

SECTION 18: ANTIMICROBIAL PRESCRIBING

A close-up photograph of various pharmaceuticals, including white, yellow, and orange tablets and capsules, some with embossed markings, scattered on a blue background with faint white text. A magenta rectangular box is overlaid on the bottom left.

Formulary and Prescribing Guidelines



18.1 Aims

- To provide a simple, safe, effective, empirical, evidence based and cost effective approach to the treatment of common infections
- To minimise the emergence of bacterial resistance

18.2 Principles of Treatment

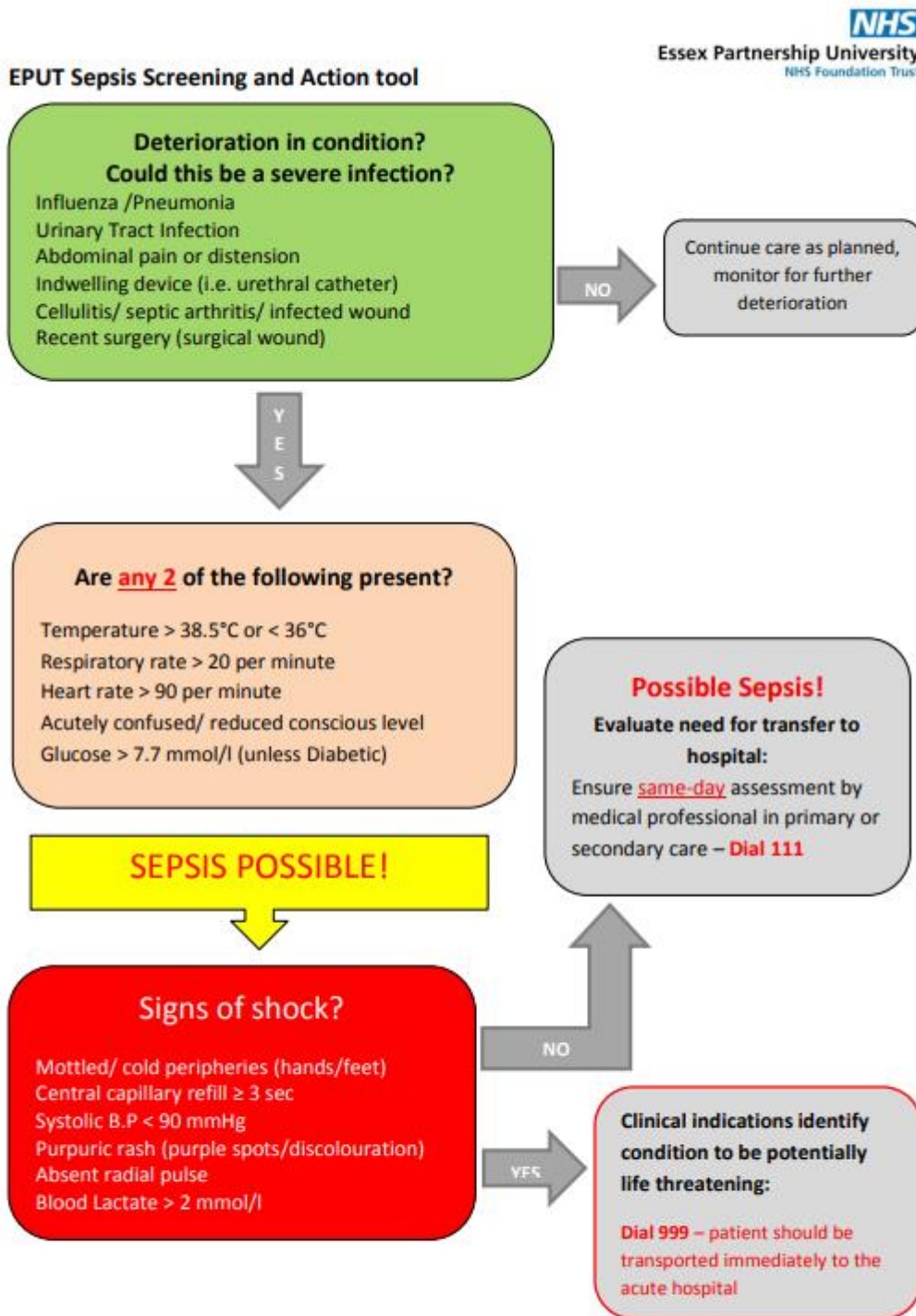
- 18.2.1 This guidance is based on the best available evidence^{1,5}. Patients should be involved in the decision where appropriate with due consideration given to antimicrobial stewardship principles.
- 18.2.2 It is important to initiate antibiotics as soon as possible for severe infection. If sepsis is suspected, antibiotic treatment should be initiated within an hour preferably by transferring the patient to an acute hospital.
- 18.2.3 A dose and duration of treatment for adults is usually suggested, but may need modification for age, weight and renal function. In severe or recurrent cases consider a larger dose or longer course in line with guidelines and after consulting a microbiologist (if appropriate).
- 18.2.4 Have a lower threshold for antibiotics in immunocompromised patients or those with multiple morbidities; consider culture and seek advice.
- 18.2.5 Prescribe an antibiotic only when there is likely to be a clear clinical benefit. Prescriptions should state the indication and course length or review date on the medicines chart and in the patients' electronic record.
- 18.2.6 Consider a no, or delayed, antibiotic strategy for acute self-limiting upper respiratory tract infections e.g. sore throat, sinusitis, otitis media which are usually viral in nature.
- 18.2.7 Limit prescribing over the telephone to exceptional cases.
- 18.2.8 Use simple generic antibiotics if possible. Avoid broad spectrum antibiotics (e.g. co-amoxiclav, quinolones and cephalosporins) when narrow spectrum antibiotics remain effective, as they increase risk of *Clostridium difficile*, MRSA and resistant UTIs. There is specific guidance for treatment of *C.difficile* infection, see main table and linked visual reference summary.
- 18.2.9 Limit the use of topical antibiotics to localised skin infections (especially those agents also available as systemic preparations, e.g. fusidic acid). Specific guidance can be found in the main table and linked visual reference summary.
- 18.2.10 In pregnancy, take specimens to inform treatment; where possible AVOID tetracyclines, aminoglycosides, quinolones, *high dose* metronidazole (2 g). Short-term use of nitrofurantoin (at term, theoretical risk of neonatal haemolysis) is unlikely to cause problems to the foetus. Trimethoprim is also unlikely to cause problems unless poor dietary folate intake or taking another folate antagonist e.g. antiepileptic. Trimethoprim is unlicensed for use in pregnancy and folate supplementation is recommended particularly in the first trimester due to the theoretical risk of congenital malformations.
- 18.2.11 For information on the recognition and management of allergies, please refer to CG27 Medical Emergencies¹⁰.

- 18.2.12 For further information on the antimicrobial choices below, for example dosing information in renal and/or hepatic impairment, please refer to the electronic BNF².
- 18.2.13 Antibiotics more likely to cause *C. difficile* infection are broad spectrum in nature and include quinolones, co-amoxiclav, cephalosporins and clindamycin but it is important to note that any antibiotic can cause *C. difficile*. If patients develop diarrhoea and *C. difficile* infection is suspected, discuss with the infection control team. and treat as per the guidance below.
- 18.2.14 Point-of-care tests for suspected UTIs are not currently recommended in primary or community care settings¹⁴. Further research is recommended to ascertain how accurate the tests are in identifying bacteria and testing for antibiotic susceptibility. They show promise but completion of ongoing studies will allow the risks and benefits to be understood fully.



18.3 Sepsis

Please refer to NICE Guideline 51⁶ for full information on Sepsis.

Whenever a person presents with signs or symptoms that indicate possible infection think 'could this be sepsis?'^{7,8} CG87 provides information on sepsis pathways for both children and adults⁹.



Adapted from  THE UK SEPSIS TRUST Pre Hospital Sepsis Screening Tool

EPUT SEPSIS SCREENING TOOL				AGE 5-11																									
PATIENT NAME:		DOB:		NHS NUMBER:																									
01 START THIS CHART IF THE CHILD LOOKS UNWELL, HAS ABNORMAL PHYSIOLOGY OR IF THERE IS PARENTAL CONCERN RISK FACTORS FOR SEPSIS INCLUDE: <input type="checkbox"/> Impaired immunity (e.g. diabetes, steroids, chemotherapy) <input type="checkbox"/> Indwelling lines / indwelling device / broken skin <input type="checkbox"/> Recent trauma / surgery / invasive procedure																													
02 COULD THIS BE DUE TO AN INFECTION? YES LIKELY SOURCE: <input type="checkbox"/> Respiratory <input type="checkbox"/> Urine <input type="checkbox"/> Skin / joint / wound <input type="checkbox"/> Indwelling device <input type="checkbox"/> Brain <input type="checkbox"/> Surgical <input type="checkbox"/> Other				SEPSIS UNLIKELY, CONSIDER OTHER DIAGNOSIS NO																									
03 ANY RED FLAG PRESENT? YES <input type="checkbox"/> Objective evidence of new or altered mental state <input type="checkbox"/> Doesn't wake when roused/ won't stay awake <input type="checkbox"/> Looks very unwell to healthcare professional <input type="checkbox"/> Severe tachycardia (see chart) <input type="checkbox"/> Severe tachypnoea (see chart) <input type="checkbox"/> Bradycardia (<60 bpm) <input type="checkbox"/> SpO ₂ < 90% on air <input type="checkbox"/> Non-blanching rash / mottled / ashen / cyanotic <input type="checkbox"/> Temperature <36°C				RED FLAG SEPSIS START GP BUNDLE																									
04 ANY AMBER FLAG PRESENT? NO IF IMMUNITY IMPAIRED TREAT AS RED FLAG SEPSIS <input type="checkbox"/> Behaving abnormally / not wanting to play <input type="checkbox"/> Parental concern <input type="checkbox"/> Moderate tachypnoea (see chart) <input type="checkbox"/> Moderate tachycardia (see chart) <input type="checkbox"/> SpO ₂ < 92% on air <input type="checkbox"/> Capillary refill time ≥ 3 seconds <input type="checkbox"/> Reduced urine output <input type="checkbox"/> Temperature <36°C <input type="checkbox"/> Leg pain				SEPSIS LIKELY - TRANSFER TO DESIGNATED DESTINATION - COMMUNICATE LIKELIHOOD OF SEPSIS AT HANDOVER																									
NO AMBER FLAGS : ROUTINE CARE AND GIVE SAFETY-NETTING ADVICE:																													
RED FLAG BUNDLE: THIS IS TIME-CRITICAL – IMMEDIATE ACTION REQUIRED: DIAL 999 AND ARRANGE BLUE LIGHT TRANSFER				COMMUNICATION: Ensur communication of 'Red Flag Sepsis' to crew. Advise crew to pre-alert as 'Red Flag Sepsis'. Where possible a written handover is recommended including observations and antibiotic allergies.																									
<table border="1"> <thead> <tr> <th rowspan="2">Age (years)</th> <th colspan="2">Tachypnoea (breaths per minute)</th> <th colspan="2">Tachycardia (beats per minute)</th> </tr> <tr> <th>Severe</th> <th>Moderate</th> <th>Severe</th> <th>Moderate</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>≥29</td> <td>24-28</td> <td>≥130</td> <td>120-129</td> </tr> <tr> <td>6-7</td> <td>≥27</td> <td>24-26</td> <td>≥120</td> <td>110-119</td> </tr> <tr> <td>8-11</td> <td>≥25</td> <td>22-24</td> <td>≥115</td> <td>104-114</td> </tr> </tbody> </table>				Age (years)	Tachypnoea (breaths per minute)		Tachycardia (beats per minute)		Severe	Moderate	Severe	Moderate	5	≥29	24-28	≥130	120-129	6-7	≥27	24-26	≥120	110-119	8-11	≥25	22-24	≥115	104-114	<div>  NHS Essex Partnership University <small>NHS Foundation Trust</small> Adapted December 2019 Version 1 </div> <div>  THE UK SEPSIS TRUST <small>UKST 2019 3.2 PAGE 1 OF 1 UKST, REGISTERED CHARITY 1158643</small> </div>	
Age (years)	Tachypnoea (breaths per minute)		Tachycardia (beats per minute)																										
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In particular, note the following NICE recommendations:

People with suspected sepsis are to be assessed using a structured set of observations to stratify risk of severe illness or death.

NG51 includes the following:

- a structured set of observations to stratify risk of severe illness or death can be found in NG51:
<https://www.nice.org.uk/guidance/NG51/chapter/Recommendations#stratifying-risk-of-severe-illness-or-death-from-sepsis> :
 - refer to the lists in “Face-to-face assessment of people with suspected sepsis” in section 1.3 of NG51
 - refer to the lists in “Stratifying risk of severe illness or death from sepsis” in section 1.4 of NG51
 - refer to Table 1 below

Table 1 Risk stratification tool for adults, children and young people aged 12 years and over with suspected sepsis

Category	High risk criteria	Moderate to high risk criteria	Low risk criteria
History	Objective evidence of new altered mental state	History from patient, friend or relative of new onset of altered behaviour or mental state History of acute deterioration of functional ability Impaired immune system (illness or drugs including oral steroids) Trauma, surgery or invasive procedures in the last 6 weeks	Normal behaviour
Respiratory	Raised respiratory rate: 25 breaths per minute or more New need for oxygen (40% FiO ₂ or more) to maintain saturation more than 92% (or more than 88% in known chronic obstructive pulmonary disease)	Raised respiratory rate: 21–24 breaths per minute	No high risk or moderate to high risk criteria met
Blood pressure	Systolic blood pressure 90 mmHg or less or systolic blood pressure more than 40 mmHg below normal	Systolic blood pressure 91–100 mmHg	No high risk or moderate to high risk criteria met
Circulation and hydration	Raised heart rate: more than 130 beats per minute Not passed urine in previous 18 hours. For catheterised patients, passed less than 0.5 ml/kg of urine per hour	Raised heart rate: 91–130 beats per minute (for pregnant women 100–130 beats per minute) or new onset arrhythmia Not passed urine in the past 12–18 hours For catheterised patients, passed 0.5–1 ml/kg of urine per hour	No high risk or moderate to high risk criteria met
Temperature		Tympanic temperature less than 36°C	
Skin	Mottled or ashen appearance Cyanosis of skin, lips or tongue Non-blanching rash of skin	Signs of potential infection, including redness, swelling or discharge at surgical site or breakdown of wound	No non-blanching rash

Sepsis: recognition, diagnosis and early management

NICE guideline NG51 <https://www.nice.org.uk/guidance/ng51>© NICE 2017. All rights reserved. Subject to [Notice of rights](#).

People with suspected sepsis in acute hospital settings and at least 1 of the criteria indicating high risk of severe illness or death to have an immediate review by a senior clinical decision-maker and antibiotics given within 1 hour if indicated.

People with suspected sepsis in acute hospital settings who need treatment to restore cardiovascular stability to have an intravenous fluid bolus within 1 hour of risk being stratified.

People with suspected sepsis in acute hospital settings who receive intravenous antibiotics or fluid bolus are seen by a consultant if their condition fails to respond within 1 hour of initial treatment.

Take into account that people with sepsis may have non-specific, non-localised presentations, for example feeling very unwell, and may not have a high temperature. Pay particular attention to concerns expressed by the person and their family or carers, for example changes from usual behaviour. Assess people who might have sepsis with extra care if they cannot give a good history (for example, people with English as a second language or people with communication problems).

Assess people with any suspected infection to identify:

- possible source of infection
- factors that increase risk of sepsis
- Any indications of clinical concern, such as new onset abnormalities of behaviour, circulation or respiration.

Refer all people with suspected sepsis outside acute hospital settings for emergency medical care by the most appropriate means of transport (usually 999 ambulance) if:

- they meet any high risk criteria (see tables 1, 2 and 3 of NICE Guideline 51) or
- they are aged under 17 years and their immunity is impaired by drugs or illness and they have any moderate to high risk criteria.

Assess all people with suspected sepsis outside acute hospital settings with any moderate to high risk criteria to:

- make a definitive diagnosis of their condition
- decide whether they can be treated safely outside hospital.

If a definitive diagnosis is not reached or the person cannot be treated safely outside an acute hospital setting, refer them urgently for emergency care.

Provide people with suspected sepsis, who do not have any high or moderate to high risk criteria, information about symptoms to monitor and how to access medical care if they are concerned.

18.4 Specific medicines warnings – refer to current BNF or Medicines Compendium (SPC) for full details

18.4.1 Fluoroquinolone ¹² antibiotics (ciprofloxacin, levofloxacin, ofloxacin) can cause disabling and long-lasting/ irreversible side effects of muscles, tendons, bones (including tendonitis and tendon rupture) and the nervous system. They may also induce convulsions in patients with or without a history of convulsions and should not be prescribed for:

- non-severe or self-limiting infections, or non-bacterial infections
- mild to moderate infections (such as in acute exacerbation of chronic bronchitis and chronic obstructive pulmonary disease) unless other antibiotics that are commonly recommended for these infections are considered

inappropriate (for example, when first-line antibiotics are unsuitable due to resistance, contraindications, or intolerance, or if first-line treatments have failed.)

- uncomplicated cystitis (for which ciprofloxacin or levofloxacin were previously authorised) unless other antibiotics that are commonly recommended are considered inappropriate (for example, when first-line antibiotics are unsuitable due to resistance, contraindications, or intolerance, or if first-line treatments have failed.)

There is a rare risk of psychiatric reactions including depression and psychotic reactions which may lead to thoughts of suicide or suicide attempts in patients taking fluoroquinolones¹⁵. Prescribers are reminded to advise patients to be alert to mood changes, distressing thoughts or thoughts of suicide at any point of their treatment and to seek medical advice. Fluoroquinolones should be stopped immediately at the first sign of any of these side effects.

Co-administration with corticosteroids should be avoided since this could exacerbate fluoroquinolone-induced tendonitis and tendon rupture. Avoid use in patients who have previously had serious adverse reactions with fluoroquinolone antibiotic. Prescribe with special caution in people older than 60 years and for those with renal impairment or solid-organ transplants because they are at a higher risk of tendon injury.

Prescribers of fluoroquinolones should advise patients to stop treatment at the first signs of a serious adverse reaction, such as tendonitis or tendon rupture, muscle pain, muscle weakness, joint pain, joint swelling, peripheral neuropathy, and central nervous system effects, and to contact their doctor immediately for further advice. Fluoroquinolone treatment should be discontinued at the first sign of tendon pain or inflammation in patients and the affected limb or limbs appropriately treated (for example with immobilisation).

- 18.4.2 **Macrolide** antibiotics (clarithromycin, erythromycin, azithromycin) can cause QT prolongation¹³ and are associated with events secondary to QT interval prolongation such as cardiac arrest and ventricular fibrillation.

The following should be noted when prescribing macrolides:

- reports of cardiotoxicity (QT interval prolongation) with macrolide antibiotics, in particular with erythromycin and clarithromycin
- macrolides **should not** be given to:
 - patients with a history of QT interval prolongation (congenital or documented acquired QT interval prolongation) or ventricular cardiac arrhythmia, including torsades de pointes

- patients with electrolyte disturbances (hypokalaemia or hypomagnesaemia due to the risk of arrhythmia associated with QT interval prolongation)
- consider the potential benefit of treatment when prescribing in patients at increased risk of a cardiac event; patients in whom caution is needed are those with:
 - cardiac disease or heart failure
 - conduction disturbances or clinically relevant bradycardia
 - those concomitantly taking other medicines associated with QT interval prolongation
- direct patients to the patient information leaflet and remind at-risk patients of the importance of seeking medical attention if they develop signs or symptoms of a cardiac event
- macrolides are widely used in children, some of whom may have QT interval prolongation; therefore, consider the child's medical history and balance the treatment benefits against the potential risks
- macrolides may interact with direct acting oral anticoagulants (DOACs) and increase the risk of bleeding – consider this interaction when prescribing antibiotics and follow precautions in the product information if concomitant use is necessary
- The product information for edoxaban recommends a reduced dose of 30mg a day for patients on concomitant erythromycin. For dabigatran and apixaban, concomitant administration of P-gp inhibitors (and for apixaban, also CYP3A4 inhibitors) is expected to increase plasma concentrations, and raise blood concentrations when used concomitantly with another macrolide, clarithromycin.
- All patients prescribed macrolides with DOACs should be informed of the signs and symptoms of bleeding and be advised to seek medical advice should they occur.

18.4.3 Nitrofurantoin¹¹ can be used for short courses of 3 to 7 days in those with reduced renal function (eGFR between 30 and 44ml/minute/1.73m²). Long term use of nitrofurantoin is not advised as it can cause pulmonary fibrosis, hepatic problems and peripheral neuropathy. Nitrofurantoin should be avoided at term in pregnancy as it can cause neonatal haemolysis. Prescribers are reminded to:

- Advise patients/carers to be aware of new or worsening respiratory symptoms
- Pulmonary reactions can occur with short or long term use and increased awareness is required in the first week of treatment
- Closely monitor those patients taking long term, particularly the elderly
- Be vigilant for signs of liver dysfunction, particularly with long term use (monitor LFTS)
- Be cautious when prescribing for those patients with pulmonary disease or hepatic dysfunction
- Advise patients to read the Patient Information Leaflet carefully

18.4.4 Other antimicrobials²

Co-amoxiclav is contraindicated in patients with a history of co-amoxiclav or penicillin associated jaundice or hepatic dysfunction. Hepatic events have been reported mostly in males and elderly patients and may be associated with prolonged treatment. Signs and symptoms usually occur during or shortly after treatment but can occur several weeks after discontinuation.


Doxycycline can cause hepatotoxicity so care should be taken when it is co-administered with antiepileptics such as carbamazepine which can also cause hepatotoxicity. Doxycycline should be avoided if the patient is taking lithium as there is an increased risk of lithium toxicity.


Flucloxacillin can cause cholestatic jaundice which can occur up to two months after treatment has stopped. Prescribe with caution in those who have risk factors including concomitant administration of other medicines likely to cause hepatotoxicity.

Trimethoprim should not be used in patients concurrently taking methotrexate or those who have a low folate status e.g. patients taking folate antagonists such as antiepileptics. There is a teratogenic risk in the first trimester of pregnancy and the manufacturer advises to avoid.

Summary of antimicrobial prescribing guidance – managing common infections


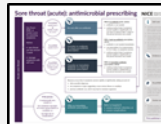
- For all PHE guidance, follow [PHE's principles of treatment](#).
- See BNF for appropriate use and dosing in specific populations, for example, hepatic impairment, renal impairment, pregnancy and breastfeeding.






Key:  Click to access doses for children



 Click to access NICE's printable visual summary




Jump to section on:

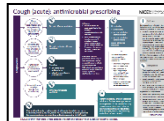

[Upper RTI](#)
[Lower RTI](#)
[UTI](#)
[Meningitis](#)
[GI](#)
[Genital](#)
[Skin](#)
[Eye](#)
[Dental](#)


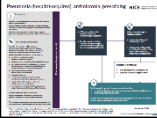

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
▼ Upper respiratory tract infections						
Acute sore throat NICE Public Health England Last updated: Feb 2023	Advise paracetamol, or if preferred and suitable, ibuprofen for pain. Medicated lozenges may help pain in adults. Use FeverPAIN or Centor to assess symptoms: FeverPAIN 0-1 or Centor 0-2 : no antibiotic; FeverPAIN 2-3 : no or back-up antibiotic; FeverPAIN 4-5 or Centor 3-4 : immediate or back-up antibiotic. Systemically very unwell or high risk of complications : immediate antibiotic. *5 days of phenoxymethylpenicillin may be enough for symptomatic cure; but a 10-day course may increase the chance of microbiological cure. For detailed information click the visual summary icon.	First choice: phenoxymethylpenicillin	500mg QDS or 1000mg BD		5 to 10 days*	
		Penicillin allergy: clarithromycin OR	250mg to 500mg BD		5 days	
		erythromycin (if macrolide needed in pregnancy; consider benefit/harm)	250mg to 500mg QDS or 500mg to 1000mg BD		5 days	

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Influenza Public Health England Last updated: Feb 2019	Annual vaccination is essential for all those ‘at risk’ of influenza. ^{1D} Antivirals are not recommended for healthy adults. ^{1D,2A+} Treat ‘at risk’ patients with 5 days oseltamivir 75mg BD, ^{1D} when influenza is circulating in the community, and ideally within 48 hours of onset (36 hours for zanamivir treatment in children), ^{1D,3D} or in a care home where influenza is likely. ^{1D,2A+} At risk: pregnant (and up to 2 weeks post-partum); children under 6 months; adults 65 years or older; chronic respiratory disease (including COPD and asthma); significant cardiovascular disease (not hypertension); severe immunosuppression; chronic neurological, renal or liver disease; diabetes mellitus; morbid obesity (BMI>40). ^{4D} See the PHE Influenza guidance for the treatment of patients under 13 years. ^{4D} In severe immunosuppression, or oseltamivir resistance, use zanamivir 10mg BD ^{5A+,6A+} (2 inhalations twice daily by diskhaler for up to 10 days) and seek advice. ^{4D} Access supporting evidence and rationales on the PHE website .					
Acute otitis media NICE Public Health England Last updated: Mar 2022	Regular paracetamol or ibuprofen for pain (right dose for age or weight at the right time and maximum doses for severe pain). Consider ear drops containing an anaesthetic and an analgesic for pain if an immediate antibiotic is not given and there is no ear drum perforation or otorrhoea. Otorrhoea or under 2 years with infection in both ears: no, back-up or immediate antibiotic. Otherwise: no or back-up antibiotic. Systemically very unwell or high risk of complications: immediate antibiotic. For detailed information click on the visual summary.	First choice: amoxicillin	-		5 to 7 days	
		Penicillin allergy: clarithromycin OR erythromycin (if macrolide needed in pregnancy; consider benefit/harm)	-		5 to 7 days	
		Second choice: co-amoxiclav	-		5 to 7 days	
Acute otitis externa Public Health England Last updated: Nov 2017	First line: analgesia for pain relief, ^{1D,2D} and apply localised heat (such as a warm flannel). ^{2D} Second line: topical acetic acid or topical antibiotic +/- steroid: similar cure at 7 days. ^{2D,3A+,4B-} If cellulitis or disease extends outside ear canal, or systemic signs of infection, start oral flucloxacillin and refer to exclude malignant otitis externa. ^{1D}	Second line: topical acetic acid 2% ^{2D,4B-} OR	1 spray TDS ^{5A-}		7 days ^{5A}	Not available. Access supporting evidence and rationales on the PHE website
		topical neomycin sulphate with corticosteroid ^{2D,5A-} (consider safety issues if perforated tympanic membrane) ^{6B-}	3 drops TDS ^{5A-}		7 days (min) to 14 days (max) ^{3A+}	
		If cellulitis: flucloxacillin ^{7B+}	250mg QDS ^{2D}		7 days ^{2D}	
			If severe: 500mg QDS ^{2D}			


Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Scarlet fever (GAS) Public Health England Last updated: Feb 2023	Guidance is available from appendix 1 of the UKHSA guidelines for the public health management of scarlet fever outbreaks in schools, nurseries and other childcare settings .					
Sinusitis NICE Public Health England Last updated: Oct 2017	Advise paracetamol or ibuprofen for pain. Little evidence that nasal saline or nasal decongestants help, but people may want to try them. Symptoms for 10 days or less: no antibiotic. Symptoms with no improvement for more than 10 days: no antibiotic or back-up antibiotic depending on likelihood of bacterial cause. Consider high-dose nasal corticosteroid (if over 12 years). Systemically very unwell or high risk of complications: immediate antibiotic. <i>For detailed information click on the visual summary.</i>	First choice: phenoxymethylpenicillin	500mg QDS		5 days	
		Penicillin allergy: doxycycline (not in under 12s) OR	200mg on day 1, then 100mg OD		5 days	
		clarithromycin OR	500mg BD			
		erythromycin (if macrolide needed in pregnancy; consider benefit/harm)	250 to 500mg QDS or 500 to 1000mg BD			
		Second choice or first choice if systemically very unwell or high risk of complications: co-amoxiclav	500/125mg TDS		5 days	
▼ Lower respiratory tract infections						
COVID-19 NICE Last updated: December 2021	Antibiotics should not be used for preventing or treating COVID-19 unless there is clinical suspicion of additional bacterial co-infection. Do not use azithromycin to treat COVID-19. Do not use doxycycline to treat COVID-19 in the community. Do not offer an antibiotic for preventing secondary bacterial pneumonia in people with COVID-19. If a person in the community has suspected or confirmed secondary bacterial pneumonia, start antibiotic treatment as soon as possible, see community-acquired pneumonia for choices. In hospital, start empirical antibiotics if there is clinical suspicion of a secondary bacterial infection in people with COVID-19, see hospital-acquired pneumonia for choices. Start antibiotics as soon as possible after establishing a diagnosis of secondary bacterial pneumonia, and certainly within 4 hours. Start treatment within 1 hour if the person has suspected sepsis and meets any of the high-risk criteria for this outlined in the NICE guideline on sepsis . <i>For detailed information, see the NICE guideline on managing COVID-19.</i>					


Infection	Key points	Medicine	Doses		Length	Visual summary		
			Adult	Child				
Acute exacerbation of COPD NICE Public Health England Last updated: Dec 2018	Many exacerbations are not caused by bacterial infections so will not respond to antibiotics. Consider an antibiotic, but only after taking into account severity of symptoms (particularly sputum colour changes and increases in volume or thickness), need for hospitalisation, previous exacerbations, hospitalisations and risk of complications, previous sputum culture and susceptibility results, and risk of resistance with repeated courses. Some people at risk of exacerbations may have antibiotics to keep at home as part of their exacerbation action plan. <i>For detailed information click on the visual summary. See also the NICE guideline on COPD in over 16s.</i>	First choice: amoxicillin OR	500mg TDS (see BNF for severe infection)	-	5 days			
		doxycycline OR	200mg on day 1, then 100mg OD (see BNF for severe infection)	-				
		clarithromycin	500mg BD	-				
		Second choice: use alternative first choice						
		Alternative choice (if person at higher risk of treatment failure): co-amoxiclav OR	500/125mg TDS	-	5 days			
		co-trimoxazole OR	960mg BD	-				
		levofloxacin (with specialist advice if co-amoxiclav or co-trimoxazole cannot be used; consider safety issues)	500mg OD	-				
		IV antibiotics (click on visual summary)						
Acute exacerbation of bronchiectasis (non-cystic fibrosis) NICE Public Health England	Send a sputum sample for culture and susceptibility testing. Offer an antibiotic. When choosing an antibiotic, take account of severity of symptoms and risk of treatment failure. People who may be at higher risk of treatment failure include people who've had repeated courses of antibiotics, a previous sputum culture with resistant or atypical bacteria, or a higher risk of developing complications. Course length is based on severity of bronchiectasis, exacerbation history, severity of exacerbation symptoms, previous culture	First choice empirical treatment: amoxicillin (preferred if pregnant) OR	500mg TDS		7 to 14 days			
		doxycycline (not in under 12s) OR	200mg on day 1, then 100mg OD					
		clarithromycin	500mg BD					
		Alternative choice (if person at higher risk of treatment failure) empirical treatment: co-amoxiclav OR	500/125mg TDS		7 to 14 days			
		levofloxacin (adults only: with specialist advice if	500mg OD or BD					




Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
<div>Last updated: Dec 2018</div>	<div>and susceptibility results, and response to treatment.</div> <div>Do not routinely offer antibiotic prophylaxis to prevent exacerbations.</div> <div>Seek specialist advice for preventing exacerbations in people with repeated acute exacerbations. This may include a trial of antibiotic prophylaxis after a discussion of the possible benefits and harms, and the need for regular review.</div> <div>For detailed information click on the visual summary.</div>	<div>co-amoxiclav cannot be used; consider safety issues) OR</div> <div>ciprofloxacin (children only: with specialist advice if co-amoxiclav cannot be used; consider safety issues)</div> <div>IV antibiotics (click on visual summary)</div> <div>When current susceptibility data available: choose antibiotics accordingly</div>				
<div>Acute cough</div> <div>NICE</div> <div>Public Health England</div> <div>Last updated: Feb 2019</div>	<div>Some people may wish to try honey (in over 1s), the herbal medicine pelargonium (in over 12s), cough medicines containing the expectorant guaifenesin (in over 12s) or cough medicines containing cough suppressants, except codeine, (in over 12s). These self-care treatments have limited evidence for the relief of cough symptoms.</div> <div>Acute cough with upper respiratory tract infection: no antibiotic.</div> <div>Acute bronchitis: no routine antibiotic.</div> <div>Acute cough and higher risk of complications (at face-to-face examination): immediate or back-up antibiotic.</div> <div>Acute cough and systemically very unwell (at face to face examination): immediate antibiotic.</div> <div>Higher risk of complications includes people with pre-existing comorbidity; young children born prematurely; people over 65 with 2 or more of, or over 80 with 1 or more of: hospitalisation in previous year, type 1 or 2 diabetes, history of congestive heart failure,</div>	<div>Adults first choice: doxycycline</div>	200mg on day 1, then 100mg OD	-	5 days	
		<div>Adults alternative first choices: amoxicillin (preferred if pregnant) OR</div>	500mg TDS	-		
		<div>clarithromycin OR</div>	250mg to 500mg BD	-		
		<div>erythromycin (if macrolide needed in pregnancy; consider benefit/harm)</div>	250mg to 500mg QDS or 500mg to 1000mg BD	-		
		<div>Children first choice: amoxicillin</div>	-		5 days	
		<div>Children alternative first choices: clarithromycin OR</div>	-			
		<div>erythromycin OR</div>	-			
		<div>doxycycline (not in under 12s)</div>	-			






Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
	current use of oral corticosteroids. Do not offer a mucolytic, an oral or inhaled bronchodilator, or an oral or inhaled corticosteroid unless otherwise indicated. <i>For detailed information click on the visual summary.</i>					
Hospital-acquired pneumonia NICE Public Health England Last updated: Sept 2019	If symptoms or signs of pneumonia start within 48 hours of hospital admission, see community acquired pneumonia . Offer an antibiotic. Start treatment as soon as possible after diagnosis, within 4 hours (within 1 hour if sepsis suspected and person meets any high risk criteria – see the NICE guideline on sepsis). When choosing an antibiotic, take account of severity of symptoms or signs, number of days in hospital before onset of symptoms, risk of developing complications, local hospital and ward-based antimicrobial resistance data, recent antibiotic use and microbiological results, recent contact with a health or social care setting before current admission, and risk of adverse effects with broad spectrum antibiotics. No validated severity assessment tools are available. Assess severity of symptoms or signs based on clinical judgement. Higher risk of resistance includes relevant comorbidity (such as severe lung disease or immunosuppression), recent use of broad spectrum antibiotics, colonisation with multi-drug resistant bacteria, and recent contact with health and social care settings before current admission. If symptoms or signs of pneumonia start within days 3 to 5 of hospital admission in people not	First choice (non-severe and not higher risk of resistance): co-amoxiclav	500/125 mg TDS		5 days then review	
		Adults alternative first choice (non-severe and not higher risk of resistance) Choice based on specialist microbiological advice and local resistance data Options include: doxycycline	200mg on day 1, then 100mg OD	-	5 days then review	
		cefalexin (caution in penicillin allergy)	500 mg BD or TDS (can increase to 1 to 1.5g TDS or QDS)	-		
		co-trimoxazole	960mg BD	-		
		levofloxacin (only if switching from IV levofloxacin with specialist advice; consider safety issues)	500mg OD or BD	-		
		Children alternative first choice (non-severe and not higher risk of resistance): clarithromycin	-		-	


Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
	at higher risk of resistance, consider following community acquired pneumonia for choice of antibiotic. For detailed information click on the visual summary.	Other options may be suitable based on specialist microbiological advice and local resistance data				
		For first choice IV antibiotics (severe or higher risk of resistance) and antibiotics to be added if suspected or confirmed MRSA infection see visual summary				
Community-acquired pneumonia <						


Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
	stable. <i>For detailed information click on the visual summary.</i>	severe in children): co-amoxiclav AND (if atypical pathogens suspected) clarithromycin OR erythromycin (if macrolide needed in pregnancy; consider benefit/harm) Alternative first choice (high severity in adults): levofloxacin (consider safety issues) IV antibiotics <i>(click on visual summary)</i>	500mg BD 500mg QDS 500mg BD	-		
▼ Urinary tract infections						
Lower urinary tract infection NICE Public Health England Last updated: Oct 2018	Advise paracetamol or ibuprofen for pain. Non-pregnant women: back up antibiotic (to use if no improvement in 48 hours or symptoms worsen at any time) or immediate antibiotic. Pregnant women, men, children or young people: immediate antibiotic. When considering antibiotics, take account of severity of symptoms, risk of complications, previous urine culture and susceptibility results, previous antibiotic use which may have led to resistant bacteria and local antimicrobial resistance data. If people have symptoms of pyelonephritis (such as fever) or a complicated UTI, see acute pyelonephritis (upper urinary tract infection) for antibiotic choices. <i>For detailed information click on the visual summary. See also the NICE guideline on urinary tract infection in under 16s: diagnosis and management and the Public Health England urinary tract infection: diagnostic tools for primary care.</i>	Non-pregnant women first choice: nitrofurantoin (if eGFR ≥45 ml/minute) OR trimethoprim (if low risk of resistance)	100mg m/r BD (or if unavailable 50mg QDS) 200mg BD	- -	3 days	
		Non-pregnant women second choice: nitrofurantoin (if eGFR ≥45 ml/minute) OR pivmecillinam (a penicillin) OR fosfomycin	100mg m/r BD (or if unavailable 50mg QDS) 400mg initial dose, then 200mg TDS 3g single dose sachet	- - -	3 days 3 days single dose	
		Pregnant women first choice: nitrofurantoin (avoid at term) – if eGFR ≥45 ml/minute Pregnant women second choice:	100mg m/r BD (or if unavailable 50mg QDS) 500mg TDS	- -	7 days 7 days	





Infection	Key points	Medicine	Doses		Length	Visual summary	
			Adult	Child			
		amoxicillin (only if culture results available and susceptible) OR					
		cefalexin	500mg BD	-			
		Treatment of asymptomatic bacteriuria in pregnant women: choose from nitrofurantoin (avoid at term), amoxicillin or cefalexin based on recent culture and susceptibility results					
		Men first choice: trimethoprim OR	200mg BD	-	7 days		
		nitrofurantoin (if eGFR ≥45 ml/minute)	100mg m/r BD (or if unavailable 50mg QDS)	-			
		Men second choice: consider alternative diagnoses basing antibiotic choice on recent culture and susceptibility results					
		Children and young people (3 months and over) first choice: trimethoprim (if low risk of resistance) OR	-		-		
		nitrofurantoin (if eGFR ≥45 ml/minute)	-				
		Children and young people (3 months and over) second choice: nitrofurantoin (if eGFR ≥45 ml/minute and not used as first choice) OR	-				
		amoxicillin (only if culture results available and susceptible) OR	-				
		cefalexin	-				








Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Acute pyelonephritis (upper urinary tract) NICE Public Health England Last updated: Oct 2018	Advise paracetamol (+/- low-dose weak opioid) for pain for people over 12. Offer an antibiotic. When prescribing antibiotics, take account of severity of symptoms, risk of complications, previous urine culture and susceptibility results, previous antibiotic use which may have led to resistant bacteria and local antimicrobial resistance data. Avoid antibiotics that don't achieve adequate levels in renal tissue, such as nitrofurantoin. <i>For detailed information click on the visual summary. See also the NICE guideline on urinary tract infection in under 16s: diagnosis and management and the Public Health England urinary tract infection: diagnostic tools for primary care.</i>	Non-pregnant women and men first choice: cefalexin OR	500mg BD or TDS (up to 1g to 1.5g TDS or QDS for severe infections)	-	7 to 10 days	
		co-amoxiclav (only if culture results available and susceptible) OR	500/125mg TDS	-	7 to 10 days	
		trimethoprim (only if culture results available and susceptible) OR	200mg BD	-	14 days	
		ciprofloxacin (consider safety issues)	500mg BD	-	7 days	
		Non-pregnant women and men IV antibiotics (click on visual summary)				
		Pregnant women first choice: cefalexin	500mg BD or TDS (up to 1g to 1.5g TDS or QDS for severe infections)	-	7 to 10 days	
		Pregnant women second choice or IV antibiotics (click on visual summary)				
		Children and young people (3 months and over) first choice: cefalexin OR	-		-	
		co-amoxiclav (only if culture results available and susceptible)	-			
Children and young people (3 months and over) IV antibiotics (click on visual summary)						
Acute prostatitis	Advise paracetamol (+/- low-dose weak opioid) for pain, or ibuprofen if preferred and suitable. Offer antibiotic.	First choice (guided by susceptibilities when available): ciprofloxacin (consider safety issues) OR	500mg BD	-	14 days then review	






Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
NICE Public Health England Last updated: Oct 2018	Review antibiotic treatment after 14 days and either stop antibiotics or continue for a further 14 days if needed (based on assessment of history, symptoms, clinical examination, urine and blood tests). <i>For detailed information click on the visual summary</i>	ofloxacin (consider safety issues) OR trimethoprim (if fluoroquinolone not appropriate; seek specialist advice) Second choice (after discussion with specialist): levofloxacin (consider safety issues) OR co-trimoxazole IV antibiotics (<i>click on visual summary</i>)	200mg BD 200mg BD 500mg OD 960mg BD	- - - -	14 days then review	
Recurrent urinary tract infection NICE Public Health England Last updated Oct 2018	First advise about behavioural and personal hygiene measures, and self-care (with D-mannose or cranberry products) to reduce the risk of UTI. For postmenopausal women, if no improvement, consider vaginal oestrogen (review within 12 months). For non-pregnant women, if no improvement, consider single-dose antibiotic prophylaxis for exposure to a trigger (review within 6 months). For non-pregnant women (if no improvement or no identifiable trigger) or with specialist advice for pregnant women, men, children or young people, consider a trial of daily antibiotic prophylaxis (review within 6 months). <i>For detailed information click on the visual summary. See also the NICE guideline on urinary tract infection in under 16s: diagnosis and management and the Public Health England urinary tract infection: diagnostic tools for primary care.</i>	First choice antibiotic prophylaxis: trimethoprim (avoid in pregnancy) OR nitrofurantoin (avoid at term) - if eGFR ≥45 ml/minute Second choice antibiotic prophylaxis: amoxicillin OR cefalexin	200mg single dose when exposed to a trigger or 100mg at night 100mg single dose when exposed to a trigger or 50 to 100mg at night 500mg single dose when exposed to a trigger or 250mg at night 500mg single dose when exposed to a trigger or 125mg at night	   	- - - -	

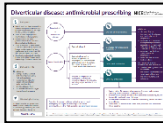
Infection	Key points	Medicine	Doses		Length	Visual summary	
			Adult	Child			
Catheter-associated urinary tract infection NICE Public Health England Last updated: Nov 2018	<p>Antibiotic treatment is not routinely needed for asymptomatic bacteriuria in people with a urinary catheter.</p> <p>Consider removing or, if not possible, changing the catheter if it has been in place for more than 7 days. But do not delay antibiotic treatment.</p> <p>Advise paracetamol for pain.</p> <p>Advise drinking enough fluids to avoid dehydration.</p> <p>Offer an antibiotic for a symptomatic infection.</p> <p>When prescribing antibiotics, take account of severity of symptoms, risk of complications, previous urine culture and susceptibility results, previous antibiotic use which may have led to resistant bacteria and local antimicrobial resistance data.</p> <p>Do not routinely offer antibiotic prophylaxis to people with a short-term or long-term catheter.</p> <p><i>For detailed information click on the visual summary. See also the Public Health England urinary tract infection: diagnostic tools for primary care.</i></p>	Non-pregnant women and men first choice if no upper UTI symptoms: nitrofurantoin (if eGFR ≥ 45 ml/minute) OR	100mg m/r BD (or if unavailable 50mg QDS)	-	7 days		
		trimethoprim (if low risk of resistance) OR	200mg BD	-			
		amoxicillin (only if culture results available and susceptible)	500mg TDS	-			
		Non-pregnant women and men second choice if no upper UTI symptoms: pivmecillinam (a penicillin)	400mg initial dose, then 200mg TDS	-	7 days		
		Non-pregnant women and men first choice if upper UTI symptoms: cefalexin OR	500mg BD or TDS (up to 1g to 1.5g TDS or QDS for severe infections)	-	7 to 10 days		
		co-amoxiclav (only if culture results available and susceptible) OR	500/125mg TDS	-			
		trimethoprim (only if culture results available and susceptible) OR	200mg BD	-	14 days		
		ciprofloxacin (consider safety issues)	500mg BD	-	7 days		
		Non-pregnant women and men IV antibiotics (click on visual summary)					
		Pregnant women first choice: cefalexin	500mg BD or TDS (up to 1g to 1.5g TDS or QDS for severe infections)	-	7 to 10 days		

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
		Pregnant women second choice or IV antibiotics (click on visual summary)				
		Children and young people (3 months and over) first choice: trimethoprim (if low risk of resistance) OR	-		-	
		amoxicillin (only if culture results available and susceptible) OR	-			
		cefalexin OR	-			
		co-amoxiclav (only if culture results available and susceptible)	-			
		Children and young people (3 months and over) IV antibiotics (click on visual summary)				
▼ Meningitis						
Suspected meningococcal disease Public Health England Last updated: Feb 2019	Transfer all patients to hospital immediately. ^{1D} If time before hospital admission, ^{2D,3A+} if suspected meningococcal septicaemia or non-blanching rash, ^{2D,4D} give IV benzylpenicillin ^{1D,2D,4D} as soon as possible. ^{2D} Do not give IV antibiotics if there is a definite history of anaphylaxis; ^{1D} rash is not a contraindication. ^{1D}	IV or IM benzylpenicillin ^{1D,2D}	Child <1 year: 300mg ^{5D} Child 1 to 9 years: 600mg ^{5D} Adult/child 10+ years: 1.2g ^{5D}	Stat dose; ^{1D} give IM, if vein cannot be accessed ^{1D}	Not available. Access the supporting evidence and rationales on the PHE website	
Prevention of secondary case of meningitis Public Health England Last updated: July 2019	Only prescribe following advice from your local health protection specialist/consultant: 📞 [INSERT PHONE NUMBER] Out of hours: contact on-call doctor: 📞 [INSERT PHONE NUMBER] Expert advice is available for managing clusters of meningitis. Please alert the appropriate organisation to any cluster situation. Public Health England, Colindale (tel: 0208 200 4400) AWARe (all Wales Acute Response team) (tel: 0300 003 0032) Access the supporting evidence and rationales on the PHE website .					

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
▼ Gastrointestinal tract infections						
Oral candidiasis Public Health England Last updated: Oct 2018	Topical azoles are more effective than topical nystatin. ^{1A+} Oral candidiasis is rare in immunocompetent adults; ^{2D} consider undiagnosed risk factors, including HIV. ^{2D} Use 50mg fluconazole if extensive/severe candidiasis; ^{3D,4D} if HIV or immunocompromised, use 100mg fluconazole. ^{3D,4D}	Miconazole oral gel ^{1A+,4D,5A-} If not tolerated: nystatin suspension ^{2D,6D,7A-} fluconazole capsules ^{6D,7A-}	2.5ml of 24mg/ml QDS (hold in mouth after food) ^{4D} 1ml; 100,000units/ml QDS (half in each side) ^{2D,4D,7A-} 50mg/100mg OD ^{3D,6D,8A-}	  	7 days; continue for 7 days after resolved ^{4D,6D} 7 days; continue for 2 days after resolved ^{4D} 7 to 14 days ^{6D,7A-,8A-}	Not available. Access supporting evidence and rationales on the PHE website
Infectious diarrhoea Public Health England Last updated: Oct 2018	Refer previously healthy children with acute painful or bloody diarrhoea, to exclude <i>E. coli</i> O157 infection. ^{1D} Antibiotic therapy is not usually indicated unless patient is systemically unwell. ^{2D} If systemically unwell and campylobacter suspected (such as undercooked meat and abdominal pain), ^{3D} consider clarithromycin 250mg to 500mg BD for 5 to 7 days, if treated early (within 3 days). ^{3D,4A+} If giardia is confirmed or suspected – tinidazole 2g single dose is the treatment of choice. ^{5A+} <i>Access the supporting evidence and rationales on the PHE website.</i>					
Traveller's diarrhoea Public Health England Last updated: Oct 2018	Prophylaxis rarely, if ever, indicated. ^{1D} Consider standby antimicrobial only for patients at high risk of severe illness, ^{2D} or visiting high-risk areas. ^{1D,2D}	Standby: azithromycin Prophylaxis/treatment: bismuth subsalicylate	500mg OD ^{1D,3A+} 2 tablets QDS ^{1D,2D}	- -	1 to 3 days ^{1D,2D,3A+} 2 days ^{1D,2D,4A-}	
Threadworm Public Health England Last updated: Nov 2017	Treat all household contacts at the same time. ^{1D} Advise hygiene measures for 2 weeks ^{1D} (hand hygiene; ^{2D} pants at night; morning shower, including perianal area). ^{1D,2D} Wash sleepwear, bed linen, and dust and vacuum. ^{1D} Child <6 months , add perianal wet wiping or washes 3 hourly. ^{1D} <i>See UKTIS advice for use of mebendazole in pregnancy.</i>	Adult/Child >6 months: mebendazole ^{1D,3B-} Child <6 months or pregnant woman (at least in first trimester): only hygiene measure for 6 weeks ^{1D}	100mg stat ^{3B-} -	 -	1 dose; ^{3B-} repeat in 2 weeks if persistent ^{3B-} -	Not available. Access supporting evidence and rationales on the PHE website

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
<i>Clostridioides difficile</i> infection NICE Public Health England Last updated: Jul 2021	<p>For suspected or confirmed <i>C. difficile</i> infection, see Public Health England's guidance on diagnosis and reporting.</p> <p>Assess: whether it is a first or further episode, severity of infection, individual risk factors for complications or recurrence (such as age, frailty or comorbidities).</p> <p>Existing antibiotics: review and stop unless essential. If still essential, consider changing to one with a lower risk of <i>C. difficile</i> infection. Review the need to continue: proton pump inhibitors, other medicines with gastrointestinal activity or adverse effects (such as laxatives), medicines that may cause problems if people are dehydrated (such as NSAIDs).</p> <p>Do not offer antimotility medicines such as loperamide.</p> <p>Offer an oral antibiotic to treat suspected or confirmed <i>C. difficile</i> infection.</p> <p>For adults, consider seeking prompt specialist advice from a microbiologist or infectious diseases specialist before starting treatment.</p> <p>For children and young people, treatment should be started by, or after advice from, a microbiologist, paediatric infectious diseases specialist or paediatric gastroenterologist.</p> <p>If antibiotics have been started for suspected <i>C. difficile</i> infection, and subsequent stool sample tests do not confirm infection, consider stopping these antibiotics.</p> <p><i>For detailed information click on the visual summary.</i></p>	<p>First-line for first episode of mild, moderate or severe: vancomycin</p> <p>Second-line for first episode of mild, moderate or severe if vancomycin ineffective: fidaxomicin</p> <p>For further episode within 12 weeks of symptom resolution (relapse): fidaxomicin</p> <p>For further episode more than 12 weeks after symptom resolution (recurrence): vancomycin OR fidaxomicin</p> <p>For alternative antibiotics if first- and second-line antibiotics are ineffective or for life-threatening infection seek specialist advice (see visual summary)</p>	125mg QDS		10 days	
			200mg BD			
			200mg BD			
			125mg QDS			
			200mg BD			
<i>Helicobacter pylori</i>	<p>Always test for <i>H.pylori</i> before giving antibiotics. Treat all positives, if known DU, GU,^{1A+} or low-grade MALToma.^{2D,3D} NNT in</p>	<p>Always use PPI^{2D,3D,5A+,12A+}</p> <p>First line and first relapse and no</p>	-		7 days ^{2D} MALToma 14 days ^{7A+,16A+}	<p><i>Not available. Access supporting evidence and</i></p>




Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
<p>Public Health England</p> <p>See PHE quick reference guide for diagnostic advice: PHE H. pylori</p> <p>Last updated: Feb 2019</p>	<p>non-ulcer dyspepsia: 14.^{4A+}</p> <p>Do not offer eradication for GORD.^{3D}</p> <p>Do not use clarithromycin, metronidazole or quinolone if used in the past year for any infection.^{5A+,6B+,7A+}</p> <p>Penicillin allergy: use PPI PLUS clarithromycin PLUS metronidazole.^{2D} If previous clarithromycin, use PPI PLUS bismuth salt PLUS metronidazole PLUS tetracycline hydrochloride.^{2D,8A-,9D}</p> <p>Relapse and no penicillin allergy use PPI PLUS amoxicillin PLUS clarithromycin or metronidazole (whichever was not used first line)^{2D}</p> <p>Relapse and previous metronidazole and clarithromycin: use PPI PLUS amoxicillin PLUS either tetracycline OR levofloxacin (if tetracycline not tolerated).^{2D,7A+}</p> <p>Relapse and penicillin allergy (no exposure to quinolone): use PPI PLUS metronidazole PLUS levofloxacin.^{2D}</p> <p>Relapse and penicillin allergy (with exposure to quinolone): use PPI PLUS bismuth salt PLUS metronidazole PLUS tetracycline.^{2D}</p> <p>Retest for <i>H. pylori</i>: post DU/GU, or relapse after second-line therapy,^{1A+} using UBT or SAT,^{10A+,11A+} consider referral for endoscopy and culture.^{2D}</p>	penicillin allergy PPI PLUS 2 antibiotics			<p><i>rationales on the PHE website</i></p>	
		amoxicillin ^{2D,6B+} PLUS	1000mg BD ^{14A+}			
		clarithromycin ^{2D,6B+} OR	500mg BD ^{8A-}			
		metronidazole ^{2D,6B+}	400mg BD ^{2D}			
		Penicillin allergy and previous clarithromycin: PPI WITH bismuth subsalicylate PLUS 2 antibiotics	-	-		
		bismuth subsalicylate ^{13A+} PLUS	525mg QDS ^{15D}			
		metronidazole ^{2D} PLUS	400mg BD ^{2D}			
		tetracycline ^{2D}	500mg QDS ^{15D}			
		Relapse and previous metronidazole and clarithromycin: PPI PLUS 2 antibiotics	-	-		
		amoxicillin ^{2D,7A+} PLUS	1000mg BD ^{14A+}			
		tetracycline ^{2D,7A+} OR	500mg QDS ^{15D}			
		levofloxacin (if tetracycline cannot be used) ^{2D,7A+}	250mg BD ^{7A+}			
		Third line on advice: PPI WITH	-	-		10 days
		bismuth subsalicylate PLUS	525mg QDS ^{15D}	-		
		2 antibiotics as above not	-	-		





Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
		previously used OR rifabutin ^{14A+} OR furazolidone ^{17A+}	150mg BD 200mg BD	- -		
Acute diverticulitis NICE Last updated: Nov 2019	Acute diverticulitis and systemically well: Consider no antibiotics, offer simple analgesia (for example paracetamol), advise to re-present if symptoms persist or worsen. Acute diverticulitis and systemically unwell, immunosuppressed or significant comorbidity: offer an antibiotic. Give oral antibiotics if person not referred to hospital for suspected complicated acute diverticulitis. Give IV antibiotics if admitted to hospital with suspected or confirmed complicated acute diverticulitis (including diverticular abscess). If CT-confirmed uncomplicated acute diverticulitis, review the need for antibiotics. * A longer course may be needed based on clinical assessment.	First-choice (uncomplicated acute diverticulitis): co-amoxiclav	500/125mg TDS	-	5 days*	
		Penicillin allergy or co-amoxiclav unsuitable: cefalexin (caution in penicillin allergy) AND metronidazole OR	cefalexin: 500mg BD or TDS (up to 1g to 1.5g TDS or QDS for severe infections) metronidazole: 400mg TDS	-		
		trimethoprim AND metronidazole OR	trimethoprim: 200mg BD metronidazole: 400mg TDS	-		
		ciprofloxacin (only if switching from IV ciprofloxacin with specialist advice; consider safety issues) AND metronidazole	ciprofloxacin: 500mg BD metronidazole: 400mg TDS			
		For IV antibiotics in complicated acute diverticulitis (including diverticular abscess) see visual summary				
▼ Genital tract infections						
STI screening Public Health England Last updated: Nov 2017	People with risk factors should be screened for chlamydia, gonorrhoea, HIV and syphilis. ^{1D} Refer individual and partners to GUM. ^{1D} Risk factors: <25 years; no condom use; recent/frequent change of partner; symptomatic or infected partner; area of high HIV. ^{2B-} Access the supporting evidence and rationales on the PHE website .					
Epididymitis Public Health England	Usually due to Gram-negative enteric bacteria in men over 35 years with low risk of STI. ^{1A+,2D} If under 35 years or STI risk, refer to GUM. ^{1A+,2D}	Doxycycline ^{1A+,2D} OR	100mg BD ^{1A+,2D}	-	10 to 14 days ^{1A+,2D}	Not available. Access supporting evidence and rationales on the PHE
		ofloxacin ^{1A+,2D} OR	200mg BD ^{1A+,2D}		14 days ^{1A+,2D}	
		ciprofloxacin ^{1A+,2D}	500mg		10 days ^{1A+,2D,3A+}	






Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Last updated: Nov 2017			BD ^{1A+,2D,3A+}			website
Chlamydia trachomatis/urethritis Public Health England Last updated: July 2019	<p>Opportunistically screen all sexually active patients aged 15 to 24 years for chlamydia annually and on change of sexual partner.^{1B-}</p> <p>If positive, treat index case, refer to GUM and initiate partner notification, testing and treatment.^{2D,3A+}</p> <p>As single dose azithromycin has led to increased resistance in GU infections, doxycycline should be used first line for chlamydia and urethritis.^{4A+}</p> <p>Advise patient with chlamydia to abstain from sexual intercourse until doxycycline is completed or for 7 days after treatment with azithromycin (14 days after azithromycin started and until symptoms resolved if urethritis).^{3A+,4A+}</p> <p>If chlamydia, test for reinfection at 3 to 6 months following treatment if under 25 years; or consider if over 25 years and high risk of re-infection.^{1B-,3B+, 5B-}</p> <p>Second line, pregnant, breastfeeding, allergy, or intolerance: azithromycin is most effective.^{6A+,7D,8A+,9A+,10D} As lower cure rate in pregnancy, test for cure at least 3 weeks after end of treatment.^{3A+}</p> <p>Consider referring all patients with symptomatic urethritis to GUM as testing should include <i>Mycoplasma genitalium</i> and <i>Gonorrhoea</i>.^{11A-}</p> <p>If <i>M.genitalium</i> is proven, use doxycycline followed by azithromycin using the same dosing regimen and advise to avoid sex for 14 days after start of treatment and until symptoms have resolved.^{11A-,12A+}</p>	First line: doxycycline ^{4A+,11A-,12A+}	100mg BD ^{4A+,11A-,12A+}		7 days ^{4A+,11A-,12A+}	Not available. Access supporting evidence and rationales on the PHE website
		Second line/ pregnant/breastfeeding/ allergy/intolerance: azithromycin ^{4A+,11A-,12A+}	1000mg ^{4A+,11A-,12A+} then 500mg OD ^{4A+,11A-,12A+}		Stat ^{4A+,11A-,12A+} 2 days ^{4A+,11A-,12A+} (total 3 days)	
Vaginal	All topical and oral azoles give over 80%	Clotrimazole ^{1A+,5D} OR	500mg pessary ^{1A+}	-	Stat ^{1A+}	Not available.






Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
candidiasis Public Health England Last updated: Oct 2018	cure. ^{1A+,2A+} Pregnant: avoid oral azoles, the 7 day courses are more effective than shorter ones. ^{1A+,3D,4A+} Recurrent (>4 episodes per year): ^{1A+} 150mg oral fluconazole every 72 hours for 3 doses induction, ^{1A+} followed by 1 dose once a week for 6 months maintenance. ^{1A+}	fenticonazole ^{1A+} OR	600mg pessary ^{1A+}		Stat ^{1A+}	Access supporting evidence and rationales on the PHE website
		clotrimazole ^{1A+} OR	100mg pessary ^{1A+}		6 nights ^{1A+}	
		oral fluconazole ^{1A+,3D}	150mg ^{1A+,3D}		Stat ^{1A+}	
		If recurrent: fluconazole (induction/maintenance) ^{1A+}	150mg every 72 hours THEN 150mg once a week ^{1A+,3D}	-	3 doses 6 months ^{1A+}	
Bacterial vaginosis Public Health England Last updated: Nov 2017	Oral metronidazole is as effective as topical treatment, ^{1A+} and is cheaper. ^{2D} 7 days results in fewer relapses than 2g stat at 4 weeks. ^{1A+,2D} Pregnant/breastfeeding: avoid 2g dose. ^{3A+,4D} Treating partners does not reduce relapse. ^{5A+}	oral metronidazole ^{1A+,3A+} OR	400mg BD ^{1A+,3A+} OR 2000mg ^{1A+,2D}	-	7 days ^{1A+} OR Stat ^{2D}	Not available. Access supporting evidence and rationales on the PHE website
		metronidazole 0.75% vaginal gel ^{1A+,2D,3A+} OR	5g applicator at night ^{1A+,2D,3A+}		5 nights ^{1A+,2D,3A+}	
		clindamycin 2% cream ^{1A+,2D}	5g applicator at night ^{1A+,2D}		7 nights ^{1A+,2D,3A+}	
Genital herpes Public Health England Last updated: Nov 2017	Advise: saline bathing, ^{1A+} analgesia, ^{1A+} or topical lidocaine for pain, ^{1A+} and discuss transmission. ^{1A+} First episode: treat within 5 days if new lesions or systemic symptoms, ^{1A+,2D} and refer to GUM. ^{2D} Recurrent: self-care if mild, ^{2D} or immediate short course antiviral treatment, ^{1A+,2D} or suppressive therapy if more than 6 episodes per year. ^{1A+,2D}	oral aciclovir ^{1A+,2D,3A+,4A+} OR	400mg TDS ^{1A+,3A+} 800mg TDS (if recurrent) ^{1A+}	-	5 days ^{1A+} 2 days ^{1A+}	Not available. Access supporting evidence and rationales on the PHE website
		valaciclovir ^{1A+,3A+,4A+} OR	500mg BD ^{1A+}		5 days ^{1A+}	
		famciclovir ^{1A+,4A+}	250mg TD ^{1A+}		5 days ^{1A+}	
			1000mg BD (if recurrent) ^{1A+}		1 day ^{1A+}	
Gonorrhoea Public Health England Last updated: Feb 2019	Antibiotic resistance is now very high. ^{1D,2D} Use IM ceftriaxone if susceptibility not known prior to treatment ^{2D} . Use Ciprofloxacin only If susceptibility is known prior to treatment and the isolate is sensitive to ciprofloxacin at all sites of infection ^{1D,2D} Refer to GUM. ^{3B-} Test of cure is essential. ^{2D}	ceftriaxone ^{2D} OR	1000mg IM ^{2D}	-	Stat ^{2D}	Not available. Access supporting evidence and rationales on the PHE website
		ciprofloxacin ^{2D} (only if known to be sensitive)	500mg ^{2D}		Stat ^{2D}	




Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Trichomoniasis Public Health England Last updated: Nov 2017	Oral treatment needed as extravaginal infection common. ^{1D} Treat partners, ^{1D} and refer to GUM for other STIs. ^{1D} Pregnant/breastfeeding: avoid 2g single dose metronidazole , ^{2A+,3D} clotrimazole for symptom relief (not cure) if metronidazole declined. ^{2A+,4A-,5D}	metronidazole ^{1A+,2A+,3D,6A+} Pregnancy to treat symptoms: clotrimazole ^{2A+,4A-,5D}	400mg BD ^{1A+,6A+} 2g (more adverse effects) ^{6A+} 100mg pessary at night ^{5D}	-	5 to 7 day ^{1A+} Stat ^{1A+,6A+} 6 nights ^{5D}	<i>Not available. Access supporting evidence and rationales on the PHE website</i>
Pelvic inflammatory disease Public Health England Last updated: Feb 2019	Refer women and sexual contacts to GUM. ^{1A+} Raised CRP supports diagnosis, absent pus cells in HVS smear good negative predictive value. ^{1A+} Exclude: ectopic pregnancy, appendicitis, endometriosis, UTI, irritable bowel, complicated ovarian cyst, functional pain. Moxifloxacin has greater activity against likely pathogens, but always test for gonorrhoea, chlamydia, and <i>M. genitalium</i> . ^{1A+} If <i>M. genitalium</i> tests positive use moxifloxacin. ^{1A+}	First line therapy: ceftriaxone ^{1A+,3C,4C} PLUS metronidazole ^{1A+,5A+} PLUS doxycycline ^{1A+,5A+} Second line therapy: metronidazole ^{1A+,5A+} PLUS ofloxacin ^{1A+,2A-,5A+} OR moxifloxacin alone ^{1A+} (first line for <i>M. genitalium</i> associated PID)	1000mg IM ^{1A+,3C} 400mg BD ^{1A+} 100mg BD ^{1A+} 400mg BD ^{1A+} 400mg BD ^{1A+,2A-} 400mg OD ^{1A+}	-	Stat ^{1A+,3C} 14 days ^{1A+} 14 days ^{1A+} 14 days ^{1A+} 14 days ^{1A+} 14 days ^{1A+}	<i>Not available. Access supporting evidence and rationales on the PHE website</i>
▼ Skin and soft tissue infections						
Note: Refer to RCGP Skin Infections online training. ^{1D} For MRSA, discuss therapy with microbiologist. ^{1D}						
Cold sores Public Health England Last updated: Nov 2017	Most resolve after 5 days without treatment. ^{1A-,2A-} Topical antivirals applied prodromally can reduce duration by 12 to 18 hours. ^{1A-,2A-,3A-} If frequent, severe, and predictable triggers: consider oral prophylaxis: ^{4D,5A+} aciclovir 400mg, twice daily, for 5 to 7 days. ^{5A+,6A+} Access supporting evidence and rationales on the PHE website .					
PVL-SA Public Health England Last updated:	Panton-Valentine leukocidin (PVL) is a toxin produced by 20.8 to 46% of <i>S. aureus</i> from boils/abscesses. ^{1B+,2B+,3B-} PVL strains are rare in healthy people, but severe. ^{2B+} Suppression therapy should only be started after primary infection has resolved, as ineffective if lesions are still leaking. ^{4D} Risk factors for PVL: recurrent skin infections; ^{2B+} invasive infections; ^{2B+} MSM; ^{3B-} if there is more than one case in a home or close community ^{2B+,3B-} (school children; ^{3B-} military personnel; ^{3B-} nursing home residents; ^{3B-} household contacts). ^{3B-}					







Infection	Key points	Medicine	Doses		Length	Visual summary	
			Adult	Child			
Nov 2017	Access the supporting evidence and rationales on the PHE website .						
Eczema (bacterial infection) NICE Public Health England Last updated: Mar 2021	<p>Manage underlying eczema and flares with treatments such as emollients and topical corticosteroids, whether antibiotics are given or not.</p> <p>Symptoms and signs of secondary bacterial infection can include: weeping, pustules, crusts, no response to treatment, rapidly worsening eczema, fever and malaise.</p> <p>Not all flares are caused by a bacterial infection, so will not respond to antibiotics. Eczema is often colonised with bacteria but may not be clinically infected.</p> <p>Do not routinely take a skin swab.</p> <p>Not systemically unwell:</p> <p>Do not routinely offer either a topical or oral antibiotic.</p> <p>If an antibiotic is offered, when choosing between a topical or oral antibiotic, take account of patient preferences, extent and severity of symptoms or signs, possible adverse effects, and previous use of topical antibiotics because antimicrobial resistance can develop rapidly with extended or repeated use.</p> <p>Systemically unwell:</p> <p>Offer an oral antibiotic.</p> <p>If there are symptoms or signs of cellulitis, see cellulitis and erysipelas.</p> <p><i>For detailed information click on the visual summary.</i></p>	If not systemically unwell, do not routinely offer either a topical or oral antibiotic					
		Topical antibiotic (if a topical is appropriate). For localised infections only:					
		First choice: fusidic acid 2%	TDS		5 to 7 days		
		Oral antibiotic:					
		First choice: flucloxacillin	500mg QDS		5 to 7 days		
		Penicillin allergy or flucloxacillin unsuitable: clarithromycin OR	250mg BD (can be increased to 500mg BD for severe infections)				
		erythromycin (if macrolide needed in pregnancy; consider benefit/harm)	250mg to 500mg QDS				
		If MRSA suspected or confirmed – consult local microbiologist					








Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Impetigo NICE Public Health England Last updated: Feb 2020	Localised non-bullous impetigo: Hydrogen peroxide 1% cream (other topical antiseptics are available but no evidence for impetigo). If hydrogen peroxide unsuitable or ineffective, short-course topical antibiotic. Widespread non-bullous impetigo: Short-course topical or oral antibiotic. Take account of person's preferences, practicalities of administration, previous use of topical antibiotics because antimicrobial resistance can develop rapidly with extended or repeated use, and local antimicrobial resistance data. Bullous impetigo, systemically unwell, or high risk of complications: Short-course oral antibiotic. Do not offer combination treatment with a topical and oral antibiotic to treat impetigo. *5 days is appropriate for most, can be increased to 7 days based on clinical judgement. <i>For detailed information click on the visual summary.</i>	Topical antiseptic:				
		hydrogen peroxide 1%	BD or TDS		5 days*	
		Topical antibiotic:				
		First choice: fusidic acid 2%	TDS		5 days*	
		Fusidic acid resistance suspected or confirmed: mupirocin 2%	TDS			
		Oral antibiotic:				
		First choice: flucloxacillin	500mg QDS		5 days*	
		Penicillin allergy or flucloxacillin unsuitable: clarithromycin OR	250mg BD			
		erythromycin (if macrolide needed in pregnancy; consider benefit/harm)	250 to 500mg QDS			
		If MRSA suspected or confirmed – consult local microbiologist				
Mastitis Public Health England Last updated: Nov 2017	<i>S. aureus</i> is the most common infecting pathogen. ^{1D} Suspect if woman has: a painful breast; ^{2D} fever and/or general malaise; ^{2D} a tender, red breast. ^{2D} Breastfeeding: oral antibiotics are appropriate, where indicated. ^{2D,3A+} Women should continue feeding, ^{1D,2D} including from the affected breast. ^{2D}	flucloxacillin ^{2D}	500mg QDS ^{2D}	-	10 to 14 days ^{2D}	Not available. Access supporting evidence and rationales on the PHE website
		Penicillin allergy: erythromycin ^{2D} OR	250mg to 500mg QDS ^{2D}			
		clarithromycin ^{2D}	500mg BD ^{2D}			
Tick bites (Lyme)	Treatment: Treat erythema migrans empirically; serology is often negative early in	Treatment: doxycycline ^{1D}	100mg BD ^{1D}		21 days ^{1D}	Not available. Access



Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
disease) Public Health England Last updated: Feb 2020	infection. ^{1D} For other suspected Lyme disease such as neuroborreliosis (CN palsy, radiculopathy) seek advice. ^{1D}	Alternative: amoxicillin ^{1D}	1,000mg TDS ^{1D}			<i>supporting evidence and rationales on the PHE website</i>
Scabies Public Health England Last updated: Oct 2018	First choice permethrin: Treat whole body from ear/chin downwards, ^{1D,2D} and under nails. ^{1D,2D} If using permethrin and patient is under 2 years, elderly or immunosuppressed, or if treating with malathion: also treat face and scalp. ^{1D,2D} Home/sexual contacts: treat within 24 hours. ^{1D}	permethrin ^{1D,2D,3A+}	5% cream ^{1D,2D}		2 applications, 1 week apart ^{1D}	<i>Not available. Access supporting evidence and rationales on the PHE website</i>
		Permethrin allergy: malathion ^{1D}	0.5% aqueous liquid ^{1D}			
Insect bites and stings NICE Public Health England Last updated: Sep 2020	Most insect bites or stings will not need antibiotics. Do not offer an antibiotic if there are no symptoms or signs of infection. If there are symptoms or signs of infection, see cellulitis and erysipelas .	-	-	-	-	
Leg ulcer infection NICE Public Health England Last updated: Feb 2020	Manage any underlying conditions to promote ulcer healing. Only offer an antibiotic when there are symptoms or signs of infection (such as redness or swelling spreading beyond the ulcer, localised warmth, increased pain or fever). Few leg ulcers are clinically infected but most are colonised by bacteria. When prescribing antibiotics, take account of severity, risk of complications and previous antibiotic use. <i>For detailed information click on the visual summary.</i>	First-choice:				
		flucloxacillin	500mg to 1g QDS	-	7 days	
		Penicillin allergy or if flucloxacillin unsuitable:				
		doxycycline OR	200mg on day 1, then 100mg OD (can be increased to 200mg daily)	-	7 days	
		clarithromycin OR	500mg BD			
		erythromycin (if macrolide needed in pregnancy; consider benefit/harm)	500mg QDS			
		Second choice:				
		co-amoxiclav OR	500/125mg TDS	-	7 days	
		co-trimoxazole (in penicillin allergy)	960mg BD			
For antibiotic choices if severely unwell or MRSA suspected or confirmed, click on the visual summary						







Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Cellulitis and erysipelas NICE Public Health England Last updated: Sept 2019	Exclude other causes of skin redness (inflammatory reactions or non-infectious causes). Consider marking extent of infection with a single-use surgical marker pen. Offer an antibiotic. Take account of severity, site of infection, risk of uncommon pathogens, any microbiological results and MRSA status. Infection around eyes or nose is more concerning because of serious intracranial complications. *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. Do not routinely offer antibiotics to prevent recurrent cellulitis or erysipelas. <i>For detailed information click on the visual summary.</i>	First choice:				
		flucloxacillin	500mg to 1g QDS		5 to 7 days*	
		Penicillin allergy or if flucloxacillin unsuitable:				
		clarithromycin OR	500mg BD		5 to 7 days*	
		erythromycin (if macrolide needed in pregnancy; consider benefit/harm)	500mg QDS			
		OR				
		doxycycline (adults only)	200mg on day 1, then 100mg OD	-		
		OR				
		co-amoxiclav (children only: not in penicillin allergy)	-			
		If infection near eyes or nose:				
		co-amoxiclav	500/125mg TDS		7 days*	
		If infection near eyes or nose (penicillin allergy):				
		clarithromycin AND	500mg BD		7 days*	
		metronidazole (only add in children if anaerobes suspected)	400mg TDS			
		For alternative choice antibiotics for severe infection, suspected or confirmed MRSA infection and IV antibiotics click on the visual summary				
Diabetic foot infection NICE Public Health England Last updated: Oct 2019	In diabetes, all foot wounds are likely to be colonised with bacteria. 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 involving deeper structures (such as abscess, osteomyelitis, septic arthritis or fasciitis)	Mild infection: first choice				
		flucloxacillin	500mg to 1g QDS	-	7 days*	
		Mild infection (penicillin allergy):				
		clarithromycin OR	500mg BD	-	7 days*	
		erythromycin (if macrolide needed in pregnancy; consider benefit/harm)	500mg QDS			
		OR				
		doxycycline	200mg on day 1, then 100mg OD (can be increased to 200mg daily)			










Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
	<p>Severe: local infection with signs of a systemic inflammatory response.</p> <p>Start antibiotic treatment as soon as possible.</p> <p>Take samples for microbiological testing before, or as close as possible to, the start of treatment</p> <p>When choosing an antibiotic, take account of severity, risk of complications, previous microbiological results and antibiotic use, and patient preference.</p> <p>*A longer course (up to a further 7 days) may be needed based on clinical assessment. However, skin does take time to return to normal, and full resolution at 7 days is not expected.</p> <p>Do not offer antibiotics to prevent diabetic foot infection.</p> <p><i>For detailed information click on the visual summary.</i></p>	For antibiotic choices for moderate or severe infection, infections where <i>Pseudomonas aeruginosa</i> or MRSA is suspected or confirmed, and IV antibiotics click on the visual summary				
Acne vulgaris NICE Last updated: Jun 2021	<p>First-line treatment options: offer a course of 1 of the options, taking account of severity, preferences, and advantages/disadvantages of each option. Completing the course is important because positive effects can take 6 to 8 weeks.</p> <p>Consider topical benzoyl peroxide monotherapy as an alternative if first-line treatment options are contraindicated, or to avoid topical retinoids or an antibiotic (topical or oral).</p> <p>Do not use: monotherapy with a topical antibiotic, monotherapy with an oral antibiotic, or a combination of a topical antibiotic and an oral antibiotic.</p> <p>Review first-line treatment at 12 weeks.</p>	<p>First line: fixed combination of topical adapalene with topical benzoyl peroxide (for any acne severity, not in under 9s) OR</p>	<p>0.1% adapalene/2.5% benzoyl peroxide OR 0.3% adapalene/2.5% benzoyl peroxide OD (thinly evening)</p>		12 weeks	<p><i>Not available. See the NICE guideline on acne vulgaris.</i></p>
	<p>fixed combination of topical tretinoin with topical clindamycin (for any acne severity, not in under 12s) OR</p>	<p>0.025% tretinoin/1% clindamycin OD (thinly in the evening)</p>				
	<p>fixed combination of topical benzoyl peroxide with topical clindamycin (for mild to moderate</p>	<p>3% benzoyl peroxide/1% clindamycin OR 5% benzoyl</p>				





Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
	<p>Only continue a topical or oral antibiotic for more than 6 months in exceptional circumstances. Review at 3 monthly intervals, and stop the antibiotic as soon as possible.</p> <p>For detailed information see the NICE guideline on acne vulgaris.</p>	acne, not in under 12s) OR	peroxide/1% clindamycin OD (in the evening)			
		fixed combination of topical adapalene with topical benzoyl peroxide AND either oral lymecycline or oral doxycycline (for moderate to severe acne, not in under 12s) OR	0.1% adapalene/2.5% benzoyl peroxide OR 0.3% adapalene/2.5% benzoyl peroxide OD (in the evening) AND lymecycline 408mg OD OR doxycycline 100mg OD	 		
		topical azelaic acid AND either oral lymecycline or oral doxycycline (for moderate to severe acne, not in under 12s)	15% or 20% azelaic acid BD AND lymecycline 408mg OD OR doxycycline 100mg OD	 		
		Alternative: topical benzoyl peroxide	5% benzoyl peroxide OD to BD			
Dermatophyte infection: skin	Most cases: use terbinafine as fungicidal, treatment time shorter and more effective than with fungistatic imidazoles or	topical terbinafine ^{3A+,4D} OR	1% OD to BD ^{2A+}		1 to 4 weeks ^{3A+}	<i>Not available. Access supporting</i>

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Public Health England Last updated: Feb 2019	undecenoates. ^{1D,2A+} If candida possible, use imidazole. ^{4D} If intractable, or scalp: send skin scrapings, ^{1D} and if infection confirmed: use oral terbinafine ^{1D,3A+,4D} or itraconazole. ^{2A+,3A+,5D} Scalp: oral therapy, ^{6D} and discuss with specialist. ^{1D}	topical imidazole ^{2A+,3A+} Alternative in athlete's foot: topical undecenoates ^{2A+} (such as Mycota®) ^{2A+}	1% OD to BD ^{2A+} OD to BD ^{2A+}	 	4 to 6 weeks ^{2A+,3A+}	evidence and rationales on the PHE website
Dermatophyte infection: nail Public Health England Last updated: Oct 2018	Take nail clippings; ^{1D} start therapy only if infection is confirmed. ^{1D} Oral terbinafine is more effective than oral azole. ^{1D,2A+,3A+,4D} Liver reactions 0.1 to 1% with oral antifungals. ^{3A+} If candida or non-dermatophyte infection is confirmed, use oral itraconazole. ^{1D,3A+,4D} Topical nail lacquer is not as effective. ^{1D,5A+,6D} To prevent recurrence: apply weekly 1% topical antifungal cream to entire toe area. ^{6D} Children: seek specialist advice. ^{4D}	First line: terbinafine ^{1D,2A+,3A+,4D,6D}	250mg OD ^{1D,2A+,6D}		Fingers: 6 weeks ^{1D,6D} Toes: 12 weeks ^{1D,6D}	Not available. Access supporting evidence and rationales on the PHE website
		Second line: itraconazole ^{1D,3A+,4D,6D}	200mg BD ^{1D,4D}		1 week a month ^{1D} Fingers: 2 courses ^{1D} Toes: 3 courses ^{1D}	
		Stop treatment when continual, new, healthy, proximal nail growth. ^{6D}				
Human and animal bites NICE Public Health England Last updated: Nov 2020	Offer an antibiotic for a human or animal bite if there are symptoms or signs of infection, such as increased pain, inflammation, fever, discharge or an unpleasant smell. Take a swab for microbiological testing if there is discharge (purulent or non-purulent) from the wound. Do not offer antibiotic prophylaxis if a human or animal bite has not broken the skin. Human bite: Offer antibiotic prophylaxis if the human bite has broken the skin and drawn blood. Consider antibiotic prophylaxis if the human bite has broken the skin but not drawn blood if it is in a high-risk area or person at high risk. Cat bite: Offer antibiotic prophylaxis if the cat bite has broken the skin and drawn blood.	First choice:				
		co-amoxiclav	250/125mg or 500/125mg TDS		3 days for prophylaxis 5 days for treatment*	
		Penicillin allergy or co-amoxiclav unsuitable:				
		doxycycline AND	200mg on day 1, then 100mg or 200mg daily		3 days for prophylaxis 5 days for treatment*	
		metronidazole	400mg TDS			
		seek specialist advice in pregnancy				
		IV antibiotics (click on visual summary)				

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
	<p>Consider antibiotic prophylaxis if the cat bite has broken the skin but not drawn blood if the wound could be deep.</p> <p>Dog or other traditional pet bite (excluding cat bite)</p> <p>Do not offer antibiotic prophylaxis if the bite has broken the skin but not drawn blood.</p> <p>Offer antibiotic prophylaxis if the bite has broken the skin and drawn blood if it has caused considerable, deep tissue damage or is visibly contaminated (for example, with dirt or a tooth).</p> <p>Consider antibiotic prophylaxis if the bite has broken the skin and drawn blood if it is in a high-risk area or person at high risk.</p> <p>*course length can be increased to 7 days (with review) based on clinical assessment of the wound.</p>					
<p>Varicella zoster/ chickenpox</p> <p>Herpes zoster/ shingles</p> <p>Public Health England</p> <p>Last updated: Oct 2018</p>	<p>Pregnant/immunocompromised/ neonate: seek urgent specialist advice.^{1D}</p> <p>Chickenpox: consider aciclovir^{2A+,3A+,4D} if: onset of rash <24 hours,^{3A+} and 1 of the following: >14 years of age;^{4D} severe pain;^{4D} dense/oral rash;^{4D,5B+} taking steroids;^{4D} smoker.^{4D,5B+}</p> <p>Give paracetamol for pain relief.^{6C}</p> <p>Shingles: treat if >50 years^{7A+,8D} (PHN rare if <50 years)^{9B+} and within 72 hours of rash,^{10A+} or if 1 of the following: active ophthalmic;^{11D} Ramsey Hunt;^{4D} eczema;^{4D} non-truncal involvement;^{8D} moderate or severe pain;^{8D} moderate or severe rash.^{5B+,8D}</p> <p>Shingles treatment if not within 72 hours: consider starting antiviral drug up to 1 week after rash onset,^{12B+} if high risk of severe shingles^{12B+} or continued vesicle formation;^{4D}</p>	<p>First line for chicken pox and shingles: aciclovir^{3A+,7A+,10A+,13B+,14A-,15A+}</p> <p>Second line for shingles if poor compliance: <i>not for children:</i> famciclovir^{8D,14A-,16A-} OR valaciclovir^{8D,10A+,14A-}</p>	<p>800mg 5 times daily^{16A-}</p> <p>250mg to 500mg TDS^{15A+} OR 750mg BD^{15A+}</p> <p>1g TDS^{14A-}</p>	<p></p> <p>-</p> <p></p>	7 days ^{14A-,16A-}	<p><i>Not available. Access supporting evidence and rationales on the PHE website</i></p>

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
	older age; ^{7A+,8D,12B+} immunocompromised; ^{4D} or severe pain. ^{7D,11B+}					
▼ Eye infections						
Conjunctivitis Public Health England Last updated: July 2019	First line: bath/clean eyelids with cotton wool dipped in sterile saline or boiled (cooled) water, to remove crusting. ^{1D} Treat only if severe, ^{2A+} as most cases are viral ^{3D} or self-limiting. ^{2A+} Bacterial conjunctivitis: usually unilateral and also self-limiting. ^{2A+,3D} It is characterised by red eye with mucopurulent, not watery discharge. ^{3D} 65% and 74% resolve on placebo by days 5 and 7. ^{4A-,5A+} Third line: fusidic acid as it has less Gram-negative activity. ^{6A-,7D}	Second line: chloramphenicol ^{1D,2A+,4A-,5A+} 0.5% eye drop ^{1D,2A+} OR 1% ointment ^{1D,5A+}	Eye drops: 2 hourly for 2 days, ^{1D,2A+} then reduce frequency ^{1D} to 3 to 4 times daily. ^{1D} Eye ointment: 3 to 4 times daily or once daily at night if using antibiotic eye drops during the day. ^{1D}		48 hours after resolution ^{2A+,7D}	Not available. Access supporting evidence and rationales on the PHE website
		Third line: fusidic acid 1% gel ^{2A+,5A+,6A-}	BD ^{1D,7D}			
Blepharitis Public Health England Last updated: Nov 2017	First line: lid hygiene ^{1D,2A+} for symptom control, ^{1D} including: warm compresses; ^{1D,2A+} lid massage and scrubs; ^{1D} gentle washing; ^{1D} avoiding cosmetics. ^{1D} Second line: topical antibiotics if hygiene measures are ineffective after 2 weeks. ^{1D,3A+} Signs of meibomian gland dysfunction, ^{3D} or acne rosacea: ^{3D} consider oral antibiotics. ^{1D}	Second line: topical chloramphenicol ^{1D,2A+,3A-}	1% ointment BD ^{2A+,3D}		6-week trial ^{3D}	Not available. Access supporting evidence and rationales on the PHE website
		Third line: oral oxytetracycline ^{1D,3D} OR oral doxycycline ^{1D,2A+,3D}	500mg BD ^{3D} 250mg BD ^{3D}		4 weeks (initial) ^{3D} 8 weeks (maint) ^{3D}	
			100mg OD ^{3D} 50mg OD ^{3D}		4 weeks (initial) ^{3D} 8 weeks (maint) ^{3D}	
▼ Suspected dental infections in primary care (outside dental settings)						
Derived from the Scottish Dental Clinical Effectiveness Programme (SDCEP) 2013 Guidelines. This guidance is not designed to be a definitive guide to oral conditions, as GPs should not be involved in dental treatment. Patients presenting to non-dental primary care services with dental problems should be directed to their regular dentist, or if this is not possible, to the NHS 111 service (in England), who will be able to provided details of how to access emergency dental care.						
Note: Antibiotics do not cure toothache. ^{1D} First-line treatment is with paracetamol ^{1D} and/or ibuprofen; ^{1D} codeine is not effective for toothache. ^{1D}						
Mucosal ulceration and	Temporary pain and swelling relief can be attained with saline mouthwash (½ tsp salt in warm water) ^{1D} . Use antiseptic mouthwash if	Chlorhexidine 0.12 to 0.2% ^{1D, 2A-,3A+,4A+} (do not use within	1 minute BD with 10 ml ^{1D}		Always spit out after use. ^{1D}	Not available. Access supporting

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
inflammation (simple gingivitis) Public Health England Last updated: Nov 2017	more severe, ^{1D} and if pain limits oral hygiene to treat or prevent secondary infection. ^{1D,2A-} The primary cause for mucosal ulceration or inflammation (aphthous ulcers; ^{1D} oral lichen planus; ^{1D} herpes simplex infection; ^{1D} oral cancer) ^{1D} needs to be evaluated and treated. ^{1D}	30 minutes of toothpaste) ^{1D} OR hydrogen peroxide 6% ^{5A-1D}	 2 to 3 minutes BD/TDS with 15ml in ½ glass warm water ^{1D}	 	Use until lesions resolve ^{1D} or less pain allows for oral hygiene ^{1D}	<i>evidence and rationales on the PHE website</i>
Acute necrotising ulcerative gingivitis Public Health England Last updated: Nov 2017	Refer to dentist for scaling and hygiene advice. ^{1D,2D} Antiseptic mouthwash if pain limits oral hygiene. ^{1D} Commence metronidazole if systemic signs and symptoms. ^{1D,2D,3B-,4B+,5A-}	chlorhexidine 0.12 to 0.2% (do not use within 30 minutes of toothpaste) ^{1D} OR	1 minute BD with 10ml ^{1D}		Until pain allows for oral hygiene ^{6D}	<i>Not available. Access supporting evidence and rationales on the PHE website</i>
		hydrogen peroxide 6% ^{1D}	2 to 3 minutes BD/TDS with 15ml in ½ glass warm water			
		metronidazole ^{1D,3B-,4B+,5A-}	400mg TDS ^{1D,2D}		3 days ^{1D,2D}	
Pericoronitis Public Health England Last updated: Nov 2017	Refer to dentist for irrigation and debridement. ^{1D} If persistent swelling or systemic symptoms, ^{1D} use metronidazole ^{1D,2A+,3B+} or amoxicillin. ^{1D,3B+} Use antiseptic mouthwash if pain and trismus limit oral hygiene. ^{1D}	metronidazole ^{1D,2A+,3B+} OR	400mg TDS ^{1D}		3 days ^{1D,2A+}	<i>Not available. Access supporting evidence and rationales on the PHE website</i>
		amoxicillin ^{1D,3B+}	500mg TDS ^{1D}		3 days ^{1D}	
		chlorhexidine 0.2% (do not use within 30 minutes of toothpaste) ^{1D} OR	1 minute BD with 10ml ^{1D}		Until less pain allows for oral hygiene ^{1D}	
		hydrogen peroxide 6% ^{1D}	2 to 3 minutes BD/TDS with 15ml in ½ glass warm water ^{1D}			
Dental abscess	Regular analgesia should be the first option ^{1A+} until a dentist can be seen for urgent drainage, ^{1A+,2B-,3A+} as repeated courses of antibiotics for abscesses are not appropriate. ^{1A+,4A+} Repeated antibiotics alone, without drainage, are ineffective in preventing the spread of infection. ^{1A+,5C} Antibiotics are only recommended if there are signs of severe infection, ^{3A+} systemic symptoms, ^{1A+,2B-,4A+} or a high risk of complications. ^{1A+} Patients with severe odontogenic infections (cellulitis, ^{1A+,3A+} plus signs of sepsis; ^{3A+,4A+} difficulty in swallowing; ^{6D} impending airway obstruction) ^{6D} should be referred urgently for hospital admission to protect airway, ^{6D} for surgical drainage ^{3A+} and for IV antibiotics. ^{3A+} The					

Infection	Key points	Medicine	Doses		Length	Visual summary
			Adult	Child		
Public Health England	empirical use of cephalosporins, ^{6D} co-amoxiclav, ^{6D} clarithromycin, ^{6D} and clindamycin ^{6D} do not offer any advantage for most dental patients, ^{6D} and should only be used if there is no response to first-line drugs. ^{6D}					
Last updated: Oct 2018	If pus is present, refer for drainage, ^{1A+,2B-} tooth extraction, ^{2B-} or root canal. ^{2B-} Send pus for investigation. ^{1A+} If spreading infection ^{1A+} (lymph node involvement ^{1A+,4A+} or systemic signs, ^{1A+,2B-,4A+} that is, fever ^{1A+} or malaise) ^{4A+} ADD metronidazole. ^{6D,7B+} Use clarithromycin in true penicillin allergy ^{6D} and, if severe, refer to hospital. ^{3A+,6D}	amoxicillin ^{6D,8B+,9C,10B+} OR	500mg to 1000mg TDS ^{6D}		Up to 5 days; ^{6D,10B+} review at 3 days ^{9C,10B+}	Not available. Access supporting evidence and rationales on the PHE website
		phenoxymethylpenicillin ^{11B-}	500mg to 1000mg QDS ^{6D}			
		metronidazole ^{6D,8B+,9C}	400mg TDS ^{6D}			
		Penicillin allergy: clarithromycin ^{6D}	500mg BD ^{6D}			
▼ Abbreviations						
BD, twice a day; eGFR, estimated glomerular filtration rate; IM, intramuscular; IV, intravenous; MALToma, mucosa-associated lymphoid tissue lymphoma; m/r, modified release; MRSA, methicillin-resistant <i>Staphylococcus aureus</i> ; MSM, men who have sex with men; stat, given immediately; OD, once daily; TDS, 3 times a day; QDS, 4 times a day.						

18.6 Microbiology Support

For North Essex, microbiology advice can be sought from the microbiology team at Colchester General Hospital on 01206 747374. Dr Gillian Urwin is the Lead Microbiologist. Out of hours the on-call microbiologist can be contacted via 01206 747474.

For South Essex, please contact Southend Hospital Microbiology Department / on-call microbiologist via 01702 435555 (switchboard).

18.7 References

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