment choices

| First line:\(^2,3\) Metronidazole 400mg tds for 3 days in conjunction with dental treatment. |
| Second line:\(^2,3\) Amoxicillin 500mg tds for 3 days in conjunction with dental treatment (irrigation or incision and debridement). |

## Evidence

There is no consensus about which mouthwash should be recommended for people with ANUG.\(^1\) 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.\(^1\) [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.\(^1\)

## References

3. BNF April 2017 (Accessed Jun 17)
# Dental Infections – Dental Abscess

## When to treat

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.1

## General advice

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.2

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.2

Advise the patient that antibiotic therapy is prescribed to reduce the spread of infection; NOT a substitute for dental treatment.2

## Treatment choices

**First line:**2,4
- Amoxicillin 500mg -1g tds OR
- Phenoxyacetylpenicillin 500mg -1g qds for up to 5 days, review at 3 days.4

If spreading infection (lymph node involvement, or systemic signs, i.e. fever or malaise) ADD Metronidazole4 400mg tds for 5 days.4

**Penicillin Allergy: First line:**
- Metronidazole 400mg tds for 5 days

**Penicillin Allergy: Second line**
- Clarithromycin 500mg bd for up to 5 days, review at 3 days.4

**Penicillin Allergy: Second line**
- Clindamycin 400mg tds for 5 days

## Cautions

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.2 The failure of the antibiotic is not usually due to microbial resistance.2

## Evidence

The recommendations are based on guidance issued by the Faculty of General Dental Practitioners.1

## References

| **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** | **First line:** | **Penicillin allergy:** |
| | Flucloxacillin Oral 500 mg QDS for 5 days | Clindamycin 300 -450 mg QDS for 5 days.  
* High risk for C Difficile infection |
| | 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. | If known MRSA carrier:  
Doxycyline 200mg OD oral for 5 days  
If anaerobic infection suspected/poor dentition:  
ADD Metronidazole 400mg TDS oral for 5 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.\(^1\) |
| 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 ([Link](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
**First line:**
- **Amoxicillin**\(^3\) 40mg/kg bd (max 1g per dose) 12 hourly for 5 days if no previous treatment in preceding 4 weeks

**If treatment with amoxicillin in preceding 4 weeks:**
- **Co-amoxiclav**\(^3\) tds for 5 days
  - **Using 125/31 suspension:**
    - Neonate 0.25ml/kilogram tds
    - Child 1-11 months 0.25ml/kilogram tds (dose doubled in severe infections)
    - Child 1-5 years 0.25ml/kilogram tds or 5ml tds (dose doubled in severe infections)
  - **Using 250/62 suspension:**
    - Child 6-11 years 0.15ml/kilogram tds or 5ml tds (dose doubled in severe infections)

**If allergic to penicillin:**
- **Azithromycin**\(^3\) 10mg/kg od for 3 days (max per dose 500mg)

### 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.

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

<table>
<thead>
<tr>
<th>When to treat</th>
<th>If cellulitis and disease extending outside ear canal, start oral antibiotics based on sensitivities.</th>
</tr>
</thead>
</table>
| **Treatment choices** | **First line:** Acetic acid (EarCalm spray®) 2% one spray tds for 7 days.  
**Second line:** Neomycin with corticosteroid ear drops, three drops tds for 7-14 days | If cellulitis and disease extending outside ear canal, start oral antibiotics based on sensitivities.  
Empirical treatment with **Cefalexin**³ 25mg/kg 8 hourly (max 1g per dose)  
If allergic to penicillin/cephalosporins: **Azithromycin**² 10mg/kg od for 3 days |
| Evidence | Cure rates similar at 7 days for topical acetic acid or antibiotic +/- steroid |
Aim to use an antibiotic that minimises dosing frequency¹ and is palatable (if suspension prescribed)² to optimise adherence. Penicillin V and flucloxacillin suspensions given qds are not well tolerated by children. |
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. Antibiotics only marginally reduce pain at 2 days (NNT 15) and do not prevent deafness\(^1\). Need to treat 4800 with antibiotics to avoid 1 case of mastoiditis\(^2\). 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 \(^1\):

- 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.

Treatment choices

If ear discharge but systemically well and apyrexial, treat with topical antibiotics (Sofradex® or neomycin containing ear drops) 2—3 drops three or four times daily for 10 days.

First line if antibiotics indicated:

<table>
<thead>
<tr>
<th>Amoxicillin(^3) 40mg/kg, 12 hourly (max 1g per dose) 12 hourly for 5 days.</th>
<th>If failed treatment with amoxicillin, Co-amoxiclav(^4) tds for 5 days.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using 125/31 suspension:</td>
<td></td>
</tr>
<tr>
<td>Neonate 0.25ml/kg, tds</td>
<td></td>
</tr>
<tr>
<td>Child 0.25ml/kg tds (dose doubled in severe infections)</td>
<td></td>
</tr>
<tr>
<td>Child 0.5ml tds</td>
<td></td>
</tr>
<tr>
<td>Using 250/62 suspension:</td>
<td></td>
</tr>
<tr>
<td>Child 0.15ml/kg tds (dose doubled in severe infections)</td>
<td></td>
</tr>
</tbody>
</table>

If allergic to penicillin:

| Azithromycin\(^5\) 10mg/kg od for 5 days |

Cautions


Aim to use an antibiotic that minimises dosing frequency \(^3\) 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
# 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. Need to treat >4000 children with antibiotics to prevent one case of quinsy.  

Base decision to treat on FeverPAIN score (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% streptococci: use NO antibiotics
- score 2-3: 34-40% streptococci, use back up/delayed antibiotic
- score ≥4: 62-65% streptococci, use immediate 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

<table>
<thead>
<tr>
<th>Treatment choices</th>
<th>For children unable to swallow tablets:</th>
<th>For children able to swallow tablets:</th>
<th>If allergic to penicillin:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin&lt;sup&gt;4&lt;/sup&gt; 40mg/kg bd (max 1g per dose) for 7 days.&lt;sup&gt;5&lt;/sup&gt; The use of amoxicillin does not significantly increase the risk of rash in acute EBV.&lt;sup&gt;7&lt;/sup&gt;</td>
<td>if age 6-12 years, <strong>Penicillin V</strong>&lt;sup&gt;5&lt;/sup&gt; 500mg bd; if age &gt;12 years, <strong>Penicillin V</strong> 1 g bd for 7 days.&lt;sup&gt;5&lt;/sup&gt;</td>
<td><strong>Azithromycin</strong>&lt;sup&gt;10&lt;/sup&gt; 10mg/kg od for 5 days</td>
<td></td>
</tr>
<tr>
<td><strong>Cautions</strong></td>
<td>Provide safety netting information (verbal and written) - Safety netting documents for parents :: Healthier Together (<a href="https://www.what0-18.nhs.uk/professionals/gy-primary-care-staff/safety-netting-documents-parents">https://www.what0-18.nhs.uk/professionals/gy-primary-care-staff/safety-netting-documents-parents</a>)</td>
<td>Aim to use an antibiotic that minimises dosing frequency and is palatable (if suspension prescribed) to optimise adherence. Penicillin V and flucloxicillin suspensions given qds are not well tolerated by children.</td>
<td></td>
</tr>
</tbody>
</table>

## References
10. BNF Sept 17-18
# 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 3 cm, and child systemically well, consider a no treatment, watchful waiting approach.

Low threshold for treatment if child immunocompromised.

## When to investigate

## Treatment choices
- **If mild/moderate infection:**
  - **Cefalexin** $^2$ 25mg/kg 8 hourly (max 1g per dose) for 7 days.

- **If allergic to penicillin:**
  - **Clarithromycin** $^3$ for 7 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

## Cautions
- Provide safety netting information (verbal and written) - [Safety netting documents for parents :: Healthier Together](https://www.what0-18.nhs.uk/professionals/gp-primary-care-staff/safety-netting-documents-parents)
- 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

<table>
<thead>
<tr>
<th>Treatment choices</th>
<th>First line:</th>
<th>If no response to amoxicillin:</th>
<th>Treatment for atypical infections should only be considered in severe infection if no response to first line empirical therapy/ if allergic to penicillin:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Amoxicillin</strong>³ 40mg/kg bd (max 1g per dose) 12 hourly for 5 days</td>
<td><strong>Co-amoxiclav</strong>³ tds for 5 days</td>
<td>use <strong>Azithromycin</strong>³ 10mg/kg od for 3 days</td>
</tr>
</tbody>
</table>

**Using 125/31 suspension:**
- Neonate 0.25ml/kg tds
- Child 1-11 months 0.25ml/kg tds (dose doubled in severe infections)
- Child 1-5 years 0.25ml/kg tds or 5ml tds (dose doubled in severe infections)

**Using 250/62 suspension:**
- Child 6-11 years 0.15ml/kg tds or 5ml tds (dose doubled in severe infections)

### 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.

### Reference
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.
- Child < 3 months with temp≥38°C: refer urgently to secondary care for assessment.
- Child 3 months - 3 years: send MSU for culture.
- Child ≥ 3 years: use positive dipstick to indicate antibiotics and send MSU for culture.
- If nitrites and/or leuk +ve on dipstick and temp≥38°C, assume upper UTI 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.
- Imaging: only refer if child <6 months, recurrent or atypical UTI.

### 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.
- 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:
- **Trimethoprim**: 4mg/kg 12 hourly (max 200mg/dose).
- If previous treatment with trimethoprim in preceding 3 months, use **Nitrofurantoin** immediate release 750mcg/kg qds (if able to swallow tablets).
- Child 12 - 17 years 100mg m/r bd or **Cefalexin**: 25mg/kg 8 hourly.
- If confirmed severe penicillin allergy and unable to swallow nitrofurantoin tablets: **Ciprofloxacin**: 10mg/kg bd (double dose in severe infection) max 750mg bd
- Duration of antibiotic course 3 days.

#### >3 months of age with upper UTI/pyelonephritis (all children with a febrile UTI should be considered to have pyelonephritis):
- Treat empirically with **Cefalexin**: 25mg/kg 8 hourly unless unable to tolerate oral antibiotics or systemically unwell (suggestive of bacteraemia).
- If confirmed severe penicillin allergy **Ciprofloxacin**: 10mg/kg bd (double dose in severe infection) max 750mg bd
- Duration of antibiotic course 7 days
- If unable to tolerate oral antibiotics or systemically unwell (suggestive of bacteraemia), requires review in hospital for consideration of IV antibiotics – call paediatrician
## 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
- 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
### 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

<table>
<thead>
<tr>
<th>When to treat</th>
<th>If mild/moderate infection:</th>
<th>If facial cellulitis:</th>
<th>If allergic to penicillin:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefalexin(^2) 25mg/kg 8 hourly (max 1g per dose) for 5 days.</td>
<td><strong>Co-amoxiclav(^2)</strong> Using 125/31 suspension: Child 3-11 months 0.25ml/kilogram tds (dose doubled in severe infections) Child 1-5 years 0.25ml/kilogram tds or 5ml tds (dose doubled in severe infections) <strong>Using 250/62 suspension:</strong> Child 6-11 years 0.15ml/kilogram tds or 5ml tds (dose doubled in severe infections)</td>
<td><strong>Clarithromycin(^2)</strong> 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</td>
<td></td>
</tr>
</tbody>
</table>

### Evidence


Aim to use an antibiotic that minimises dosing frequency\(^2\) 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>For children unable to swallow tablets:</th>
<th>For children able to swallow tablets:</th>
<th>If allergic to penicillin:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amoxicillin</strong> (\times 4) 40mg/kg bd (max 1g per dose) for 7 days. (^1)(^2)</td>
<td><strong>Penicillin V</strong> (\times 5) 500mg bd; Age &gt;12 years, <strong>Penicillin V</strong> 1 g bd for 7 days(^1)(^2)</td>
<td><strong>Azithromycin</strong> (\times 5) 12 mg/kg od for 5 days</td>
</tr>
</tbody>
</table>

### Cautions


Aim to use an antibiotic that minimises dosing frequency \(^3\) 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 Sept'17-18
<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>Usually no treatment required; viral cause most likely (adenovirus, enterovirus, occasionally herpes simplex). Consider ophthalmia neonatorum in a neonate; this does not refer to a simple &quot;sticky eye&quot; in a neonate and requires urgent review in hospital.</td>
</tr>
<tr>
<td><strong>Treatment choices</strong></td>
</tr>
<tr>
<td>Consider Chloramphenicol eye drops 0.5% and Chloramphenicol eye ointment 1%. Continue until 2 days after symptoms resolved</td>
</tr>
<tr>
<td><strong>General Advice</strong></td>
</tr>
<tr>
<td>Provide safety netting information (verbal and written) - <a href="http://www.medicinesforchildren.org.uk/chloramphenicol-eye-infections-0">http://www.medicinesforchildren.org.uk/chloramphenicol-eye-infections-0</a></td>
</tr>
</tbody>
</table>