

# Suffolk Antibiotic Formulary for use in Primary Care

This formulary is available online via the following websites:

- <http://www.westsuffolkccg.nhs.uk/about-us/prescribing-and-medicines-management/>
- <http://www.ipswichandeastsuffolkccg.nhs.uk/GPpracticememberarea/Clinicalarea/Medicinesmanagement/CCGFormularies/Formularies.aspx>

# Index

Safety issues	3
A PRIME	4
Mean duration of illness and symptoms	5
Upper Respiratory Tract Infections	6
Lower Respiratory Tract Infections	8
Urinary Tract Infections	10
Genital Tract Infections	13
Gastro-intestinal Tract Infections	15
Miscellaneous	18
Supporting Materials	23
Management of a patient with unexplained diarrhoea – suspected <i>Clostridium difficile</i> infection (CDI): Guidance for GPs	25
Guidance for Care Home staff	26

## Principles of Treatment

1. This formulary is based on the best available evidence, however professional judgement and patient choice should also be considered when making a treatment decision. It is important to initiate antibiotics as soon as possible in severe infection.
2. Antibiotics should only be prescribed when there is likely to be a clear clinical benefit.
3. Dose and duration of antibiotic treatments for adults are suggested throughout this formulary, however they may need to be modified for age, weight and renal function. In severe or recurrent cases of infection, consider prescribing a larger dose or a longer course of treatment. Please refer to the latest edition of the BNF or BNF for Children for further dosing information.
4. The threshold for antibiotics in immuno-compromised patients and in those with multiple morbidities should be lowered; consider culture and seek advice.
5. Consider a no (or delayed) antibiotic strategy for acute infections which tend to be self-limiting.
6. Avoid prescribing over the telephone.
7. Prescribe simple generic antibiotics when possible. Avoid prescribing broad-spectrum antibiotics (e.g. co-amoxiclav, quinolones and cephalosporins) when narrow-spectrum antibiotics remain effective; broad-spectrum antibiotics increase the risk of *Clostridium difficile*, MRSA and resistant UTIs.
8. Avoid widespread use of topical antibiotics (especially those agents that are also available as systemic preparations, e.g. fusidic acid).
9. In pregnancy AVOID tetracyclines, aminoglycosides, quinolones and high-dose metronidazole (e.g. doses  $\geq 2\text{g}$ ). Short-term use of nitrofurantoin is unlikely to affect the foetus, but should be avoided in 3rd trimester due to the potential risk of neonatal haemolysis.
10. Where a 'best guess' therapy has failed, or special circumstances exist, advice from a consultant microbiologist should be obtained.

## Safety issues

Drug	Warning		
Trimethoprim	<ul style="list-style-type: none"><li>• <b>Avoid prescribing for patients taking methotrexate – increased risk of haematological toxicity</b></li><li>• Avoid in 1st trimester of pregnancy due to teratogenic risk (trimethoprim is a folate antagonist)</li></ul>		
Nitrofurantoin	<ul style="list-style-type: none"><li>• Contraindicated in glucose 6-phosphate dehydrogenase (G6PD) deficiency (due to the definite risk of haemolysis), and in acute porphyria</li><li>• Avoid in 3rd trimester of pregnancy due to potential risk of neonatal haemolysis</li><li>• Avoid in patients with renal impairment (eGFR &lt;60mL/minute/1.73m<sup>2</sup>)</li></ul> <p>For prescribers who wish to determine renal function in terms of creatinine clearance, an estimate can be calculated using the Cockcroft and Gault formula:</p> <table border="1"><tr><td>Estimated creatinine clearance (mL/minute) =</td><td><math display="block">\frac{[(140 - \text{Age in years}) \times \text{Ideal}^\dagger \text{ bodyweight in kg} \times 1.23 \text{ for men OR } 1.04 \text{ for women}]}{\text{Serum creatinine (micromole/L)}}</math></td></tr></table> <p>†Actual bodyweight in kg may be used in the calculation, however the formula will over/underestimate at extremes of body weight; use of ideal bodyweight is therefore preferred. A calculator for estimating creatinine clearance can be accessed from most GP clinical systems or from the West Suffolk NHS Foundation Trust website at: <a href="https://www.wsh.nhs.uk/Extranet/SupportServices/Pharmacy/InfectionsandAntibiotics/InfectionsandAntibiotics.aspx">https://www.wsh.nhs.uk/Extranet/SupportServices/Pharmacy/InfectionsandAntibiotics/InfectionsandAntibiotics.aspx</a></p>	Estimated creatinine clearance (mL/minute) =	$\frac{[(140 - \text{Age in years}) \times \text{Ideal}^\dagger \text{ bodyweight in kg} \times 1.23 \text{ for men OR } 1.04 \text{ for women}]}{\text{Serum creatinine (micromole/L)}}$
Estimated creatinine clearance (mL/minute) =	$\frac{[(140 - \text{Age in years}) \times \text{Ideal}^\dagger \text{ bodyweight in kg} \times 1.23 \text{ for men OR } 1.04 \text{ for women}]}{\text{Serum creatinine (micromole/L)}}$		
Warfarin	<ul style="list-style-type: none"><li>• Experience in anticoagulant clinics suggests that INR is possibly altered when warfarin is given with the majority of antibiotics; please check for interactions, consider management options and advise the patient accordingly</li><li>• Patients should be advised to have their INR checked 3-4 days after starting an antibiotic or a new medicine and follow the advice given by the anticoagulant clinic</li></ul>		
Theophylline	<ul style="list-style-type: none"><li>• Metabolism inhibited by <b>clarithromycin</b> and <b>erythromycin</b>; consider reducing total daily dose of theophylline by up to 50%</li></ul>		
Statins	<ul style="list-style-type: none"><li>• Increased risk of myopathy with <b>clarithromycin</b>, <b>erythromycin</b> and <b>telithromycin</b> – avoid concomitant use</li></ul>		

## Urine sensitivity results

The results from microbiology are not listed in order of preference; please scroll through all of the options and choose the appropriate antibiotic according to the guidance in this formulary. NB: MSU must be sent for culture in children, pregnancy, complicated UTIs and treatment failure.

## General information:

CHILDREN: For details of drug dosage and administration in children please refer to the current edition of the BNF for Children

CHOICE: Antibiotics are listed in order of preference within the treatment tables

DOSES: The upper end of the dosage range is used to ensure adequate treatment and to prevent emergence of resistance

PROPHYLAXIS: For guidance on antibiotic prophylaxis please consult the current edition of the BNF or BNF for Children (Chapter 5.1, Table 2)

Consultations for simple infections were once regarded as straightforward however the management of infection is becoming more complex. Multiple drug regimens offer more opportunities for drug interactions and patients may see several prescribers which necessitates a very careful history of medication use. More patients are presenting with a decline in renal function due to increasing age or illness. There are new pressures on the choice and use of antibiotics with resistant strains and the emergence of infections such as *C. difficile* putting pressure on an already limited formulary of antimicrobials.

The following acronym is a useful safety check when prescribing antimicrobials, to avoid being **A PRIME** example of the pitfalls of antimicrobial prescribing:

<b>A</b>	<b>Allergy</b>	Be aware of combination drugs (e.g. Septrin® (co-trimoxazole) – contains trimethoprim and sulfamethoxazole), and which drug class the antimicrobial belongs to.
<b>P</b>	<b>Pregnancy or paediatric</b>	In pregnancy AVOID tetracyclines, aminoglycosides, quinolones and <i>high-dose</i> metronidazole. In children AVOID tetracyclines.
<b>R</b>	<b>Renal function</b>	A number of antibiotics require dose adjustment in renal impairment - consult the latest edition of the BNF or BNF for Children for guidance.
<b>I</b>	<b>Interactions</b>	Be aware of antibiotic interactions, particularly with oral contraceptives, warfarin, statins, theophylline and immunosuppressants. Interactions with other medicines are most notable with macrolides and quinolones.
<b>M</b>	<b>Methotrexate</b>	Deaths have occurred as a result of trimethoprim interacting with methotrexate. Remember that medicines may be issued from the hospital and may not appear on a GP record unless correspondence is checked.
<b>E</b>	<b>Effective choice</b>	Two factors to consider: <b>1)</b> the patient – consider the points detailed above <b>2)</b> known or likely causative organism

# Mean duration of illness and symptoms

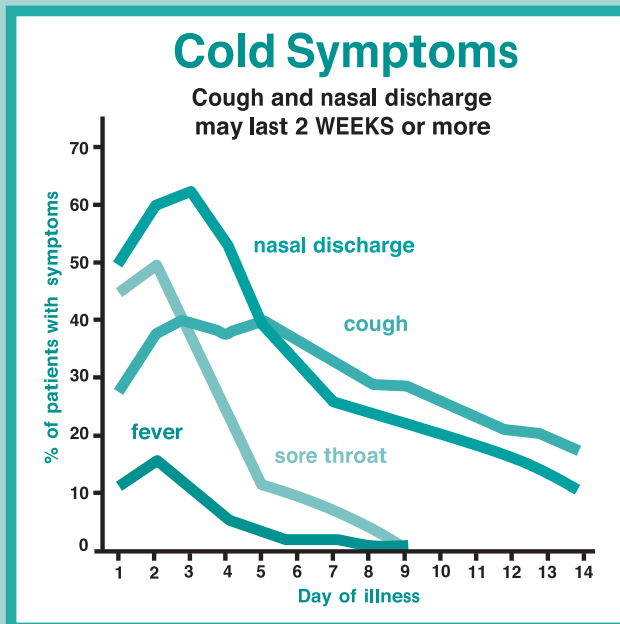
It may be helpful to offer all patients:

- Advice about the usual natural history of the illness and the average total length of the illness
- Advice about managing symptoms (e.g. analgesics for managing pain/fever)

Infection (acute)	Average duration
Bronchitis / Cough	3 weeks
Common cold	1 <sup>1</sup> / <sub>2</sub> weeks
Otitis media	4 days
Rhinosinusitis	2 <sup>1</sup> / <sub>2</sub> weeks
Tonsillitis / Pharyngitis	1 week

Note: these are average durations; approximately 50% of all patients will experience symptoms for longer

The graph below provides an estimate of the duration of common cold symptoms:




## Upper Respiratory Tract Infections

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Tonsillitis</b>	Tonsillitis is commonly viral and rarely needs treatment with an antibiotic. Sore throats should not be treated unless there is good evidence that they are caused by <i>S. pyogenes</i> . 90% of cases resolve in 7 days without antibiotics. Amoxicillin and other broad-spectrum penicillins should NOT be used for the blind treatment of a sore throat.			
	No antibiotic			
	Phenoxyethylpenicillin (Penicillin V)	500mg QDS	Oral	10 days
	Penicillin allergy: Clarithromycin	250mg - 500mg BD	Oral	5 days
<b>Sinusitis, acute</b> <12 weeks duration	Many sinusitis infections are viral. Symptomatic benefit of antibiotics is small and 80% of cases will resolve in 14 days without antibiotics. Antibiotics should only be considered if the infection is severe or if symptoms have lasted for >7 days.			
	No antibiotic			
	Amoxicillin	1g TDS	Oral	7 days
	Penicillin allergy: Clarithromycin <b>OR</b> Doxycycline	500mg BD  200mg on first day then 100mg daily	Oral	7 days
<b>Sinusitis, chronic or recurrent</b> >12 weeks duration	Inform the patient of the natural course of chronic sinusitis and that it may last for several months; referral is not usually required unless the episodes are frequent. Recommend use of analgesics/antipyretics when required. Consider if a short-course of an antibiotic is appropriate; if required, treat as acute.			

## Upper Respiratory Tract Infections (continued)

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Otitis media, acute or recurrent</b>	<b>The benefits of antibiotics for otitis media are regularly questioned. Consider not prescribing an antibiotic in acute diagnosis; recommend analgesia for the first three days and consider a delayed prescription.</b>			
	No antibiotic			
	Amoxicillin	500mg-1g TDS	Oral	5 days
	Penicillin allergy: Clarithromycin	250mg-500mg BD	Oral	5 days
<b>Otitis externa</b>	<b>If infection is recurrent, or if treatment fails, take a swab for culture.</b>			
	<b>Mild cases:</b> 2% Acetic acid ear spray	One spray into the affected ear at least three times a day	Ear	7 days
	<b>Moderate to severe cases</b> (or where acetic acid has failed):	Topical ear preparation containing a corticosteroid with an antibiotic (e.g. Flumetasone with Clioquinol ear drops); consult BNF for dose. Treat for 7 days. AVOID preparations containing an aminoglycoside antibiotic (e.g. gentamycin, neomycin, framycetin) in patients with a perforated tympanic membrane.		

## Lower Respiratory Tract Infections

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Acute bronchitis, uncomplicated</b>	Commonly viral - antibiotics are not normally indicated.			
	No antibiotic			
<b>Acute bronchitis with bacterial infection</b>	Indicated by the presence of purulent sputum, crackles and raised temperature.			
	Amoxicillin	500mg-1g TDS	Oral	5 days
	Co-amoxiclav (contains amoxicillin)	500/125mg TDS	Oral	5 days
	 Thought to be associated with greater incidence of <i>C. difficile</i> infections			
	Penicillin allergy: Doxycycline	200mg on first day then 100mg daily	Oral	5 days
<b>OR</b> Clarithromycin	500mg BD	Oral	5 days	
<b>Community acquired pneumonia</b>	Review at 48 hours. Patients with unresponsive pneumonia, including post-influenza (which could be due to <i>S. aureus</i> or other atypical organism), should be referred to hospital.			
	Amoxicillin	500mg-1g TDS	Oral	Up to 7 days with review
	Alternative (if penicillin allergy) or add on: Clarithromycin	500mg BD	Oral	Up to 7 days with review
<b>OR</b> Doxycycline	200mg on first day then 100mg daily	Oral	Up to 7 days with review	





## Lower Respiratory Tract Infections (continued)

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Chronic obstructive pulmonary disease (COPD) with infective exacerbations</b>	30% of cases are viral – use antibiotics if purulent sputum and increased dyspnoea and/or increased sputum volume. There is insufficient evidence to recommend prophylactic antibiotic therapy in the management of stable COPD.			
	Amoxicillin	500mg TDS	Oral	5 days
	Doxycycline	200mg on first day then 100mg daily	Oral	5 days
	Clarithromycin	500mg BD	Oral	5 days
<b>Bronchiectasis, infective exacerbation</b>	Before prescribing an antibiotic, send expectorated sputum sample (after deep coughing) for culture and sensitivity testing (even if patient is taking long-term antibiotics). Do not await results of culture before prescribing an antibiotic. Previous microbiology cultures (if available) should guide antibiotic choice; when previous cultures are not available prescribe an antibiotic from the options listed below. Review response to empirical treatment when sputum results are available. If patient responding well, continue prescribed antibiotic. If poor response, prescribe a different antibiotic based on the culture results.			
	Amoxicillin	500mg TDS	Oral	10-14 days
	Penicillin allergy: Clarithromycin	500mg BD	Oral	10-14 days







# Urinary Tract Infections

In treatment failure (or if unsure) consider resistant organism as the cause and consult microbiology

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<ul style="list-style-type: none"> <li>• Urinary tract infections are generally self-limiting; on average, antibiotics shorten the duration of symptoms by about a day</li> <li>• If symptoms are mild, dipstick test the urine to guide treatment decisions; consider not prescribing an antibiotic, especially if the urine dipstick test is negative for nitrites, leucocyte esterase and blood</li> <li>• If symptoms are moderate to severe, offer to prescribe an antibiotic; do not dipstick test the urine as the decision to offer an antibiotic is not influenced by urine dipstick test results</li> <li>• Asymptomatic bacteriuria in patients aged over 65 should not be treated</li> </ul>				
<b>UTI, simple (female patient)</b> No fever or flank pain Not pregnant	1st episode only: Trimethoprim	200mg BD	Oral	3 days
	 <b>Not with methotrexate</b>			
	Recurrent episodes: Nitrofurantoin	50mg QDS	Oral	3 days
	<b>MSU must be sent for culture</b>			
<b>UTI, simple (male patient)</b> No fever or flank pain	1st episode only: Trimethoprim	200mg BD	Oral	7 days
	 <b>Not with methotrexate</b>			
	Recurrent episodes: Nitrofurantoin	50mg QDS	Oral	7 days
	<b>MSU must be sent for culture</b>			
<b>UTI, multi-drug resistant Gram-negative bacteria</b>	Adjunctive treatment with pivmecillinam (oral), ertapenem (intravenous infusion), or fosfomycin (oral) may be required – <b>contact microbiology for advice on antibiotic choice, dose and duration</b> . Information on these medicines is available from the BNF. Administration of ertapenem by intravenous infusion in the community setting can be requested from the Community Intervention Service (telephone 0300 123 2425). <b>Note:</b> Intravenous ertapenem for the treatment of UTIs caused by multi-drug resistant Gram-negative bacteria is an 'off-label' use (see page 24 for further information). Oral fosfomycin is an unlicensed medicine in the UK (see page 24 for further information and procurement details).			



## Urinary Tract Infections (continued)

**In treatment failure (or if unsure) consider resistant organism as the cause and consult microbiology**







Infection	Formulary Choice	Dose	Route	Duration of Treatment
<b>UTI, lower in CHILDREN</b>	Trimethoprim  <b>Not with methotrexate</b>	Age 3 -5 months: 4mg/kg BD 6 months - 5 years: 50mg BD 6 - 11 years: 100mg BD	Oral Oral Oral	3 days 3 days 3 days
	Nitrofurantoin	Age 3 months - 11 years: 750micrograms/kg QDS	Oral	3 days
<b>UTI, upper in CHILDREN</b>	Co-amoxiclav (contains amoxicillin)	Age 3-11 months: 0.5mL/kg of 125/31mg suspension TDS	Oral	7 days
		1 - 5 years: 5mL of 250/62mg suspension TDS 6 - 11 years: 10mL of 250/62mg suspension TDS	Oral Oral	7 days 7 days
 <b>Thought to be associated with greater incidence of <i>C. difficile</i> infections</b> If the child has a penicillin allergy, seek advice from microbiology				
<b>UTI in PREGNANCY</b>	<b>MSU must be sent for culture. Treatment should be delayed if possible until culture results are available. If urgent empirical treatment is required then consider prescribing an antibiotic from the options below; patients should be reviewed after 48 hours (or according to the clinical situation) to check response to treatment and the results of the urine culture. Repeat MSU for culture 1 to 2 weeks after end of treatment.</b>			
	Nitrofurantoin  <b>Avoid in 3rd trimester</b>	50mg QDS	Oral	7 days
	Trimethoprim  <b>Avoid in 1st trimester</b>  <b>Not with methotrexate</b>	200mg BD	Oral	7 days
	'Off-label' use (see page 24 for further information). Avoid if woman folate deficient, taking folate antagonist, or treated with trimethoprim in the past year.			
	Cefalexin  <b>Thought to be associated with greater incidence of <i>C. difficile</i> infections</b>	500mg BD	Oral	7 days

## Urinary Tract Infections (continued)

**In treatment failure (or if unsure) consider resistant organism as the cause and consult microbiology**

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>UTI, long-term suppressive treatment</b>	Antibiotic prophylaxis is not usually indicated but may be considered on the advice of a consultant microbiologist. If other specialists request prescribing of a prophylactic antibiotic, seek advice from microbiology.			
<b>Pyelonephritis</b>	<b>MSU must be sent for culture. Refer if patient fails to improve significantly within 24 hours of starting antibiotic or if pyrexial with other risk factors e.g. pregnancy. There is a risk of undertreatment or underestimation of the severity of this condition. Pregnant patients should be referred to hospital.</b>			
	Co-amoxiclav (contains amoxicillin)	500/125mg TDS	Oral	14 days
	 <b>Thought to be associated with greater incidence of <i>C. difficile</i> infections</b>			
	Penicillin allergy: Ciprofloxacin	500mg BD	Oral	7 days
	 <b>Thought to be associated with greater incidence of <i>C. difficile</i> infections</b>			
<b>Indwelling catheter</b>	<p>Bacterial colonisation is inevitable in long-term catheterised patients; urethral catheters should be changed only when clinically necessary or according to the manufacturer's current recommendations. With regard to the formation of struvite (encrustation), some patients develop this problem routinely and good practice would be to record the lifespan of 3 consecutive catheters and base the optimum time to change the catheter on this. Bladder instillations or washouts must not be used to prevent catheter-associated infection. Ensure the patient remains well hydrated.</p> <ul style="list-style-type: none"> <li>• Only if patient is systemically unwell take a CSU for antibiotic sensitivity and consider treatment</li> <li>• Please ensure urine specimens are labelled correctly i.e. CSU or MSU; USING A DIPSTICK IS NOT APPROPRIATE</li> <li>• Antibiotic use for suppression of recurrent infection in this group is not supported as it is likely to encourage multi-drug resistant organisms</li> </ul>			

## Genital Tract Infections

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Prostatitis, acute</b>	Antibiotic penetration of the prostate is generally very poor. Quinolones and trimethoprim are the most effective antibiotics as they have greater penetration into the prostate. Quinolones are preferred to trimethoprim as they are effective against a broader range of urinary pathogens. MSU should be sent for culture.			
	Ofloxacin	200mg BD	Oral	28 days then review
	 Thought to be associated with greater incidence of <i>C. difficile</i> infections			
	Ciprofloxacin	500mg BD	Oral	28 days then review
 Thought to be associated with greater incidence of <i>C. difficile</i> infections				
Trimethoprim	200mg BD	Oral	28 days then review	
 Not with methotrexate				
<b>Epididymo-orchitis</b>	There is no specific treatment for mumps epididymo-orchitis. Oral corticosteroids and antibiotics are not routinely recommended. If sexually active and STD suspected refer to GUM for treatment. In older patients the infection is normally due to coliforms, 98% of which are resistant to tetracyclines.			
	Ciprofloxacin	500mg BD	Oral	10 days
	 Thought to be associated with greater incidence of <i>C. difficile</i> infections			
	Ofloxacin	200mg BD	Oral	14 days
 Thought to be associated with greater incidence of <i>C. difficile</i> infections				
<b>Pelvic inflammatory disease</b>	If STD suspected refer to GUM clinic for treatment, contact tracing and follow-up. In pregnancy seek advice from obstetrics or GUM. For children seek guidance from paediatrics or GUM.			
	Metronidazole <b>AND</b> Ofloxacin	400mg BD	Oral	14 days
	 Thought to be associated with greater incidence of <i>C. difficile</i> infections	400mg BD	Oral	14 days
	Ceftriaxone <b>AND</b> Metronidazole <b>AND</b> Doxycycline	500mg	IM	Single dose
	400mg BD	Oral	14 days	
	100mg BD	Oral	14 days	

## Genital Tract Infections (continued)

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Bacterial vaginosis</b>	<b>If STD suspected refer to GUM for treatment, contact tracing and follow-up. In pregnancy seek advice from obstetrics or GUM.</b>			
	Metronidazole	400mg BD	Oral	7 days
	Metronidazole 0.75% vaginal gel	5g applicatorful at night	Vaginal	5 nights
	<i>Treatment with oral metronidazole is preferred</i>			
	Clindamycin 2% cream	5g applicatorful at night	Vaginal	7 nights
<b><i>Chlamydia trachomatis</i></b>	<b>Treat contacts and refer to GUM clinic. In pregnancy or breastfeeding azithromycin is the most effective option; it is recommended by WHO and is more effective than erythromycin and amoxicillin.</b>			
	Azithromycin	1g	Oral	Single dose
	Doxycycline	100mg BD	Oral	7 days
<b>Vaginal candidiasis</b> Not pregnant	<b>The partner may also be the source of reinfection and, if symptomatic, should be treated with clotrimazole 1% cream 2-3 times daily until symptoms settle, or for up to 14 days. For more information on choice of treatment in <i>children</i>, refer to the BNF for Children.</b>			
	Clotrimazole 10% vaginal cream	5g applicatorful at night	Vaginal	Single dose
	Clotrimazole pessary	500mg at night	Vaginal	Single dose
	Fluconazole capsule	150mg	Oral	Single dose
<b>Vaginal candidiasis in PREGNANCY</b>	<b>In pregnancy, the lower-dose longer-treatment duration regimens are more effective than the single-dose intra-vaginal treatments.</b>			
	Clotrimazole pessary	100mg at night	Vaginal	6 nights
	Miconazole 2% cream	5g applicatorful BD	Vaginal	7 days

## Gastro-intestinal Tract Infections



Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b><i>Campylobacter</i></b>	Usually no antibiotics in mild disease. In severe disease or in patients with co-morbidity seek advice from microbiology.			
<b><i>Salmonella</i></b>	Usually no antibiotics in mild disease. In severe disease or in patients with co-morbidity seek advice from microbiology.			
<b><i>Shigella</i></b>	<p><b>Be aware that the Shiga and Shiga-like toxins, produced by some strains of <i>S. dysenteriae</i> and <i>E. coli</i> O157:H7, have been associated with approximately 70% of cases of haemolytic uraemic syndrome (HUS) in children.</b></p> <p>Usually no antibiotics in mild disease. In severe disease or in patients with co-morbidity seek advice from microbiology. Antibiotics can increase the risk of complications.</p>			
<b><i>E. coli</i> 0157 colitis</b>	Treat as advised by microbiologist. Antibiotics are not normally recommended as they may increase the risk of haemolytic uraemic syndrome.			
<b>Traveller's diarrhoea</b>	Mostly self-limiting and will need supportive management only. Send a stool specimen if person is systemically unwell, there is blood or pus in the stool, diarrhoea is persistent and giardiasis is suspected, if they have recently received antibiotics or been in hospital, if the person is immunocompromised or if other pathologies are a possibility (e.g. parasites).			

## Gastro-intestinal Tract Infections (continued)

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b><i>C. difficile</i> toxin positive diarrhoea</b>	For management of a patient with unexplained diarrhoea or suspected <i>C. difficile</i> infection see flowcharts on pages 25 & 26			
	<b>Stop offending antibiotic if possible. If patient on a PPI, review and stop if possible. If antibiotics are required for another infection seek advice from microbiology.</b>			
	<b>Severity of <i>C. difficile</i>:</b>			
	<b>Mild:</b> not associated with an increased white cell count (WCC). It is typically associated with less than three episodes of loose stools (defined as loose enough to take the shape of the container used to sample it) per day.			
	<b>Moderate:</b> associated with an increased WCC (but less than $15 \times 10^9/L$ ) and typically associated with 3-5 loose stools per day.			
<b>Severe:</b> associated with a WCC greater than $15 \times 10^9/L$ , or an acutely increased serum creatinine concentration (that is, greater than 50% increase above baseline), or a temperature higher than $38.5^\circ C$ , or evidence of severe colitis (abdominal or radiological signs). The number of stools may be a less reliable indicator of severity.				
<b>Mild:</b>				
No treatment				
<b>Mild to Moderate (initial episode):</b>				
Metronidazole	400mg TDS	Oral	10-14 days	
If no response in 5 days seek advice from microbiology				
<b>Severe or recurrent infection:</b>				
Seek advice from microbiology				




## Gastro-intestinal Tract Infections (continued)

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Giardiasis</b>	Metronidazole	2g daily	Oral	3 days
		<b>OR</b> 400mg TDS	Oral	5 days
<b>Cryptosporidium</b>	Treatment not readily available and not normally indicated. Seek specialist advice for immunocompromised patients and those in poor health.			
<b>Acute diverticulitis</b>	<b>Consider antibiotics if patient shows systemic symptoms e.g. pyrexia, pain, raised CRP. Review within 48 hours or sooner if symptoms deteriorate. Arrange admission if symptoms persist or deteriorate.</b>			
	Co-amoxiclav (contains amoxicillin)	500/125mg TDS	Oral	7 days
	 <b>Thought to be associated with greater incidence of <i>C. difficile</i> infections</b>			
	Penicillin allergy: Metronidazole	400mg TDS	Oral	7 days
<b>AND</b> Ciprofloxacin	500mg BD	Oral	7 days	
 <b>Thought to be associated with greater incidence of <i>C. difficile</i> infections</b>				
<b><i>Helicobacter pylori</i></b>	<b>Avoid amoxicillin-containing regimens for those with known or suspected penicillin allergy. Check for recent use of clarithromycin or metronidazole; this may promote resistance, resulting in eradication failure. For those recently treated with clarithromycin (up to 1 year), choose a regimen containing amoxicillin and metronidazole. For those recently treated with metronidazole (up to 1 year), choose a regimen containing amoxicillin and clarithromycin. For people who require a second course of eradication therapy, refer to BNF guidance. If further advice required, speak to gastroenterology.</b>			
	Omeprazole	20mg BD	Oral	7 days
	<b>AND</b> Clarithromycin	500mg BD	Oral	7 days
	<b>AND</b> Amoxicillin	1g BD	Oral	7 days
	Omeprazole	20mg BD	Oral	7 days
<b>AND</b> Clarithromycin	250mg BD	Oral	7 days	
<b>AND</b> Metronidazole	400mg BD	Oral	7 days	

## Miscellaneous

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Acne, moderate to severe</b>	For mild to moderate acne, topical treatments are usually sufficient (see BNF for further information). Consider an oral antibiotic (combined with either a topical retinoid or benzoyl peroxide) if there is acne on the back or shoulders that is particularly extensive or difficult to reach, or if there is a significant risk of scarring or substantial pigment change. Refer all people with severe acne for specialist assessment and treatment.			
	Lymecycline	408mg once daily	Oral	Minimum of 8 weeks
	Erythromycin	500mg BD	Oral	Minimum of 8 weeks
<b>Bites, human/animal</b>	<p><b>Animal bite (cat or dog):</b></p> <ul style="list-style-type: none"> <li>• Thoroughly irrigate the wound</li> <li>• Assess tetanus and rabies risk</li> <li>• Antibiotics are advised if the wound is less than 48 hours old and the risk of infection is high. Prescribe oral antibiotics for all cat bites, animal bites to the hand, foot or face, puncture wounds, wounds requiring surgical debridement, wounds involving joints, tendons, ligaments or suspected fractures, people with a prosthetic valve or joint, people at risk of serious wound infection (e.g. diabetic, cirrhotic, asplenic or immunosuppressed) and wounds that have undergone primary closure</li> <li>• Send cultures if wound appears to be infected</li> <li>• Antibiotics are not generally needed if the wound is more than 2 days old and there is no sign of local or systemic infection</li> </ul> <p><b>For other animals:</b></p> <ul style="list-style-type: none"> <li>• Seek specialist advice</li> </ul> <p><b>Human bite:</b></p> <ul style="list-style-type: none"> <li>• Thoroughly irrigate the wound</li> <li>• Assess risk of tetanus, HIV and hepatitis B and C</li> <li>• Antibiotic prophylaxis advised for all human bite wounds under 72 hours old, even if there is no sign of infection</li> </ul>			
	Co-amoxiclav (contains amoxicillin)	250/125mg - 500/125mg TDS	Oral	7 days

## Miscellaneous (continued)

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Bites, human/animal</b> (continued)	Penicillin allergy: For children less than 12 years old with penicillin allergy, seek advice from microbiology.			
	<b>Animal/human bite:</b>			
	Metronidazole	200mg - 400mg TDS	Oral	7 days
	<b>AND</b>			
	Doxycycline	100mg BD	Oral	7 days
	<b>Human bite only:</b>			
Metronidazole	200mg - 400mg TDS	Oral	7 days	
<b>AND</b>				
Clarithromycin	250mg - 500mg BD	Oral	7 days	
<b>Cellulitis</b> (routine swabs not required for leg ulcers)	<b>People with mild or moderate cellulitis with no systemic illness or uncontrolled co-morbidities can usually be managed in primary care. If MRSA suspected (i.e. previous infection, colonisation, or failure to respond), take a swab. If serious, IV treatment may be required – refer to microbiology.</b>			
	Flucloxacillin	500mg QDS	Oral	7-14 days
	Penicillin allergy: Clarithromycin	500mg BD	Oral	7-14 days
<b>Cellulitis, water contact</b>	If cellulitis has arisen from wound contaminated with fresh or salt water please discuss with microbiologist			
<b>Cellulitis, facial</b>	Co-amoxiclav (contains amoxicillin) (consider admitting to hospital if patient febrile and ill)	500/125mg TDS	Oral	7-14 days
	 <b>Thought to be associated with greater incidence of <i>C. difficile</i> infections</b>			


## Miscellaneous (continued)

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Conjunctival infections</b>	Most conjunctivitis is viral and self-limiting. Bacterial conjunctivitis is usually unilateral and also self-limiting. It is characterised by red eye and mucopurulent (not watery) discharge. Contact lenses should not be used during treatment with topical antibiotics, or if untreated infection is present. Soft contact lenses should be avoided until at least 24 hours after treatment has been completed. Non-disposable contact lenses must be thoroughly cleaned before re-starting use. Check patient has not purchased drops from a community pharmacy. Refer if no improvement, particularly if patient wears contact lenses.			
	No antibiotic, or consider a delayed prescription			
	Chloramphenicol 0.5% drops <b>AND/OR</b>	One drop 2 hourly for 2 days then 4 hourly	Eye	Continue for 48 hours after healing; usual treatment duration 7 days
	Chloramphenicol 1% ointment	Apply QDS for 2 days then BD <b>or</b> once daily at night if used with eye drops	Eye	Continue for 48 hours after healing; usual treatment duration 7 days
	If chloramphenicol not suitable: Fusidic acid 1% gel	Apply BD	Eye	Continue for 48 hours after healing; usual treatment duration 7 days
<b>Dental abscess</b>	Refer to dentist			
<b>Impetigo</b>	Systematic review indicates topical and oral treatment produces similar results. As resistance is increasing, reserve topical antibiotics for very localised lesions. N.B. some strains of <i>Staph. aureus</i> are resistant to sodium fusidate – do not repeat topical treatment if treatment failure. National guidance states that mupirocin should be reserved for MRSA.			
	Flucloxacillin	500mg QDS	Oral	7 days
	Penicillin allergy: Clarithromycin	250mg-500mg BD	Oral	7 days

## Miscellaneous (continued)

Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Leg ulcers, infected</b> Not normal colonisation; significant cellulitis around the ulcer, purulent discharge and patient systemically unwell	<b>Bacteria will always be present. Antibiotics do not improve healing unless there is active infection. Culture swabs and antibiotics are only indicated if there is evidence of clinical cellulitis, increased pain, enlarging ulcer or pyrexia. If a swab is indicated, swab the base of the ulcer after cleaning; do not swab the exudate. Do not use topical antibiotics.</b>			
	Flucloxacillin	500mg QDS	Oral	7-14 days
	Penicillin allergy: Clarithromycin	500mg BD	Oral	7-14 days
<b>Mastitis, infective</b>	Flucloxacillin	500mg QDS	Oral	14 days*
	Penicillin allergy: Erythromycin	250mg - 500mg QDS	Oral	14 days*
	*If symptoms fail to settle after 48 hours of antibiotic treatment: Check that the patient has taken the antibiotic correctly and send a sample of the milk for culture <ul style="list-style-type: none"> <li>• If culture results are available, treat with an antibiotic the organism is sensitive to</li> <li>• If culture results are not available, treat empirically with oral co-amoxiclav 500/125mg, three times a day for 14 days; seek specialist advice if the woman is unable to take a penicillin-related antibiotic</li> <li>• Review treatment when culture results are available</li> </ul>			
Infection	Formulary Choice	Dose	Route	Duration of Treatment
<b>Meningococcal disease, suspected</b>	<b>Transfer patient to hospital immediately. Administer a single dose of benzylpenicillin injection unless the patient has a history of anaphylaxis (not allergy).</b>			
	Benzylpenicillin	<b>CHILD aged under 1 year:</b> 300mg	IV	Single dose
		<b>CHILD aged 1 - 9 years:</b> 600mg	IV	Single dose
		<b>CHILD aged 10 years and over:</b> 1.2g	IV	Single dose
		<b>ADULT:</b> 1.2g	IV	Single dose
If unable to administer by IV injection, give by IM injection.				
History of anaphylaxis to penicillin: Transfer to hospital				

## Miscellaneous (continued)

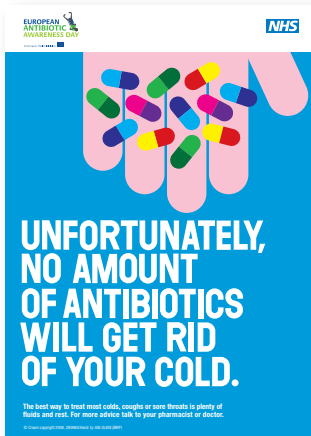
Infection	Formulary Choice	Adult Dose	Route	Duration of Treatment
<b>Severe necrotising infections</b>	Admit to hospital immediately			
<b>Wounds, badly soiled</b> i.e. dirty, traumatic wounds	<b>Carefully clean the wound using normal saline, drinking-quality water, or cooled boiled water. Consider if debridement is required.</b>			
	Co-amoxiclav (contains amoxicillin)	250/125mg - 500/125mg TDS	Oral	5 days
	 Thought to be associated with greater incidence of <i>C. difficile</i> infections			
	Penicillin allergy: Metronidazole <b>AND</b> Clarithromycin	400mg TDS  250mg BD	Oral  Oral	5 days  5 days

# Supporting Materials

There are a range of support materials available from the Department of Health website which can be downloaded free of charge  
<https://www.gov.uk/government/publications/european-antibiotic-awareness-day-resources-for-primary-and-secondary-care>



Available as a leaflet  
and a non-prescription pad



Available as a poster

## References

- British Thoracic Society Guideline: Community Acquired Pneumonia in Adults (October 2009; Vol 64 Supplement III)  
<http://www.brit-thoracic.org.uk/Portals/0/Guidelines/Pneumonia/CAPGuideline-full.pdf>
- British National Formulary and British National Formulary for Children Online (September 2013; February 2014)  
<http://www.medicinescomplete.com/mc/index.htm>
- British Association for Sexual Health and HIV (BASHH) Guideline: Management of Chlamydia (2006)  
<http://www.bashh.org/BASHH/Guidelines/BASHH/Guidelines/Guidelines.aspx?hkey=faccb209-a32e-46b4-8663-a895d6cc2051>
- British Association for Sexual Health and HIV (BASHH) Guideline: Management of epididymo-orchitis (updated June 2011)  
<http://www.bashh.org/BASHH/Guidelines/BASHH/Guidelines/Guidelines.aspx?hkey=faccb209-a32e-46b4-8663-a895d6cc2051>
- Clinical Knowledge Summaries Online (accessed September 2013)  
<http://cks.nice.org.uk>
- Faculty of Sexual and Reproductive Healthcare (FSRH) Guideline: Management of Vaginal Discharge in Non-Genitourinary Medicine Settings (February 2012) [http://www.fsrh.org/pages/Clinical\\_Guidance\\_5.asp](http://www.fsrh.org/pages/Clinical_Guidance_5.asp)
- Health Protection Agency Guidance: Management of Infection Guidance for primary care for local consultation and adaptation (revised November 2012) [www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1279888711402](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1279888711402)
- MHRA Drug Safety Update August 2013  
<http://www.mhra.gov.uk/Safetyinformation/DrugSafetyUpdate/CON300402>
- NICE Clinical Guideline 69: Respiratory tract infections - antibiotic prescribing (July 2008)  
<http://publications.nice.org.uk/respiratory-tract-infections-antibiotic-prescribing-cg69>
- Public Health England: Updated guidance on the management and treatment of *Clostridium difficile* infection (June 2013)  
[http://www.hpa.org.uk/webc/HPAwebFile/HPAweb\\_C/1317138914904](http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317138914904)
- Department of Health: Updated guidance on the diagnosis and reporting of *Clostridium difficile* (March 2012).  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/215135/dh\\_133016.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/215135/dh_133016.pdf)

Key	
<i>C. difficile</i>	<i>Clostridium difficile</i>
CRP	C-Reactive protein
CSU	Catheter stream urine
eGFR	Estimated glomerular filtration rate
GUM	Genito-urinary medicine
IM	Intramuscular injection
IV	Intravenous injection
MSU	Mid-stream urine
PPIs	Proton pump inhibitors
STD	Sexually transmitted disease
UTI	Urinary tract infection
WBC	White blood cell count
WHO	World Health Organisation

## Off-label and unlicensed medicines

'Off-label' use refers to the use of a medicine outside the terms of its marketing authorisation (product licence), while an unlicensed medicine does not have a marketing authorisation. Further information on the prescribing of 'off-label' and unlicensed medicines is available from the MHRA at the following link: <http://www.mhra.gov.uk/Safetyinformation/DrugSafetyUpdate/CON087990>

**Fosfomycin** (see page 10) is an unlicensed medicine in the UK.

It is available on special order from IDIS:

<b>Drug</b>	Fosfomycin oral 3g sachet
<b>PIP code</b>	MON108
<b>Order line</b>	Tel: 01932 824 100 Fax: 01932 824 300 Email: <a href="mailto:uk@idispharma.com">uk@idispharma.com</a> <b>Order cut-off time is 17:30 for next day delivery</b>



# Management of a patient with unexplained diarrhoea - suspected *Clostridium difficile* infection (CDI): Guidance for GPs

If a patient has diarrhoea (Bristol Stool Chart type 5 - 7) that is not clearly attributable to an underlying condition (e.g. inflammatory colitis, overflow) or therapy (e.g. laxatives, enteral feeding) then it is necessary to determine if this is due to CDI; send stool sample to microbiology and ensure that the request form clearly states that a *C. difficile* test is required

Notified of positive sample by microbiology laboratory

1. Re-assess severity\*\* (may affect treatment choice)
2. If symptoms are not resolving commence antibiotics for *C. difficile* \*\*\*
3. Stop precipitating antibiotics if possible
4. Stop anti-motility drugs
5. Review the requirement for, and dose of, PPI
6. An Infection Control Nurse will call to arrange Root Cause Analysis investigation (start reviewing notes ready for Root Cause Analysis investigation)

Patients can call 01473 770000 and ask to speak to a nurse in the Infection Control department if they are anxious or concerned

Give the patient standard advice with regards to good hygiene and stress the importance of suitable and adequate fluids. Provide *C. difficile* patient information leaflet, available from the West Suffolk/Ipswich & East Suffolk Clinical Commissioning Group websites

Daily assessment necessary; advise the patient to contact the GP surgery if symptoms persist or worsen

## STOOL SAMPLES FOR CLEARANCE ARE NOT REQUIRED

Do not retest for *C. difficile* toxin if the patient is still symptomatic within a period of 28 days (unless symptoms resolve and then recur and there is a need to confirm recurrent CDI); note the symptoms and consult the duty microbiologist to discuss

### \*\* SEVERITY INDICATORS

- fever
- raised wbc
- raised crp
- low albumin
- dehydration
- abdominal pain

### \*\*\* ANTIBIOTICS FOR PATIENT AT HOME:

Oral metronidazole 400mg TDS, 10 - 14 days

**If no response in 5 days seek advice from microbiology**

### \*\*\* ANTIBIOTICS FOR INPATIENT IN COMMUNITY HOSPITAL:

Oral metronidazole 400mg TDS

If no response after 48 hours switch to

Oral vancomycin 125 - 250mg QDS

Treat for 10 days. Consider other causes for diarrhoea

Consultant Microbiologists

### West Suffolk Hospital:

Duty Microbiologist

**01284 712579**

### Ipswich Hospital:

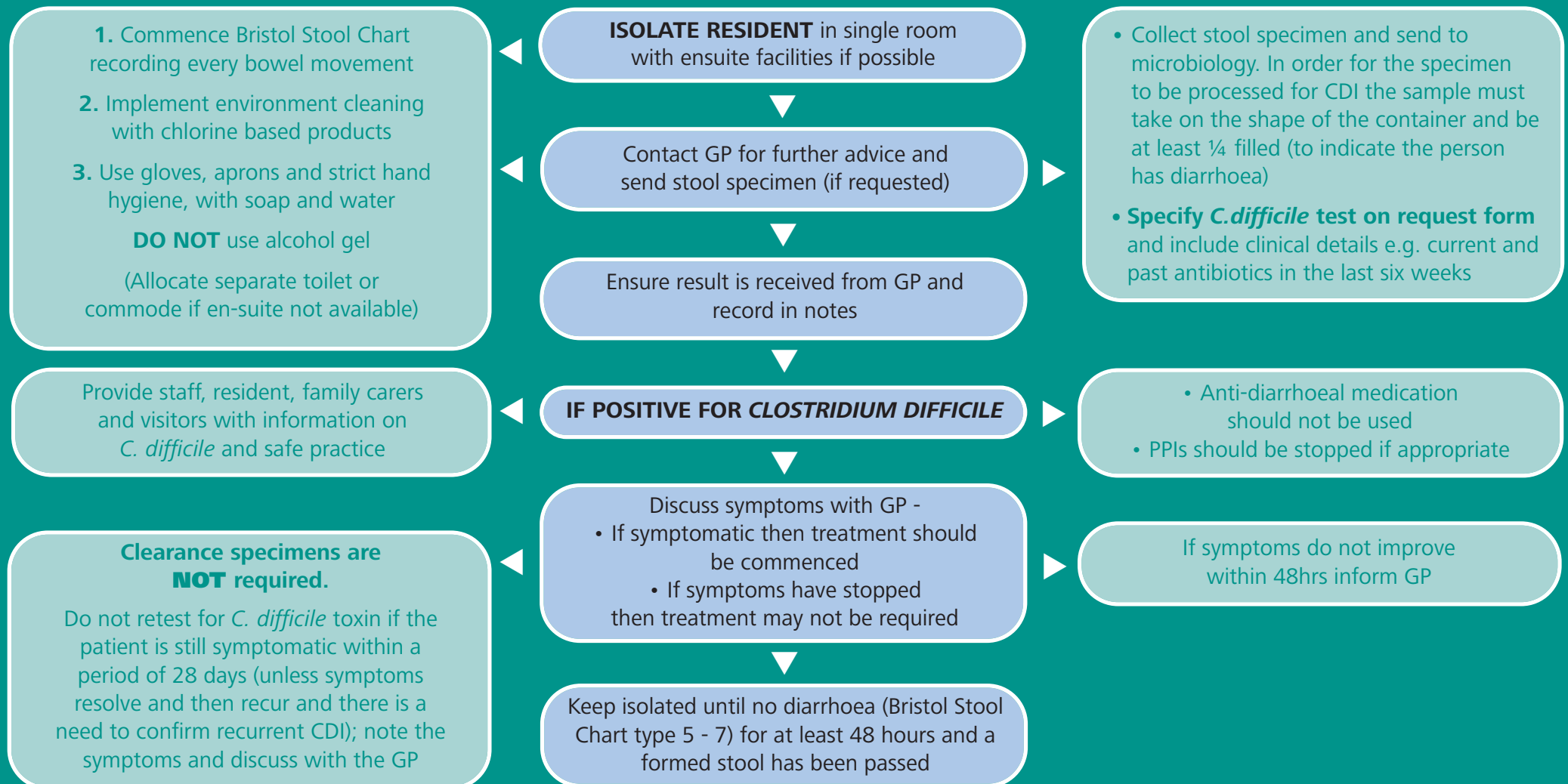
Duty Microbiologist

**01473 703741**

**01473 703745**

# Management of a patient with unexplained diarrhoea - suspected *Clostridium difficile* infection (CDI): Guidance for Care Home Staff

If a resident has diarrhoea (Bristol Stool Chart type 5 - 7) that is not clearly attributable to an underlying condition (e.g. inflammatory colitis, overflow) or therapy (e.g. laxatives, enteral feeding) then it is necessary to determine if this is due to CDI. If in doubt please seek advice from the GP.





Prepared by the Medicines Management Teams of the West Suffolk and the Ipswich and East Suffolk Clinical Commissioning Groups, in collaboration with local GPs and specialists from the Ipswich Hospital NHS Trust and the West Suffolk NHS Foundation Trust.