

Management of infection guidelines for primary and community services

Aims of these guidelines

- To encourage the rational and cost-effective use of antibiotics.
- To minimise the emergence of bacterial resistance in the community.
- To 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, co-amoxiclav.
- To provide a simple, best guess approach to the treatment of common infections.



Contents

Upper respiratory tract infections	4
Otitis media (child doses)	4
Acute diffuse Otitis externa.....	4
Influenza treatment.....	5
Pharyngitis / sore throat / tonsillitis	5
Sinusitis acute or chronic.....	5
Lower respiratory tract infections	6
Acute bronchitis and acute cough	6
Acute exacerbation of COPD	6
Bronchiectasis exacerbation.....	7
Community-acquired pneumonia.....	7
Severe CAP in a community hospital setting.....	7
Hospital acquired pneumonia in a community hospital setting	7
Aspiration pneumonia in a community hospital setting	7
Meningitis	8
Suspected meningococcal disease	8
Prevention of secondary cases of meningitis	8
Urinary tract infections	9
Uncomplicated UTI i.e. no fever or flank pain.....	9
Acute prostatitis.....	10
Acute pyelonephritis	10
Catheter associated bacteriuria.....	10
Lower UTI in patients with an indwelling catheter.....	10
Prophylaxis for recurrent UTI in women	11
Staph aureus in urine	11
UTI in pregnancy	11
Gastro-intestinal tract infections	11
Acute Cholecystitis	11
Clostridium difficile	11
Diverticulitis	12
Eradication of Helicobacter pylori	12
Gastroenteritis	13
Giardiasis	13
Roundworm	13
Threadworm	13
Genital tract infections	13
Acute epididymo-orchitis.....	13
Bacterial vaginosis.....	13
Candidiasis	14
Chlamydia trachomatis	14
Pelvic Inflammatory Disease	14
Chronic genital herpes simplex.....	15
Primary genital herpes simplex.....	15
Postnatal infections	15
Trichomoniasis	15
Skin / soft tissue infections	16
Animal / human bites	
Insect bites and stings	16
Cellulitis	16
Cellulitis (managed in hospital).....	17
Dermatophyte infection of nails	17
Dermatophyte infection of the skin	17
Impetigo.....	17
Infective lactation mastitis.....	18
Leg ulcers	18
MRSA	18
MRSA colonisation	18
Panton-Valentine Leukocidin (PVL) staphylococcal infection	18
Varicella and Herpes zoster.....	18
Eye infections	19
Acute infective conjunctivitis	19
Dental infections	19
Acute-dento-alveolar infection	19
Acute necrotising ulcerative gingivitis	19
Acute pericoronitis	20
Useful resources	20

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 e.g. flucloxacillin is very rarely a good choice in patients colonised with MRSA. A dose and duration of treatment is suggested. In severe or recurrent cases consider a larger dose or longer course.
- 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.
- 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.
- Avoid use of quinolones unless benefits outweighs risks as evidence indicates that they may be rarely associated with long lasting disabling neuro muscular and skeletal side effects ([drug safety update March 2019](#)). MHRA has also issued a [drug safety update](#) in November 2018, which reported a two-fold 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 information.
- Where a 'best guess' therapy has failed or special circumstances exist, microbiological advice can be obtained from the Department of Clinical Microbiology on 01872 254900 - out of hours call the RCHT switchboard on 01872 250000.

Drug option	Dose	Duration
Upper respiratory tract infections		
Consider delayed antibiotic prescriptions.		
Otitis media (child doses)		NICE visual summary code: ng91
Many are viral. OM resolves in 60 percent 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 three days.		
Self-care	Self-care with paracetamol or ibuprofen for pain.	
Amoxicillin	Neonate: 30mg/kg TDS 1-11 months: 125mg TDS 1-4 years: 250mg TDS >5 years: 500mg TDS	5 days
Penicillin allergy: erythromycin	<2 years: 125mg QDS 2-7 years: 250mg QDS >8 years: 250-500mg QDS	
OR Clarithromycin	1 month-11 years: 7.5mg/kg-250mg BD (weight dosing) 12-18 years: 250mg BD	
Acute diffuse Otitis externa		NICE CKS summary: cks.nice.org.uk/otitis-externa
Oral antibiotics are not recommended for otitis externa; complications need specialist advice, e.g. 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 six 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 seven days and consideration should be given to referral for micro-suction. Patients with symptoms beyond two weeks should be considered treatment failures and alternative management initiated.		
Self-care	Analgesia for pain relief, and apply localised heat (such as a warm flannel).	
	Acetic acid 2% ear spray (EarCalm, OTC, P medicine) One spray TDS (maximum one spray every two to three hours)	7 days maximum
Steroid combination ear drops / spray	Sofradex ear drops: 2-3 drops 3-4 times a day for 7 days flumetasone–clioquinol ear drops: 2-3 drops twice daily for 7-10 days gentamicin hydrocortisone ear drops: 2-4 drops 4-5 times a day for 7 days Otomize ear spray: 1 spray 3 times daily for 7 days	
Use of ciprofloxacin eye drops for otitis externa is unlicensed but may be used with specialist ENT input.		

Drug option	Dose	Duration
Influenza treatment		
Refer to Public Health England: www.gov.uk/government/collections/seasonal-influenza-guidance-data-and-analysis		
Pharyngitis / sore throat / tonsillitis		NICE visual summary code: ng84
Avoid antibiotics as 82 percent will resolve in seven days without 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.		
FeverPAIN criteria	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. FeverPAIN online tool: ctu1.phc.ox.ac.uk/feverpain/index.php Each of the Centor criteria score one point (maximum score of four). 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.	
<ul style="list-style-type: none"> • Fever (during previous 24 hours) • Purulence (pus on tonsils) • Attend rapidly (within three days after onset of symptoms) • Severely Inflamed tonsils • No cough or coryza (inflammation of mucus membranes in the nose) 		
Centor criteria		
<ul style="list-style-type: none"> • Tonsillar exudate • Tender anterior cervical lymphadenopathy or lymphadenitis • History of fever (over 38°C) • Absence of cough 		
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 Gp A Strep is grown
OR Clarithromycin if allergic to penicillin	500mg BD	5 days
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 two to three 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.		
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.	

Drug option	Dose	Duration
Penicillin V for delayed antibiotic	500mg QDS	5 days
OR if allergic to penicillin: Clarithromycin	500mg BD	
OR Doxycycline	200mg stat then 100mg once daily	5 days
Co-Amoxiclav if systemically unwell	625mg TDS	

Lower respiratory tract infections

Quinolones e.g. 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 seven day delayed antibiotics with advice. Symptom resolution can take three 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 cough: Some people may wish to try honey (over 1s), herbal or cough medicines containing expectorant or suppressants, except codeine, (in over 12s). These self-care treatments have limited evidence for relief of cough symptoms.
- Acute cough with URTI: No antibiotics
- Acute bronchitis: No routine antibiotic
- Acute cough and higher risk of complications at face to face examination: Immediate or back-up antibiotic
- Acute cough and systemically very unwell at face to face examination: Immediate antibiotic

Adult first choice: Doxycycline	200mg stat then 100mg once daily	5 days
OR Amoxicillin	500mg TDS	

Acute exacerbation of COPD NICE visual summary code: [ng114](#)

Many cases are viral so will not respond to antibiotics. Consider antibiotics 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 ≥3 standby antibiotics and investigate reasons as per NICE COPD 2018. Ensure regular review on those who are on prophylactic antibiotics.

Doxycycline	200mg stat then 100mg once daily	5 days
OR Amoxicillin	500mg TDS	

Drug option	Dose	Duration
OR Clarithromycin	500mg BD	
Bronchiectasis exacerbation		
High dose antibiotics, as advised by the specialist, generally for two to four weeks and taken until the patient's improvement has plateaued as measured by improvement in sputum volume and purulence.		
Community-acquired pneumonia		
<ul style="list-style-type: none"> 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>30/min; BP systolic<90 or diastolic<60; Age > 65. Score 3-4: urgent hospital admission; score 1-2 intermediate risk: consider hospital assessment; score 0 low risk: consider home based care. Always give safety net advice and likely duration of symptoms. Mycoplasma is rare in over 65s. Consider legionella in travellers. Do not use doxycycline in children or pregnant women. 		
For non-severe CAP: Amoxicillin	500mg TDS	5 days
OR Doxycycline	200mg stat then 100mg once daily	
OR Clarithromycin	500mg BD	
Severe CAP in a community hospital setting		
Switch to oral treatment when appropriate, as for non-severe CAP.		
Piperacillin/tazobactam PLUS Clarithromycin	4.5g IV TDS 500mg BD orally or by infusion if oral route not available then oral switch to amoxicillin + clarithromycin where clinically indicated	For total course of (IV+ oral) 7 days
Levofloxacin IV for penicillin allergy if oral route not available THEN Levofloxacin orally	500mg IV ONCE daily then 500mg once daily (97% orally absorbed)	For total course (IV + oral) of 7 days
Hospital acquired pneumonia in a community hospital setting		
Non-severe: Amoxicillin PLUS Doxycycline	500mg TDS 200mg stat then 100mg once daily orally	5 days
Severe: Piperacillin/tazobactam	4.5g IV TDS and then treat according to sensitivities THEN amoxicillin and doxycycline for oral switch	For total course of (IV + oral) 7 days
Levofloxacin *IV for penicillin allergy if oral route not available THEN levofloxacin* orally	500mg once daily then orally 500mg once daily	For total course (IV + oral) of 7 days
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		

1st line = Green | 2nd line = blue

*Fluroquinolones –Consider Drug Safety Risk

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

Meningitis

Suspected meningococcal disease

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

IV Benzylpenicillin OR IM if a vein cannot be found	Adults and children 10 years and over: 1200mg 1-9 years: 600mg <1 year: 300mg	
Cefotaxime if history of penicillin allergy (not anaphylaxis)	1g IV/IM stat < 12 years 50mg/kg IV/IM stat	

Prevention of secondary cases of meningitis

Only prescribe following advice from Health Protection Unit - open 9am to 5pm - call 0300 303 8162.
Out of hours: Contact on-call doctor / nurse for the Health Protection Unit via RCHT switchboard: 01872 250000.

Drug option	Dose	Duration
Urinary tract infections		
<p>Amoxicillin resistance is common, therefore only use if culture confirms susceptibility. In the elderly (>65 years), do not treat asymptomatic bacteriuria i.e. positive urine dipstick for nitrite and leucocytes; it occurs in 25 percent of women and 10 percent of men and is not associated with increased morbidity. 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 TARGET UTI leaflet available here: www.rcgp.org.uk/TARGETantibiotics and 'Care Home UTI Management Tool for persons > 65 leaflet' available here: www.eclipsesolutions.org/cornwall.</p>		
Uncomplicated UTI i.e. no fever or flank pain		NICE visual summary code: ng109
<p>Self-care options to relieve symptoms include paracetamol, NSAIDs (e.g. Ibuprofen) and encourage intake of fluids to avoid dehydration. In women <65yrs use signs/symptoms of dysuria, new nocturia or cloudy urine to guide treatment. Two or more of these 3 signs/symptoms are likely to have a UTI: consider immediate antibiotic, or back-up if mild symptoms and woman is not pregnant. One sign/symptom: UTI possible as 68% will have a culture confirmed UTI ($\geq 10^6$ cfu/L) therefore use urine dipstick to increase diagnostic certainty. None of the 3: UTI less likely - use urine dipstick if other severe urinary symptoms (frequency, urgency, haematuria, suprapubic tenderness). Dipstick criteria -</p> <ul style="list-style-type: none"> • 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 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/755597/PHE_UTI_quick_reference_guide.pdf 		
<p>Risk factors for increased resistance include care home resident, recurrent UTI, hospitalisation >7 days in the last six months, unresolving urinary symptoms, recent travel to a country with increased antimicrobial resistance, previous UTI known to be resistant to trimethoprim, cephalosporins or quinolones.</p> <p>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.</p>		
<p>Nitrofurantoin if GFR >45ml/min. If GFR 30-45ml/min: only use if resistance testing indicates no alternative.</p>	<p>100mg BD (modified-release capsules) OR 50mg QDS (immediate release) Suspension – expensive +++. Capsules cannot be opened and the tablets should not be crushed as they are an irritant.</p>	<p>Females - 3 days Males - 7 days</p>
<p>Trimethoprim if low risk of resistance</p>	<p>200mg BD Suspension available.</p>	
<p>OR Pivmecillinam (type of penicillin – do not</p>	<p>400mg stat then 200mg TDS (400mg if high resistance risk)</p>	

Drug option	Dose	Duration
use if history of penicillin allergy)	Unlicensed use: manufacturers advise tablets can be crushed and dissolved in a neutral (e.g. water or tea not fruit juice) rather than acidic liquid but may have a bitter taste.	
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.		
Acute prostatitis		NICE visual summary code: ng110
Send MSU for culture and start antibiotic.		
Ciprofloxacin *	500mg BD	14 days and review either to stop or continue further 14 days
Trimethoprim if sensitive	200mg BD	
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		
Always send culture. Cefalexin until sensitivity results are available, 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.		
Cefalexin	500mg TDS	7-10 days
OR if organism sensitive: Trimethoprim	200mg BD	14 days
Catheter associated bacteriuria		
If asymptomatic, no antibiotics. Don't swab catheters.		
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 e.g. suprapubic pain. If symptoms are severe (e.g. 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 seven days. Follow up after 48 hours (or according to the clinical situation) to check response to treatment and the result of urine culture.		

Drug option	Dose	Duration
Prophylaxis for recurrent UTI in women		NICE visual summary code: ng112
<ul style="list-style-type: none"> • Three 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 six month trial of low-dose continuous antibiotic treatment: Trimethoprim 100mg every night, or Nitrofurantoin (immediate-release capsules) 50-100mg every night or Methenamine hippurate (1g BD). Stop after six months and evaluate. • For breakthrough infection, change antibiotics according to sensitivities, treat for seven days maximum (seven days in men, five days in women) and then continue prophylaxis. If ≥ 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 five - 'Important local documents' tab. 		
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.		
Nitrofurantoin	MR 100mg BD OR IR 50mg QDS	7 days
OR Trimethoprim if Nitrofurantoin unsuitable	200mg BD	
Cefalexin	500mg BD	
Gastro-intestinal tract infections		
Acute Cholecystitis		
Co-amoxiclav for mild cases	625mg TDS	7 days
OR Ciprofloxacin - if penicillin allergic	500mg BD	
Clostridium difficile		
Stop current antibiotics, antimotility drugs (e.g. Loperamide) and PPIs if possible.		
<ul style="list-style-type: none"> • Not severe: WCC<15x10⁹/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 four days switch to oral Vancomycin 125mg QDS for 14 days. 		

Drug option	Dose	Duration
<ul style="list-style-type: none"> 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). Severe: Underlying inflammatory bowel disease or passing >8 stools in 24 hours with WCC>15x10⁹ /L, albumin<25g/L, temperature >38.5°C refer to hospital. Recurrent: Discuss with microbiology. 		
Diverticulitis		
Prescribe paracetamol for pain. Recommend clear liquids only. Gradually reintroduce solid food as symptoms improve over two to three days. Review within 48 hours or sooner if symptoms deteriorate. Arrange admission if symptoms persist or deteriorate.		
Co-amoxiclav	625mg TDS	5 days
OR Ciprofloxacin if penicillin allergic AND Metronidazole	500mg BD 400mg TDS	
Eradication of Helicobacter pylori		
<ul style="list-style-type: none"> Eradication is beneficial in DU, GU, but not in GORD. In non-ulcer dyspepsia, eight percent of patients benefit. Triple treatment attains >85 percent 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. 		
Omeprazole PLUS Clarithromycin PLUS Amoxicillin	20mg BD capsules 500mg BD 1g BD	7 days
If penicillin allergic, Omeprazole PLUS Clarithromycin PLUS Metronidazole	20mg BD capsules 250mg BD 400mg BD	
For those who still have symptoms after first-line eradication: Omeprazole PLUS Amoxicillin PLUS EITHER Clarithromycin OR Metronidazole - whichever was not used first-line	20mg BD capsules 1g BD 500mg BD 400mg BD	

Drug option	Dose	Duration
Gastroenteritis		
Antibiotic therapy is not usually indicated. Campylobacter infections form 12 percent 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.		
Metronidazole	2g daily	3 days
In pregnancy: Metronidazole	400mg TDS	5 days
Roundworm > 1 year old		
Mebendazole	100mg BD	3 days
Threadworm		
Treat all household contacts at the same time plus advise hygiene measures. If reinfection occurs, second dose may be needed after two weeks (off-label if less than two years). If less than six months or pregnant (first trimester), use hygiene measures for six weeks. Child <6 months perianal wet wiping/ washes three hourly.		
Mebendazole	Child six months to adult 100mg	Single dose. Repeat in 2 weeks if persistent
Genital tract infections		
<ol style="list-style-type: none"> 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 GU medicine due to increasing antibiotic resistance. 		
Acute epididymo-orchitis		
Check sexual history. Send both first pass urine for CT and MSU for UTI. If gonorrhoea suspected (for example a significant urethral discharge), refer to GUM.		
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.		
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

1st line = Green | 2nd line = blue

*Fluoroquinolones –Consider Drug Safety Risk

Drug option	Dose	Duration
Candidiasis		
Persistent cases require longer courses (see BASHH guidelines www.bashh.org). Other oral therapy options may be used instead of topical therapy e.g. Itraconazole 200mg orally as two doses eight hours apart, but avoid oral therapy if risk of pregnancy.		
Fluconazole if co-existing vulvitis (except in pregnancy) AND Clotrimazole	150mg stat orally 1% cream	Topical 1% cream for at least 14 days
Clotrimazole	500mg pessary stat	
OR Clotrimazole	100mg pessary	6 nights
Chlamydia trachomatis		
<ul style="list-style-type: none"> Tetracyclines are contraindicated in pregnancy. Ideally, refer to GUM clinic for treatment, follow up and contact tracing. A test of cure six 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 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 three to fifteen percent 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. 		
Doxycycline	100mg BD	7 days
OR Azithromycin	1g stat orally then 500mg daily for two days	
OR Erythromycin EC - If pregnancy risk	500mg BD	14 days
OR Doxycycline - rectal or throat infection	100mg BD	7 days
Pelvic Inflammatory Disease		
<ul style="list-style-type: none"> 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 GU medicine as antibiotic resistance is now very high. If risk of pregnancy, seek specialist advice. 		
Metronidazole PLUS levofloxacin*	400mg BD (reduce duration to seven days if nausea is a problem). 500mg once daily	14 days

1st line = Green | 2nd line = blue

*Fluroquinolones –Consider Drug Safety Risk

Drug option	Dose	Duration
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 (e.g. less than six attacks per year) or consider self-initiated treatment so antiviral medication can be started early in the next attack.		
Aciclovir for self-initiated treatment	400mg TDS	5 days
Suppressive antiviral treatment (e.g. oral aciclovir 400mg BD for 6-12 months) if attacks are frequent (six or more attacks per year), causing psychological distress, or adverse emotional/social/relationship effects: After 6-12 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.		
Primary genital herpes simplex		
Take viral swab prior to commencing therapy otherwise opportunity for diagnosis will be lost if first episode.		
Aciclovir	400mg TDS (consider increasing to 400mg five times a day in the immunocompromised or if absorption impaired)	5 days
OR Valaciclovir	500mg BD	
Adjunct treatment: Saline bathing, regular analgesia, lidocaine 5% ointment prn or Hydrogel dressing, antifungals.		
Postnatal infections (e.g. endometritis, postepisiotomy infections of the perineum)		
<ul style="list-style-type: none"> Seek specialist advice from Obstetrics if patients have significant systemic symptoms or if symptoms fail to improve after seven days. Consider endometritis if there is new/ 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. 		
Co-amoxiclav	625mg TDS	5 to 7 days
OR non-anaphylaxis allergy to penicillin: Cefalexin	500mg BD	
PLUS Metronidazole	400mg TDS	
Trichomoniasis		
Treat partners simultaneously. Refer to GUM for contact tracing. Pregnant/breast feeding patients should avoid the 2g stat dose.		
Metronidazole	400mg BD	7 days
OR Metronidazole	2g as single stat dose	

Drug option	Dose	Duration
Skin / soft tissue infections		
Animal / human bites		
Thorough irrigation is important. Assess, as appropriate, risk of tetanus, HIV, hepatitis B&C, rabies. Prophylaxis should be given after bites unless seen three days after and no evidence of infections. This guidance does not cover insect bites.		
<ul style="list-style-type: none"> • 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. 		
Co-Amoxiclav	625mg TDS	7 days
OR if allergic to penicillin (animal bites): Metronidazole AND Doxycycline	400mg TDS 100mg BD	
OR if allergic to penicillin (human bites): Metronidazole AND Clarithromycin	400mg TDS 500mg BD	
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		
The ERON classification system can help guide admission and treatment decisions.		
<ul style="list-style-type: none"> • Class I: Patient afebrile and healthy other than cellulitis, use oral flucloxacillin. • Class II: Febrile and ill, or co-morbidity, seek advice from Acute Care at Home team to prevent hospital admission or admit for IV treatment if appropriate. • Class III: Toxic appearance - admit. If river or sea exposure, discuss with microbiology. 		
If associated with MRSA, follow MRSA advice overleaf on page 18 as flucloxacillin is not effective against MRSA. In penicillin allergy, or if not improving contact microbiology.		
Flucloxacillin	500mg QDS	5 days - If slow response continue for a further 5 days
OR Clarithromycin	500mg BD	
Co-Amoxiclav for facial cellulitis	625mg TDS	

Drug option	Dose	Duration
Cellulitis (managed in hospital)		
If not improving, discuss with microbiology.		
Flucloxacillin	1g IV six hourly	5 days with clinical review
THEN Flucloxacillin orally	500mg QDS	
OR Clindamycin	300mg QDS	
OR Teicoplanin for MRSA/infected cannula sites	Three doses of 6mg/kg IV BD THEN 6mg/kg once a day for five days	
Dermatophyte infection of nails		
<ul style="list-style-type: none"> 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 nine 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). 		
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 one week	Fingers: 2 courses Toes: 3 courses
Dermatophyte infection of the skin		
Take skin scrapings for culture. Treatment: One week topical terbinafine is as effective as four weeks topical azole. If intractable consider oral itraconazole. Discuss scalp infections with specialist.		
Terbinafine (topical 1%)	Applied daily/twice daily	1 week
Topical undecenoic acid	Applied daily/twice daily	4-6 weeks
OR Topical Azole		
Impetigo		
Extensive, severe or bullous infections usually require treatment with an oral antibiotic.		
Flucloxacillin	500mg QDS	7 days
OR clarithromycin if allergic to penicillin	250-500mg BD	7 days
Fusidic acid topically	Applied TDS	5 days Used alone for very localised infections only

Drug option	Dose	Duration
Infective lactation mastitis		
If there is an infected nipple fissure or symptoms have not improved after 12–24 hours despite effective milk removal.		
Flucloxacillin	500mg QDS	10–14 days
OR erythromycin if allergic to penicillin	250-500mg QDS	
OR clarithromycin	500mg twice a day	
Leg ulcers		
Routine swabs are not recommended. Antibiotics do not improve healing unless active infection.		
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):		
Doxycycline	100mg BD	7-10 days
OR Clarithromycin if reported as sensitive	500mg BD	
MRSA colonisation		
<ul style="list-style-type: none"> For patients unable to use chlorhexidine, Octenisan can be used instead for five days (i.e. daily wash and as a shampoo on two 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. 		
Mupirocin nasal ointment PLUS Chlorhexidine 4% (Hibiscrub) PLUS Chlorhexidine 4% (Hibiscrub)	Apply eight hourly Washes daily As a shampoo	5 days and use shampoo twice during the 5 days
Panton-Valentine Leukocidin (PVL) staphylococcal infection		
Or 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 (i.e. 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.		
Aciclovir	800mg five times a day	7 days
OR Valaciclovir	1g TDS	

Drug option	Dose	Duration
Eye infections		
Acute infective conjunctivitis		
Most people with infective conjunctivitis get better, without treatment, within one to two 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.		
1 st line: self-care	Bath/clean eyelids with cotton wool dipped in sterile saline or boiled (cooled) water, to remove crusting.	
2 nd line: Chloramphenicol eye drops 0.5	Every two hours for 48 hours then every four hours	48 hrs after resolution
OR Chloramphenicol 1% eye ointment	Three to four times daily	
3 rd line: Fusidic acid 1% eye drops	BD - continue for 48 hours after eye returns to normal (expensive and have less Gram-negative activity)	
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 two to three days. Discontinue antibiotic if temperature normal and swelling resolving. Failure of resolution may require referral for specialist advice.		
Amoxicillin	500mg TDS	Up to 5 days - review at 3 days
OR Penicillin V	500mg QDS	
OR Clarithromycin if penicillin allergic	500mg BD	
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.		

1st line = Green | 2nd line = blue
 *Fluroquinolones –Consider Drug Safety Risk

Drug option	Dose	Duration
Metronidazole	400mg TDS	3 days
Acute pericoronitis		
<ul style="list-style-type: none"> • 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. 		
Metronidazole if there is pyrexia or gross local soft tissue swelling or trismus present	400mg TDS	3 days
OR Amoxicillin	500mg TDS	

Useful resources

TARGET RTI leaflet

<http://www.rcgp.org.uk/clinical-and-research/resources/toolkits/-/media/9ACFD17AEAD84E32BD8EBB3DC042C543.ashx>

EMIS upload instructions (RTI)

<http://www.rcgp.org.uk/clinical-and-research/resources/toolkits/-/media/94BF700D782943739AEC58005455392F.ashx>

SystemOne upload instructions (RTI)

<http://www.rcgp.org.uk/clinical-and-research/resources/toolkits/-/media/43808FFCA83D4179AFB509E7362543DC.ashx>

TARGET UTI leaflet

www.rcgp.org.uk/clinical-and-research/resources/toolkits/-/media/85AAD1D4DDEF455A85E0416C3BB714AE.ashx

SystemOne upload instructions (UTI)

<http://www.rcgp.org.uk/clinical-and-research/resources/toolkits/-/media/0BA9C1807DE043969F06C45B41805CE7.ashx>

These guidelines have been produced by NHS Kernow's Prescribing team. Email kccg.prescribing@nhs.net