

# Management of infection guidelines for primary and community services

May 2020

The aims of these guidelines are to:

- encourage the rational and cost-effective use of antibiotics
- minimise the emergence of bacterial resistance in the community
- minimise infections caused by MRSA, c difficile, resistant UTI and support the ambition of reducing inappropriate prescribing in primary care by avoiding use of quinolones, cephalosporins and co-amoxiclav
- provide a simple, best guess approach to the treatment of common infections.

Adapted following NICE and Public Health England antimicrobial prescribing guidance - managing common infections, along with recommendations and practical advices from Royal Cornwall Hospitals NHS Trust.

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## Principles of treatment

This guidance is based on the best available evidence but its application must be modified by professional judgement and any knowledge of previous culture results. For example flucloxacillin is very rarely a good choice in patients colonised with MRSA. A dose and duration of treatment is 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.

Use simple, generic antibiotics if possible. Avoid broad spectrum antibiotics, for example co-amoxiclav, quinolones and cephalosporins, when narrow spectrum antibiotics remain effective, as broad spectrum antibiotics increase the risk of side effects, clostridium difficile infection, MRSA and future resistant infections in exposed patients.

Prescribe an antibiotic only when there is likely to be a clear clinical benefit. This guidance should not be used in isolation; it should be supported with patient information about safety netting, back-up antibiotics, self-care, infection severity and usual duration, clinical staff education and audits. Materials are available on the [RCGP TARGET website](#) and [NICE guidance visual summaries](#). Do not prescribe an antibiotic for viral sore throat, simple coughs and colds. Limit prescribing over the telephone to exceptional cases.

Consider for empiric treatment:

- Does the patient have a bacterial infection?
- Is an antibiotic treatment necessary?
- Have relevant specimens been collected?
- Is the patient allergic to any antibiotics?

In severe infections, immunocompromised or high-risk of complications, give immediate antibiotic and always consider possibility of sepsis.

Do not use penicillin, amoxicillin, co-amoxiclav, flucloxacillin, pivmecillinam or piperacillin/tazobactam in patients who are allergic to penicillin. Please assess nature of allergy status to distinguish intolerance from true allergy. Previous anaphylaxis following penicillin: do not use any of the above or cephalosporins.

True allergic reactions to penicillins occur in 1% of exposed individuals but reported in 10% of patients; anaphylactic reactions occur in fewer than 0.05% of treated patients. If nature of the reported allergic reaction is unknown, avoid the use of the antibiotic concerned if there is a reasonable alternative.

Self-reported penicillin allergy is relatively common. It is important therefore to clarify the reaction the patient experienced. Endorse reaction in detail in drug allergy or sensitivities section of patients electronic record. In some cases it is simply a common side effect of the drug, for example diarrhoea or vomiting, rather than true allergic reaction, for example rash, angiodema or anaphylaxis.

Patients with true allergy to the beta-lactam ring in penicillin molecules will react to all penicillins, for example Penicillin V, Amoxicillin, Flucloxacillin and Co-Amoxiclav. If they react to a penicillin molecule side chains then they may also have a crossover-allergy to other  $\beta$ -Lactams, for example cephalosporins, that share similar side chains.

The risk of crossover is quoted as between 1% and 10% for cephalosporins, for example cephalexin, with the risk dependant of side chain similarities. If the patient reports a mild reaction to penicillins, for example rash alone, with no symptoms of anaphylaxis, cephalosporins may still be used - patients should be made aware of the signs and symptoms of an allergic reaction and seek immediate medical advice.

Patients with serious allergic symptoms to penicillins, for example anaphylaxis, breathing difficulties, facial swelling or major skin reactions, should avoid cephalosporins and alternative agents be administered. For further advice on antibiotic choice please contact a consultant microbiologist.

Do not use tetracycline or doxycycline in children under 12 years, pregnant women or patients with a history of tetracycline allergy. Doxycycline can be given with food/dairy products but not with antacids.

In pregnancy, where possible, avoid tetracycline, aminoglycosides, quinolones, azithromycin, clarithromycin and high dose of metronidazole (2g stat), unless the benefits outweigh the risk. Amoxicillin, Erythromycin and cephalosporin 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.

Current recommendations are that no additional contraceptive precautions are required when non-liver enzyme inducing antibiotics are combined with oral contraceptives, contraceptive patches or vaginal rings unless diarrhoea or vomiting occurs. Anecdotal reports of contraceptive failure have been made with the concomitant use of antifungals.

Experience in anticoagulant clinics suggests that the INR can be altered by a course of antibiotics or antifungals. Increased frequency of INR monitoring is necessary during and after a course of antibiotics until the INR has stabilized. Cephalosporins, macrolides, tetracyclines, quinolones, metronidazole and trimethoprim seem to cause a particular problem. Contact the anticoagulant clinic for any further advice.

Avoid use of quinolones unless benefits outweigh risks as evidence indicates that they may be rarely associated with long lasting disabling neuro muscular and skeletal side effects. Read the [March 2019 drug safety update](#) for more information. MHRA has also issued a [drug safety update](#) in November 2018, which reported an increase in risk of aortic aneurism and dissection with older people being at higher risk. Once microbiology results are available, treat according to culture results and sensitivity.

Doses are for oral administration in the main and for adults unless otherwise stated. Please [refer to BNF](#) for further dosing and interaction information, for example macrolides and statins, or to the [BNFc for children](#).

When there is clinical uncertainty about whether a condition is self-limiting or is likely to deteriorate, back-up prescribing (also known as delayed prescribing) offers healthcare professionals an alternative to immediate antimicrobial prescribing. It encourages self-management as a first step, but allows a person to access antimicrobials without another appointment if their condition gets worse. It is important that the patient is given clear instructions about when they should use the prescription.

A back-up (delayed) prescription with instructions about use can either be given to the patient or left at an agreed location, for example the local pharmacy, to be collected at a later date. Read codes are available for back-up prescriptions.

Where a best guess therapy has failed or special circumstances exist, microbiological advice can be obtained from:

- RCHT clinical microbiology department: 01872 254900 - out of hours call the RCHT switchboard on 01872 250000.
- Derriford clinical microbiology department: 01752 437745 - out of hours urgent queries call the hospital switchboard to bleep the on-call consultant microbiologist.

## Upper respiratory tract infections

Consider delayed antibiotic prescriptions.

### Otitis media (child doses)

[NICE visual summary code NG91](#)

Many are viral. OM resolves in 60% in 24 hours without antibiotics. Complications unlikely if temp <38.5°C or patient not vomiting. Self-care using ibuprofen or paracetamol as pain relief is adequate in most cases. Consider antibiotics if not settled or worsening in 3 days.

Drug option	Dose	Duration
Self-care	Self-care with paracetamol or ibuprofen for pain.	5-7 days
Amoxicillin	<ul style="list-style-type: none"> <li>• Neonate: 30mg/kg TDS</li> <li>• 1-11 months: 125mg TDS</li> <li>• 1-4 years: 250mg TDS</li> <li>• &gt;5 years: 500mg TDS</li> </ul>	5-7 days
Penicillin allergy: erythromycin	<ul style="list-style-type: none"> <li>• 1 month to 23 months: 125mg QDS</li> <li>• 2-7 years: 250mg QDS</li> <li>• &gt;8 years: 250-500mg QDS</li> </ul>	5-7 days
<b>OR</b> Clarithromycin	<ul style="list-style-type: none"> <li>• 1 month to 11 years:</li> <li>• Under 8 kg: 7.5 mg/kg BD</li> <li>• 8 to 11 kg: 62.5 mg BD</li> <li>• 12 to 19 kg: 125 mg BD</li> <li>• 20 to 29 kg: 187.5 mg BD</li> <li>• 30 to 40 kg: 250 mg BD</li> <li>• 12-18 years: 250mg BD</li> </ul>	5-7 days

Duration based on evidence that the absolute difference in treatment failure with an antibiotic course of less than 7 days compared with a course of 7 days or more is small. If a decision to prescribe an antibiotic is made, a 5 day course may be sufficient for many children, reserving 7 day courses for those with a clinical assessment of more severe or recurrent infection

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## Acute diffuse Otitis externa

[NICE CKS summary](#)

Oral antibiotics are not recommended for otitis externa; complications need specialist advice, for example facial swelling/cellulitis. If there is obstruction of the ear canal, consider need for micro-suction (may need referral to ENT/aural care). If pain cannot be controlled consider early urgent referral to ENT/aural care service. Patients prescribed antibiotic/steroid drops can expect their symptoms to last for approximately 6 days after treatment has begun. If they have symptoms beyond the first week they should continue the drops until their symptoms resolve (and possibly for a few days after) for a maximum of a further 7 days and consideration should be given to referral for micro-suction. Patients with symptoms beyond 2 weeks should be considered treatment failures and alternative management initiated.

Drug option	Dose
Self-care	Analgesia for pain relief, and apply localised heat (such as a warm flannel).
Self-care	Acetic acid 2% ear spray (EarCalm, OTC, P medicine) 1 spray TDS (maximum 1 spray every 2 to 3 hours). 7 days maximum.
Steroid combination ear drops or spray	<ul style="list-style-type: none"><li>• Sofradex ear drops: 2-3 drops 3-4 times a day for 7 days</li><li>• Flumetasone–clioquinol ear drops: 2-3 drops twice daily for 7-10 days</li><li>• Gentamicin-hydrocortisone ear drops: 2-4 drops 3-4 times a day and at night for 7 days</li><li>• Otomize ear spray: 1 spray 3 times daily for 7 days</li></ul>

Use of Ciprofloxacin (Cetraxal 2mg/ml) ear drops 0.25ml unit dose for otitis externa is licensed and may be used with specialist ENT input.

## Influenza treatment

Refer to [Public Health England guidance](#).

## Pharyngitis, sore throat or tonsillitis

[NICE visual summary code ng84](#)

Avoid antibiotics as 82% will resolve in 7 days without antibiotics and pain will only be reduced by 16 hours with antibiotics. Use [FeverPAIN](#) or Centor criteria to identify people who are more likely to benefit from an antibiotic.

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## FeverPAIN criteria

- Fever (during previous 24 hours)
- Purulence (pus on tonsils)
- Attend rapidly (within 3 days after onset of symptoms)
- Severely Inflamed tonsils
- No cough or coryza (inflammation of mucus membranes in the nose)

Score 0-1: 13-18% streptococci, no antibiotics indicated.

Score 2-3: 34-40% likelihood of streptococci, use no Abx or back-up prescription.

Score 4-5: 62-65% likelihood of streptococci, use immediate antibiotic treatment if severe or 48 hour back-up prescription.

## Centor criteria

- Tonsillar exudate
- Tender anterior cervical lymphadenopathy or lymphadenitis
- History of fever (over 38°C)
- Absence of cough

Each of the Centor criteria score 1 point (maximum score of 4). A score of 0, 1 or 2 is thought to be associated with a 3-17% likelihood of isolating streptococcus, no antibiotics indicated. A score of 3-4 is thought to be associated with a 32-56% likelihood of isolating streptococcus, consider an immediate antibiotic prescription or a back-up antibiotic prescription with advice.

Drug option	Dose	Duration
Self-care	No antibiotics. Paracetamol/ibuprofen for pain/fever. Medicated lozenges may help pain in adults.	-
Penicillin V	500mg QDS	5 days and 10 days if GAS (Group A Strep) is grown
OR Clarithromycin if allergic to penicillin	500mg BD	5 days

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## Sinusitis acute or chronic

[NICE visual summary code ng79](#)

Many cases are viral and antibiotics are generally not required. Reserve antibiotics for those systemically very unwell or high risk of complications. Symptoms < 10 days do not offer antibiotics; advise sinusitis usually last 2 to 3 weeks. Symptoms without improvement for > 10 days: consider no antibiotic or back-up antibiotic prescription depending on likelihood of bacterial cause; consider high-dose nasal steroid if aged >12 years.

Drug option	Dose	Duration
Self-care	No antibiotics. Advise paracetamol/ibuprofen for pain/fever. Little evidence that nasal decongestants or saline may help, but people may want to try them as part of self-care.	-
Penicillin V for delayed antibiotic	500mg QDS	5 days
OR if allergic to penicillin: Clarithromycin	500mg BD	5 days
OR Doxycycline	200mg stat then 100mg once daily	5 days
Co-Amoxiclav if systemically unwell	625mg TDS	5 days

## Lower respiratory tract infections

Quinolones like Ciprofloxacin are not good first choice antibiotics in respiratory infections as they have poor activity against pneumococci. However, they do have use in proven pseudomonal infections – for example in patients with cystic fibrosis or bronchiectasis.

### Acute bronchitis and acute cough

[NICE visual summary code ng120](#)

Antibiotics provide little benefit if no co-morbidity. Consider 7 day delayed antibiotics with advice. Symptom resolution can take 3 weeks. Higher risk of complications includes people with pre-existing comorbidity; young children born prematurely, people >65 with ≥2 of, or >80 with ≥1 or more of: hospitalisation in previous year, type 1 or 2 diabetes, history of congestive heart failure, current use of oral steroids. Consider CRP test if antibiotic being considered. If CRP<20mg/L no antibiotics, 20-100mg/L delayed antibiotics, CRP>100mg/L immediate antibiotics. Do not offer mucolytic, oral or inhaled bronchodilator or oral/inhaled corticosteroid unless otherwise indicated.

Acute bronchitis: No routine antibiotic

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Acute cough:

- some people may wish to try honey (over 1 year), herbal or cough medicines containing expectorant or suppressants, except codeine, (in over 12 years) - these self-care treatments have limited evidence for relief of cough symptoms
- with URTI - no antibiotics
- and higher risk of complications at face to face examination: immediate or back-up antibiotic
- and systemically very unwell at face to face examination: immediate antibiotic

Drug option	Dose	Duration
Doxycycline	200mg stat then 100mg once daily	5 days
OR Amoxicillin	500mg TDS	5 days

## Acute exacerbation of COPD

[NICE visual summary code ng114](#)

Many cases are viral so will not respond to antibiotics. Consider antibiotics if are needed; but only after taking into account severity of symptoms (sputum colour changes and increases in volume or thickness), need for hospitalisation, previous exacerbations/hospitalisation/risk of complications/sputum culture and susceptibility results and risk of resistance with repeated courses. Antibiotics not indicated in absence of purulent/mucopurulent sputum. Use of rotational antibiotics in COPD is very rarely indicated. Standby antibiotics may be offered to patients who suffer frequent exacerbations with severe COPD who have been counselled on how to use these 'as needed' antibiotics (doxycycline or amoxicillin or clarithromycin). Ensure pneumococcal and annual flu vaccination are up to date/optimised. Review those who have used  $\geq 3$  standby antibiotics and investigate reasons as per NICE COPD 2018. Ensure regular review on those who are on prophylactic antibiotics.

Drug option	Dose	Duration
Doxycycline	200mg stat then 100mg once daily	5 days
OR Amoxicillin	500mg TDS	5 days
OR Clarithromycin	500mg BD	5 days

## Bronchiectasis exacerbation

High dose antibiotics, as advised by the specialist, generally for 2 weeks and taken until the patient's improvement has plateaued as measured by improvement in sputum volume and purulence. Please also [refer to RMS guidance on bronchiectasis](#).

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Send a sputum sample for culture and susceptibility testing. Offer an antibiotic until sputum culture and susceptibility testing are back reviewing the choice of antibiotic.

When choosing an antibiotic, take account of severity of symptoms and risk of treatment failure (previous sputum culture with resistant or atypical bacteria, or a higher risk of developing complications).

Drug option	Dose	Duration
<a href="#">Amoxicillin</a>	500mg TDS	7-14 days
<b>OR</b> Doxycycline	200 mg on first day, then 100 mg once a day	7-14 days
<b>OR</b> Clarithromycin	500mg BD	7-14 days

Course length is based on severity of bronchiectasis, exacerbation history, severity of exacerbation symptoms, previous culture and susceptibility results, and response to treatment

## Community-acquired pneumonia

[NICE visual summary code ng138](#)

Use CRB65 score to guide mortality risk and place of care. Each CRB65 parameter scores 1:

- Confusion-Abbreviated Mental test (AMT) score <8 or new disorientation in person, place or time
- Respiratory rate  $\geq 30$ /min
- BP systolic <90 or diastolic  $\leq 60$
- Age  $\geq 65$

Mycoplasma is rare in over 65s. Consider legionella in travellers. Do not use doxycycline in children or pregnant women.

- Score 3-4 high severity: urgent hospital admission
- Score 1-2 moderate severity: consider hospital referral (particularly if score 2).
- Score 0 low risk: consider home based care. Always give safety net advice and likely duration of symptoms

Drug option	Dose	Duration
If CRB65 score 0 prescribe monotherapy <a href="#">Amoxicillin</a>	500mg TDS	5 days
<b>OR</b> <a href="#">Doxycycline</a>	200mg stat then 100mg once daily	5 days

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Drug option	Dose	Duration
<b>OR</b> Clarithromycin	500mg BD	5 days
If <b>CRB65 score 1-2</b> prescribe <b>Amoxicillin</b>	500mg TDS	5 days
<b>WITH</b> <b>doxycycline</b>	200mg stat then 100mg once daily	5 days
<b>OR</b> Clarithromycin (if atypical pathogens suspected)	500mg BD	5 days

Stop antibiotic treatment after 5 days unless microbiological results suggest a longer course is needed or the person is not clinically stable. Fever in the past 48 hours, or more than 1 sign of clinical instability systolic BP 100/min, respiratory rate >24/min, arterial oxygen saturation <90% or PaO<sub>2</sub><60mmHg in room air.

### Severe CAP in a community hospital setting

Switch to oral treatment when appropriate guided by bacterial sensitivity results or as for non-severe CAP.

Drug option	Dose	Duration
<b>Piperacillin/tazobactam</b>	4.5g IV TDS	Total course (IV+oral) 5 days
<b>PLUS</b> <b>Doxycycline</b>	200mg stat then 100mg once daily orally	Total course (IV+oral) 5 days
<b>OR</b> Clarithromycin by infusion if oral route not available		Total course (IV+oral) 5 days
Levofloxacin IV for penicillin allergy if oral route not available	500mg IV once daily	Total course (IV+oral) 5 days
<b>THEN</b> Levofloxacin orally	500mg once daily (97% orally absorbed)	Total course (IV+oral) 5 days

### Hospital acquired pneumonia in a community hospital setting

Drug option	Dose	Duration
Non-severe: <b>Amoxicillin</b>	500mg TDS	5 days
<b>PLUS</b> <b>Doxycycline</b>	200mg stat then 100mg once daily orally	5 days
Severe: <b>Piperacillin/tazobactam</b>	4.5g IV TDS and then treat according to sensitivities <b>THEN</b> amoxicillin and doxycycline for oral switch	Total course (IV+oral) 5 days
Levofloxacin *IV for penicillin allergy if oral	500mg once daily	Total course (IV+oral) 5 days

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Drug option	Dose	Duration
route not available	then	
<b>THEN</b> levofloxacin* orally	Orally 500mg once daily	

Antibiotic treatment should be reviewed at 5 days. Stopping the antibiotic should be considered on an individual basis if the person is judged to be clinically stable.

## Aspiration pneumonia in a community hospital setting

Contact microbiology if MRSA status is positive. Aspiration pneumonia is a chemical injury caused by inhalation of gastric contents and does not indicate antibiotic treatment per se. Antibiotic should be reserved for patients who fail to improve 48 hours post aspiration or who develop a septic pneumonia. Initial symptoms are due to pneumonitis rather than infection.

Drug option	Dose	Duration
Amoxicillin - community acquired non-severe aspiration pneumonia	500mg TDS	5 days
<b>PLUS</b> Metronidazole	400mg TDS	5 days
Metronidazole If history of penicillin allergy	400mg TDS	5 days
<b>PLUS EITHER</b> Clarithromycin	500mg BD	5 days
<b>OR</b> Doxycycline	200mg stat then 100mg daily	5 days
Piperacillin/tazobactam - hospital acquired severe aspiration pneumonia	4.5g IV TDS	5 days

## COVID-19 pneumonia in adults in the community

[NICE visual summary code ng165](#)

As COVID-19 becomes more prevalent in the community, pneumonia is more likely to be caused by the COVID-19 virus than a bacteria. Viral pneumonia will not respond to the use of antibiotics therefore patients should only be offered if bacteria are the likely cause, or if it is unclear whether the cause is bacterial or viral and symptoms are more concerning or the person is at high risk of developing complications. People should seek medical help without delay if their symptoms don't improve or worsen rapidly, whether they have been given an antibiotic or not. When possible, clinicians should discuss the risks, benefits and possible likely outcomes of treatment options with patients with COVID-19, and their families and carers, so that they can express their preferences about their treatment.

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Drug option	Dose	Duration
Doxycycline	200mg stat then 100mg daily	5 days
OR Amoxicillin	500mg TDS	5 days

## Meningitis

### Suspected meningococcal disease

Transfer all patients to hospital immediately. Only give benzylpenicillin or cefotaxime if time before admission and patient has non-blanching rash.

Drug option	Dose	Duration
IV Benzylpenicillin OR IM if a vein cannot be found	<ul style="list-style-type: none"> <li>Adults and children 10 years and over: 1200mg</li> <li>1-9 years: 600mg</li> <li>1 month - 1 year: 300mg</li> <li>Neonate: 50mg/Kg</li> </ul>	-
Cefotaxime if history of penicillin allergy (not anaphylaxis)	<ul style="list-style-type: none"> <li>Adults and children 12 years and over: 1g IV/IM stat</li> <li>1 month -11years: 50mg/kg IV/IM stat</li> </ul>	-

### Prevention of secondary cases of meningitis

Only prescribe following advice from health protection unit, call 0300 303 8162 between 9am and 5pm. Out of hours contact the on-call health protection unit doctor or nurse via the RCHT switchboard on 01872 250000.

## Urinary tract infections

Amoxicillin resistance is common, therefore only use if culture confirms susceptibility. In the elderly (>65 years). Do not treat asymptomatic bacteriuria, for example positive urine dipstick for nitrite and leucocytes, it occurs in 25% of women and 10% of men and is not associated with increased morbidity.

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In the presence of a catheter, antibiotics will not eradicate bacteriuria; only treat if systemically unwell or pyelonephritis likely. As E-coli bacteraemia in the community is increasing always safety net and consider risks for resistance. Use the [TARGET UTI leaflet](#) and [care home UTI management tool for persons > 65 leaflet](#).

## Uncomplicated UTI

[NICE visual summary code ng109](#)

For example no fever or flank pain. Self-care options to relieve symptoms include paracetamol, NSAIDs (Ibuprofen) and encourage intake of fluids to avoid dehydration.

In women over 65yrs use signs/symptoms to guide treatment. Do not dipstick test. Asymptomatic bacteriuria is common in older patients.

New onset dysuria alone OR 2 or more:

- temperature 1.5°C above patient's normal twice in the last 12 hours
- new frequency or urgency
- new incontinence
- visible haematuria
- new or worsening delirium/debility
- new suprapubic pain

If fever and delirium/debility only, consider other causes before treating for UTI.

In women <65yrs use [signs/symptoms to guide treatment](#):

- dysuria
- urine cloudiness
- new nocturia

2 or more of these 3 signs/symptoms, patient is likely to have a UTI. Consider immediate antibiotic, or back-up if mild symptoms and woman is not pregnant.

1 sign or symptom, UTI possible, 68% will have a culture confirmed UTI ( $\geq 10^6$  cfu/L), therefore use urine dipstick to increase diagnostic certainty.

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None of the 3, UTI is less likely. Use urine dipstick if other severe urinary symptoms (frequency, urgency, haematuria, suprapubic tenderness).

Dipstick criteria:

- positive nitrite OR positive leukocyte and blood: UTI likely - offer empirical antibiotics for lower UTI OR if milder symptoms (and not pregnant) consider back-up antibiotic with self-care and safety-netting
- leukocyte positive but nitrite negative: UTI equally likely to other diagnosis - review time of specimen (morning is best); send urine for culture; use back-up (if not pregnant) or immediate antibiotic depending on symptom severity
- ALL nitrite, leukocyte and blood negative: UTI Less likely - consider other diagnosis; reassure; give self-care and safety-netting advice

Risk factors for increased resistance include care home resident, recurrent UTI, hospitalisation >7 days in the last 6 months, unresolving urinary symptoms, recent travel to a country with increased antimicrobial resistance, previous UTI known to be resistant to trimethoprim, cephalosporins or quinolones.

First line non-pregnant women: Back up antibiotic (to use if no improvement in 48 hours or symptoms worsening) or immediate antibiotic.  
Pregnant women, men children or young people: immediate antibiotic

In women with symptoms of vaginal itch or discharge, explore alternative diagnoses and consider pelvic examination.

Treating does not reduce mortality or prevent symptomatic episodes, but does increase side-effects and antibiotic resistance

Drug option	Dose	Duration
<b>Nitrofurantoin</b> if GFR >45ml/min. If GFR 30-45ml/min: only use if resistance testing indicates no alternative.	100mg BD (modified-release capsules) <b>OR</b> 50mg QDS (immediate release) Suspension – expensive +++. Capsules cannot be opened and the tablets should not be crushed as they are an irritant.	Females - 3 days Males - 7 days
<b>Trimethoprim</b> if low risk of resistance	200mg BD Suspension available.	Females - 3 days Males - 7 days
<b>OR Pivmecillinam</b> (type of penicillin – do not use if history of penicillin allergy)	400mg stat then 200mg TDS (400mg if high resistance risk) for 5 days. Unlicensed use: manufacturers advise tablets can be crushed and dissolved in a neutral rather than acidic liquid but may have a bitter taste. For example water or tea not fruit juice.	Females - 3 days Males - 7 days

Key: 1<sup>st</sup> line = Green | 2<sup>nd</sup> line = blue | \*Fluroquinolones = Consider drug safety risk

Treatment failure depends on susceptibility of organism isolated. For infections due to resistant coliforms including ESBL, oral options are very limited. Fosfomycin is an option where sensitivity report indicates susceptibility. Available from community pharmacy. Prescribe as Monuril as cost effective brand. Women: 3g stat; men: 3g stat plus 2nd 3g dose 72 hours later. If know ESBL carrier then antibiotic choice guided by previous microbiology results.

## Acute prostatitis

[NICE visual summary code ng110](#)

Send MSU for culture and start antibiotic.

Drug option	Dose	Duration
<a href="#">Ciprofloxacin</a> *	500mg BD	14 days and review
<a href="#">Trimethoprim</a> if sensitive	200mg BD	14 days and review

Review antibiotic treatment after 14 days and either stop the antibiotic or continue for a further 14 days if needed, based on an assessment of the person's history, symptoms, clinical examination, urine and blood tests.

## Acute pyelonephritis

[NICE visual summary code ng111](#)

Always send culture. Cefalexin until sensitivity results are available and then treat according to sensitivity results. If no organism isolated continue Cefalexin. If no response within 24 hours consider referral. If ESBL risk and on advice from microbiologist, consider IV antibiotic via acute care at home.

Drug option	Dose	Duration
<a href="#">Cefalexin</a>	500mg TDS	7-10 days
<b>OR</b> if organism sensitive: <a href="#">Trimethoprim</a>	200mg BD	14 days

## Catheter associated bacteriuria

If asymptomatic, no antibiotics. Don't swab catheters.

Key: 1<sup>st</sup> line = Green | 2<sup>nd</sup> line = blue | \*Fluroquinolones = Consider drug safety risk

## Lower UTI in patients with an indwelling catheter

Do not treat asymptomatic bacteriuria. Considerable clinical judgement is required to diagnose UTI in patients with an indwelling urinary catheter, and urinalysis of catheterised patients is not recommended to diagnose UTI. Treatment may be indicated if there are signs of local infection (suprapubic pain). If symptoms are severe (confusion, tachypnoea, tachycardia, hypotension, reduced urine output), admit to hospital as intravenous antibiotics may be required. Check that the catheter is correctly positioned and not blocked. Where there is symptomatic UTI, commence antibiotic and arrange to renew catheter if it has been in place for more than a week. The need for an indwelling catheter should be reviewed. If there is fever, or loin pain, or both, manage as upper UTI (acute pyelonephritis). Otherwise, treat for lower UTI: Relieve symptoms with paracetamol or ibuprofen. Send urine for culture and microscopy before starting antibiotic treatment. If symptoms are moderate or severe, empirically prescribe nitrofurantoin or pivmecillinam for 7 days. Follow up after 48 hours (or according to the clinical situation) to check response to treatment and the result of urine culture.

## Prophylaxis for recurrent UTI in women

[NICE visual summary code ng112](#)

- 3 or more in 12 months; positive MSU or dipstick with positive history. Long term antibiotics are associated with various risks.
- If abdominal ultrasound abnormal refer to urology. If abdominal ultrasound normal, offer lifestyle advice, consider topical oestrogens for atrophic vaginitis. Self-care with D-mannose or cranberry if appropriate to reduce the risk of UTI.
- Consider use of standby or post-coital antibiotics which may reduce recurrence. Least favoured option is to offer 6 month trial of low-dose continuous antibiotic treatment: Trimethoprim 100mg every night, or Nitrofurantoin (note: as per January 2020, 100mg standard tablets 1x nocte is the most cost effective option for prophylaxis) or Methenamine hippurate (Hiprex®) 1g BD. Stop after 6 months and evaluate.
- Safety issue with trimethoprim: can cause hyperkalaemia, particularly in the elderly, patients with renal impairment or in patients receiving ACE inhibitors, angiotensin receptor blockers or potassium sparing diuretics. Close monitoring of potassium is advised.
- Safety issue with nitrofurantoin: rarely can cause pulmonary toxicity (acutely, sub-acutely and chronically), hepatic toxicity (cholestatic jaundice and chronic active hepatitis), renal impairment and neurological toxicity (peripheral neuropathy including optical neuritis). Close monitoring of liver function, renal function and pulmonary symptoms is advised.
- For breakthrough infection, change antibiotics according to sensitivities, treat for 7 days maximum (7 days in men, 5 days in women) and then continue prophylaxis. If  $\geq 2$  acute UTI while on prophylaxis antibiotics - stop prophylactic treatment as trial of prophylaxis has failed.
- Guidance for management of recurrent UTI in women is available on the Cornwall Joint Formulary website under chapter 5 - 'Important local documents' tab.

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## Staph aureus in urine

Staph aureus (MRSA or MSSA) is not a urinary pathogen unless renal or prostatic abscess present. Staph aureus is usually present in urine as a contaminant or colonising a catheter. It is rarely due to deep infection, Staph aureus bacteraemia or endocarditis. Discuss with clinical microbiology if treatment is thought necessary.

## UTI in pregnancy

Send MSU for culture. Avoid Trimethoprim in first trimester. Avoid Nitrofurantoin in third trimester.

Drug option	Dose	Duration
Nitrofurantoin	MR 100mg BD or IR 50mg QDS	7 days
OR Trimethoprim if Nitrofurantoin unsuitable	200mg BD	7 days
Cefalexin	500mg BD	7 days

## Gastro-intestinal tract infections

### Acute cholecystitis

Urgent admission to secondary care is recommended because of high mortality rate. Please refer to [RMS guidance on acute cholecystitis](#).

Drug option	Dose	Duration
Co-amoxiclav for mild cases	625mg TDS	7 days
OR Ciprofloxacin - if penicillin allergic	500mg BD	7 days

### Clostridium difficile

Stop current antibiotics, antimotility drugs (Loperamide) and PPIs if possible.

- Not severe: WCC<15x10<sup>9</sup>/L, albumin>25g/L): Do not start treatment if diarrhoea has stopped. Mild cases (<4 episodes / day) may respond without metronidazole.
- Oral Metronidazole 400mg TDS for 14 days. If unresolved after 4 days switch to oral Vancomycin 125mg QDS for 14 days.

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- Refer to hospital if diarrhoea is still present after toxin result reported and any of the following symptoms are present: fever, dehydration, sepsis, severe abdominal pain, abdominal distension or vomiting. On microbiology advice: Fidaxomicin 200mg BD for 10 days (note this is a high cost medication; please only prescribe on microbiology advice). Community pharmacies may obtain stock by calling Astrellas Pharma Ltd. 0203 379 8721. Stock is delivered by Alliance Healthcare.
- Severe: Underlying inflammatory bowel disease or passing >8 stools in 24 hours with WCC>15x10<sup>9</sup> /L, albumin<25g/L, temperature >38.50C refer to hospital.
- Recurrent: Discuss with microbiology.

## Diverticulitis

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

Drug option	Dose	Duration
Co-amoxiclav	625mg TDS	5 days
OR Ciprofloxacin if penicillin allergic	500mg BD	5 days
AND Metronidazole	400mg TDS	5 days

## Eradication of helicobacter pylori

- Eradication is beneficial in DU, GU, but not in GORD. In non-ulcer dyspepsia, 8% of patients benefit. Triple treatment attains >85% eradication. Do not use clarithromycin or metronidazole if used in the past year for any infection.
- When managing symptomatic relapse in DU/GU: Retest (using breath test) for Helicobacter if symptomatic.
- When managing symptomatic relapse in non-ulcer dyspepsia: Do not retest, treat as functional dyspepsia.
- Seek advice from Gastroenterology if eradication of H pylori is not successful with second-line treatment.

Drug option	Dose	Duration
Omeprazole	20mg BD capsules	7 days
PLUS Clarithromycin	500mg BD	7 days
PLUS Amoxicillin	1g BD	7 days
If penicillin allergic, Omeprazole	20mg BD capsules	7 days
PLUS Clarithromycin	250mg BD	7 days

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Drug option	Dose	Duration
<b>PLUS</b> Metronidazole	400mg BD	7 days
For those who still have symptoms after first-line eradication: Omeprazole	20mg BD capsules	7 days
<b>PLUS</b> Amoxicillin	1g BD	7 days
<b>PLUS EITHER</b> Clarithromycin	500mg BD	7 days
<b>OR</b> Metronidazole - whichever was not used first-line	400mg BD	7 days

## Gastroenteritis

Antibiotic therapy is not usually indicated. Campylobacter infections form 12% of GP consultations for gastroenteritis. Antibiotics should be reserved for pregnant, immuno-suppressed, non-responsive or unwell patients. All suspected cases of food poisoning should be notified to the local authority. Seek advice on exclusion of patients from work from the health protection unit on 0300 303 8162.

## Giardiasis

Avoid using the 2g dose in pregnancy.

Drug option	Dose	Duration
Metronidazole	2g daily	3 days
In pregnancy: Metronidazole	400mg TDS	5 days

## Roundworm > 1 year old

Purchase of over the counter treatment can be recommended except for children under 2, pregnancy and breastfeeding.

Drug option	Dose	Duration
Mebendazole	100mg BD	3 days

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## Threadworm

Purchase of over the counter treatment can be recommended except for children under 2, pregnancy and breastfeeding. Treat all household contacts at the same time plus advise hygiene measures. If reinfection occurs, second dose may be needed after 2 weeks (off-label if less than 2 years). If less than 6 months or pregnant (first trimester), use hygiene measures for 6 weeks.

For child <6 months perianal wet wiping/washes 3 hourly.

Drug option	Dose	Duration
Mebendazole	Child 6 months to adult 100mg	Single dose. Repeat in 2 weeks if persistent

## Genital tract infections

For sexually transmitted infections treated with antibiotics, the patient should be advised to abstain from sexual intercourse until they and their partner(s) have completed the treatment. GPs should consider referral for treatment, follow-up and contact tracing.

In cases of recurrent thrush in males consider treating partner(s). There is no indication to treat male partners of women with recurrent candida infection. Please discuss all cases of suspected STI with Brook or GU medicine due to increasing antibiotic resistance.

## Acute epididymo-orchitis

Check sexual history. Send both first pass urine for chlamydia test and MSU for UTI. If gonorrhoea suspected, for example a significant urethral discharge, refer to Brook or GUM.

Drug option	Dose	Duration
Doxycycline	100mg BD	10-14 days
OR Ofloxacin *	200mg BD	14 days

## Bacterial vaginosis

Pregnant patients should not use an applicator for the local treatments.

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Drug option	Dose	Duration
Metronidazole	400mg BD	5-7 days
OR Metronidazole	0.75% vaginal gel 5g applicator at night	5 days
OR Clindamycin	2% cream 5g applicator at night	7 days

## Candidiasis

Persistent cases require longer courses (see BASHH guidelines [www.bashh.org](http://www.bashh.org)). Other oral therapy options may be used instead of topical therapy, for example Itraconazole 200mg orally as 2 doses 8 hours apart, but avoid oral therapy if risk of pregnancy.

Drug option	Dose	Duration
Fluconazole if co-existing vulvitis (except in pregnancy)	150mg stat orally	-
AND Clotrimazole	1% cream	At least 14 days
Clotrimazole	500mg pessary stat	-
OR Clotrimazole	100mg pessary	6 nights

## Chlamydia trachomatis

Tetracyclines are contraindicated in pregnancy. Ideally, refer to Brook or GUM clinic for treatment, follow up and contact tracing. A test of cure 6 weeks after treatment is recommended in pregnancy, where compliance is suspect, if symptoms persist or if contact tracing was not felt to have been reliable. It is also recommended if the infection was in a non-genital site or if using Erythromycin or Azithromycin.

- Azithromycin is not licensed for use in pregnancy in the UK, but is widely used after discussion of options and risk/benefit with the patient.
- Consider possibility of LGV if chlamydia positive proctitis - discuss with Brook or GU medicine.
- A test of cure is recommended for non-genital infection.

Mycoplasma genitalium (MGen) is emerging as a significant sexually transmitted pathogen and coinfection rates of 3% to 15% with chlamydia have been reported. Recent data demonstrate an increasing prevalence of macrolide resistance in MGen, hence a STAT dose of azithromycin is no longer recommended for treatment of uncomplicated chlamydia infection at any site.

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Drug option	Dose	Duration
Doxycycline	100mg BD	7 days
OR Azithromycin	1g stat orally then 500mg daily for 2 days	-
OR Erythromycin EC - If pregnancy risk	500mg BD	14 days
OR Doxycycline - rectal or throat infection	100mg BD	7 days

## Pelvic inflammatory disease

- Chlamydia is the commonest cause but consider possibility of N.gonorrhoeae as well.
- Please send endocervical swab for chlamydia and gonorrhoea.
- Please discuss all suspected gonococcal PID with Brook or GU medicine as antibiotic resistance is now very high.
- If risk of pregnancy, seek specialist advice.

Drug option	Dose	Duration
Ceftriaxone	1g single dose i.m.	-
followed by oral Doxycycline	100mg twice daily	14 days
plus Metronidazole	400mg twice daily	14 days

## Chronic genital herpes simplex

Recurrent episodes are self-limiting and seldom need drug treatment, but if needed to manage future attacks use either episodic antiviral treatment if attacks are infrequent (less than 6 attacks per year) or consider self-initiated treatment so antiviral medication can be started early in the next attack.

Drug option	Dose	Duration
Aciclovir for self-initiated treatment	400mg TDS	5 days

Suppressive antiviral treatment, for example oral aciclovir 400mg BD for 6 to 12 months, if attacks are frequent (6 or more attacks per year), causing psychological distress, or adverse emotional/social/relationship effects: After 6 to 12 months, stop treatment for a trial period. If attacks are still considered problematic, restart suppressive treatment. If attacks are not considered problematic (off treatment), control future attacks with episodic antiviral treatment (if needed). If the person has breakthrough attacks on suppressive treatment at any stage seek specialist advice.

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## Primary genital herpes simplex

Take viral swab prior to commencing therapy otherwise opportunity for diagnosis will be lost if first episode.

Drug option	Dose	Duration
Aciclovir	400mg TDS (consider increasing to 400mg 5 times a day in the immunocompromised or if absorption impaired)	5 days
OR Valaciclovir	500mg BD	5 days

Adjunct treatment: Saline bathing, regular analgesia, lidocaine 5% ointment prn or Hydrogel dressing, antifungals.

## Postnatal infections

For example endometritis, postepisiotomy infections of the perineum. Seek specialist advice from obstetrics if patients have significant systemic symptoms or if symptoms fail to improve after 7 days. Consider endometritis if there is new or changed and offensive discharge within 10 days post-partum.

Co-amoxiclav, cefalexin and metronidazole are all present in breast milk but are safe to use in breast-feeding mothers. Breast-fed infants of mothers taking these antibiotics should be observed for diarrhoea or rashes.

Drug option	Dose	Duration
Co-amoxiclav	625mg TDS	5 to 7 days
OR non-anaphylaxis allergy to penicillin: Cefalexin	500mg BD	5 to 7 days
PLUS Metronidazole	400mg TDS	5 to 7 days

## Trichomoniasis

Treat partners simultaneously. Refer to Brook or GUM for contact tracing. Pregnant/breast feeding patients should avoid the 2g stat dose.

Drug option	Dose	Duration
Metronidazole	400mg BD	7 days

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Drug option	Dose	Duration
OR <a href="#">Metronidazole</a>	2g as single stat dose	-

## Skin and soft tissue infections

### Animal and human bites

Thorough irrigation is important. Assess, as appropriate, risk of tetanus, HIV, hepatitis B and C, rabies. Prophylaxis should be given after bites unless seen 3 days after and no evidence of infections. This guidance does not cover insect bites.

- Cat: always give prophylaxis
- Dog: give prophylaxis if: puncture wound, bite to hand, foot, face, joint, tendon or ligament, immunocompromised; cirrhotic; asplenic; or presence of prosthetic valve/joint.

Drug option	Dose	Duration
<a href="#">Co-Amoxiclav</a>	625mg TDS	7 days
OR if allergic to penicillin (animal bites): Metronidazole	400mg TDS	7 days
AND Doxycycline	100mg BD	7 days
OR if allergic to penicillin (human bites): Metronidazole	400mg TDS	7 days
AND Clarithromycin	500mg BD	7 days

### Insect bites and stings

Medical help is appropriate if secondary infection (worsening erythema, pain or fever) is present, or a large local reaction or systemic reaction develops. Self-care such as the use of cold compresses is advised in the first instance. Evidence in support of painkillers, creams for itching and antihistamines is lacking.

### Cellulitis

[NICE visual summary code ng141](#)

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If patient meeting sepsis markers, refer to hospital. If river or sea water exposure, discuss with microbiologist.

Consider admission for patient with severe or rapidly deteriorating cellulitis; an uncertain diagnosis with sinister signs or symptoms (necrotizing fasciitis, lymphangitis, osteomyelitis, septic arthritis), 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.

Consider marking extent of infection with a single-use surgical marker pen. Manage underlying conditions such as diabetes, venous insufficiency, eczema and oedema. Advise patient to have an adequate fluid intake and elevation of the affected area. If associated with MRSA, follow [MRSA advice](#) as flucloxacillin is not effective against MRSA. In penicillin allergy, or if not improving after 2 to 3 days contact microbiology.

Drug option	Dose	Duration
Flucloxacillin	500mg QDS	5-7 days
OR Clarithromycin	500mg BD	5-7 days
Co-Amoxiclav for facial cellulitis	625mg TDS	5-7 days
OR Clarithromycin plus Metronidazole	500mg BD + 400mg TDS	5-7 days

Review at 48- 72hrs or as appropriate. A longer course (up to 14 days in total) may be needed but skin takes time to return to normal, and full resolution at 5 to 7 days is not expected.

### Cellulitis (managed in hospital)

If not improving, discuss with microbiology.

Drug option	Dose	Duration
Flucloxacillin	1g IV 6 hourly	5 days with clinical review
THEN Flucloxacillin orally	500mg QDS	5 days with clinical review
OR Clindamycin	300mg QDS	5 days with clinical review
OR Teicoplanin for MRSA/infected cannula sites	3 doses of 6mg/kg IV BD THEN 6mg/kg once a day for 5 days	5 days

### Dermatophyte infection of nails

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- Take nail clippings - drug therapy should only be initiated if infection is confirmed by microscopy and/or culture and treatment is actually required.
- Seek specialist advice for persistent dermatophyte infections or children with nail infections. Terbinafine persists in nail keratin for up to 9 months after the end of treatment. Therefore benefits may continue after the course is completed.
- To prevent recurrence: apply weekly 1% topical antifungal cream to entire toe area.
- Amorolfine 5% nail lacquer is not as effective (can be purchased over the counter, mild cases limited up to 2 nails).

Drug option	Dose	Duration
Terbinafine	250mg OD daily Periodic monitoring of LFTs (after 4-6 weeks of treatment)	Fingers: 6 weeks Toes: 12 weeks
OR Itraconazole	200mg BD for 1 week	Fingers: 2 courses Toes: 3 courses

## Dermatophyte infection of the skin

Take skin scrapings for culture. Treatment: 1 week topical terbinafine is as effective as 4 weeks topical azole. If intractable consider oral itraconazole. Discuss scalp infections with specialist. Topical undecenoates (Mycota) for athlete's foot only.

Drug option	Dose	Duration
Terbinafine (topical 1%)	Applied daily/twice daily	1-4 weeks
Topical Azole	Applied daily/twice daily	4-6 weeks
OR Topical undecenoic acid (Mycota cream)	Applied daily/twice daily	4-6 weeks

## Impetigo

[NICE visual summary code ng153](#)

Do not offer combination treatment with a topical and oral antibiotic to treat impetigo. Extended or recurrent use of topical fusidic acid or mupirocin may increase the risk of developing antimicrobial resistance.

- Localised non-bullous impetigo: Consider hydrogen peroxide 1% cream. If hydrogen peroxide is unsuitable: offer a short course of a topical antibiotic. Other topical antiseptics are available for superficial skin infections, but no evidence was found.

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- Widespread non-bullous impetigo: offer a short course of a topical or oral antibiotic, taking account of prescribing considerations
- Bullous impetigo or systemically unwell or at high risk of complications: Offer a short course of an oral antibiotic.

Reassess if symptoms worsen rapidly or significantly, or have not improved after treatment, taking account of:

- alternative diagnoses, such as herpes simplex • any symptoms or signs suggesting a more serious illness or condition, such as a cellulitis
- previous antibiotic use, which may have led to resistant bacteria

Drug option	Dose	Duration
Hydrogen peroxide 1% (Crystacide cream 1%)	Apply BD-TDS	5 days
Fusidic acid 2%	Apply TDS	5 days
OR Mupirocin 2% (if resistance suspected)	Apply TDS	5 days
Flucloxacillin	<ul style="list-style-type: none"> <li>• 1 month to 1 year: 62.5 mg to 125 mg QDS</li> <li>• 2 to 9 years: 125 mg to 250 mg QDS</li> <li>• 10 to 17 years: 250 mg to 500 mg QDS</li> <li>• Adult: 500mg QDS</li> </ul>	5 days
OR clarithromycin if allergic to penicillin	<ul style="list-style-type: none"> <li>• 1 month to 11 years under 8 kg: 7.5 mg/kg BD</li> <li>• 8 to 11 kg: 62.5 mg BD</li> <li>• 12 to 19 kg: 125 mg BD</li> <li>• 20 to 29 kg: 187.5 mg BD</li> <li>• 30 to 40 kg: 250 mg BD</li> <li>• 12 to 17 years, 250 mg BD</li> <li>• Adult: 250-500mg BD</li> </ul>	5 days

## Infective lactation mastitis

If there is an infected nipple fissure or symptoms have not improved after 12–24 hours despite effective milk removal and/or breast milk culture is positive then prescribe antibiotic. 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. If symptoms fail to settle after 48 hours of first line treatment, send sample of breast milk for microscopy, culture and sensitivities. Prescribe an oral antibiotic for all women with non-lactational mastitis. Most episodes of lactational mastitis are caused by *Staphylococcus aureus*. Penicillins,

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Cephalosporins and Macrolides are safe choice in breastfeeding. Course length 5 to 7 days if the response to therapy is rapid and complete but longer courses, 10 to 14 days, may reduce the risk of relapse. In the setting of non-severe infection with risk for MRSA, consultant Microbiologist for further advice.

If breast milk culture available, treat according to sensitivities otherwise

Drug option	Dose	Duration
Flucloxacillin	500mg QDS	10–14 days
OR Erythromycin if allergic to penicillin	250-500mg QDS	10–14 days
OR Clarithromycin	500mg twice a day	10–14 days

## Leg ulcers

[NICE visual summary code ng152](#)

Routine swabs are not recommended. Antibiotics do not improve healing unless active infection. Symptoms and signs of an infected leg ulcer include:

- redness or swelling spreading beyond the ulcer
- localised warmth
- increased pain
- fever

Drug option	Dose	Duration
Flucloxacillin	500mg QDS	7 days
Doxycycline	200 mg on first day, then 100 mg once a day (can be increased to 200 mg daily)	7 days
OR Clarithromycin	500 mg BD	7 days

## Diabetic foot ulcer

[NICE visual summary code ng19](#)

Diabetic foot infection has at least 2 of: local swelling or induration; erythema; local tenderness or pain; local warmth; purulent discharge. Severity is classified as: Mild: local infection with 0.5 to less than 2cm erythema, Moderate: local infection with more than 2cm erythema or

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involving deeper structures (such as abscess, osteomyelitis, septic arthritis or fasciitis) patient should be referred for inpatient management in the presence of complication, Severe: local infection with signs of a systemic inflammatory response and refer patient for urgent inpatient management. Swabs should be taken from the deepest part of the cleaned wound after removal of surface contamination and exudate. When infection of a diabetic foot ulcer is clinically suspected the diabetic foot specialist (vascular or orthopaedic) should be consulted at an early stage. Do not offer antibiotics to prevent diabetic foot infection.

Drug option	Dose	Duration
Flucloxacillin (Mild infection)	500mg QDS	7 days
OR Clarithromycin if allergic to penicillin	500mg BD	7 days
OR Doxycycline	200 mg on first day, then 100 mg once a day (can be increased to 200 mg daily)	7 days

COVID-19 advice: where community podiatry have requested a prescription for antibiotics, to support immediate access (same day where possible), for a 2 week supply of antibiotics - in the first instance we would recommend Clindamycin 300mg QDS (assuming no allergies). If the patient is not responding to clindamycin treatment after 72 hours, or develops diarrhoea, GPs should [contact the podiatry team](#) who will provide further advice in consultation with either endocrine or vascular teams.

## MRSA

If in doubt as to severity of infection, contact clinical microbiology. Minor, localised, not systemic (majority of cases will be sensitive to Doxycycline hence good empirical choice):

Drug option	Dose	Duration
Doxycycline	100mg BD	7-10 days
OR Clarithromycin if reported as sensitive	500mg BD	7-10 days

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## MRSA colonisation

- For patients unable to use chlorhexidine, Octenisan can be used instead for 5 days (daily wash and as a shampoo on 2 occasions).
- For colonised large wounds, contact tissue viability service.
- MRSA infection where patient has signs of sepsis, fever, raised white cell count and CRP: refer to hospital.

Drug option	Dose	Duration
Mupirocin nasal ointment	Apply 8 hourly	5 days
<b>PLUS</b> Chlorhexidine 4% (Hibiscrub)	Washes daily	5 days
<b>PLUS</b> Chlorhexidine 4% (Hibiscrub)	As a shampoo	Use twice during the 5 days

## Panton-Valentine Leukocidin (PVL) staphylococcal infection

Also a recurrent skin infection in young adults. Seek microbiology advice if required and/or refer to the PVL Staphylococcus aureus infection guidelines

## Varicella and Herpes zoster

Treatment is only effective if started at onset of infection (within 24 hours of onset of rash for varicella and within 72 hours for herpes zoster). See BNF/BNF for children for doses for children and immunocompromised patients.

Drug option	Dose	Duration
Aciclovir	800mg 5 times a day	7 days
<b>OR</b> Valaciclovir	1g TDS	7 days

## Eye infections

### Acute infective conjunctivitis

Most people with infective conjunctivitis get better, without treatment, within 1 to 2 weeks and for most people, use of a topical ocular antibiotic makes little difference to recovery. Only when symptoms are severe or likely to become severe, providing serious causes of a red eye can be confidently excluded as most cases are viral or self-limiting. Bacterial causes are very rare.

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Although contact lens wear is generally safe and comfortable, contact lens wearers are at a greater risk of eye infection, especially soft lenses. Symptoms of microbial keratitis include a sensation of having something in the eye, watery eyes, blurred vision, sensitivity to light, swelling of the upper eyelid and extreme pain. For mild irritation wait a couple of hours after lens removal to see if the symptoms settle. If after removing the lens the eye remains irritable and red, especially if the vision is blurred the patients can get chloramphenicol eye drops + lubrication eye drops over the counter and use both 4-6 times a day. If no improvement or worse in 2 days contact GP. GP can refer using online referral form to emergency eye department if required.

Drug option	Dose	Duration
Self-care	Bath/clean eyelids with cotton wool dipped in sterile saline or boiled (cooled) water, to remove crusting.	-
Chloramphenicol eye drops 0.5%	Every 2 hours for 48 hours then every 4 hours	48 hrs after resolution
OR Chloramphenicol 1% eye ointment	3 to 4 times daily	48 hrs after resolution
Fusidic acid 1% eye drops (expensive and has less Gram-negative activity)	BD	Continue for 48 hours after eye returns to normal

## Dental infections

This guidance is not designed to be a definitive guide to oral conditions, as GPs should not be involved in dental treatment. Note: Antibiotics do not cure toothache. First line treatment is with paracetamol and/or ibuprofen, codeine is not effective for toothache.

### Acute-dento-alveolar infection

The initial assessment of an acute dento-alveolar infection is important. Hospital referral, rather than treatment is necessary if: there are indications of septicaemia, spreading cellulitis, swellings involving the floor of the mouth that may compromise the airway, difficulty in swallowing, dehydration, failure to respond to treatment. Antibiotics are an adjunct to the treatment of acute dento-alveolar infections. Patients should be reviewed after 2 to 3 days. Discontinue antibiotic if temperature normal and swelling resolving. Failure of resolution may require referral for specialist advice.

Key: 1<sup>st</sup> line = Green | 2<sup>nd</sup> line = blue | \*Fluroquinolones = Consider drug safety risk

Drug option	Dose	Duration
Amoxicillin	500mg TDS	Up to 5 days - review at 3 days
OR Penicillin V	500mg QDS	Up to 5 days - review at 3 days
OR Clarithromycin if penicillin allergic	500mg BD	Up to 5 days - review at 3 days
ADD Metronidazole if a predominately anaerobic infection is suspected	400mg TDS	3 days

### Acute necrotising ulcerative gingivitis

Swollen ulcerated gums, pain on chewing and swallowing +/- pyrexia usually with foul smelling breath. Active treatment including debridement needs to be delayed until the acute phase has passed. Refer to GDP/emergency dentist for advice on debridement and irrigation and oral hygiene.

Drug option	Dose	Duration
Metronidazole	400mg TDS	3 days

### Acute pericoronitis

- Pain and swelling localized to the partially erupted third molar teeth, most commonly lower teeth but can affect upper third molars as well.
- Refer to GDP/emergency dentist as debridement, irrigation or relief of occlusion may be needed.
- Chlorhexidine 0.2% mouthwash 300ml is useful as a local measure.

Drug option	Dose	Duration
Metronidazole if there is pyrexia or gross local soft tissue swelling or trismus present	400mg TDS	3 days
OR Amoxicillin	500mg TDS	3 days

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## Useful resources

- [TARGET RTI leaflet](#)
- [EMIS upload instructions \(RTI\)](#)
- [SystemOne RTI upload instructions](#)
- [TARGET UTI leaflet](#)
- [SystemOne UTI upload instructions](#)
- [NICE-PHE Summary of antimicrobial prescribing guidance – managing common infections](#)

These guidelines have been produced by NHS Kernow's prescribing team in collaboration with Royal Cornwall Hospitals NHS Trust. The guidelines replace previous management of infection guidelines for primary and community services (April 2019). For more information email: [kccg.prescribing@nhs.net](mailto:kccg.prescribing@nhs.net)

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