

# NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

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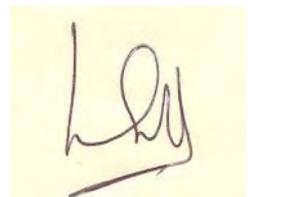
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**Identifier:**

NHSG/Guid/EmpP/  
MGPG335

**Review Date:**

March 2011

**Approval Date:**

March 2010

**UNCONTROLLED WHEN PRINTED**

**Version 2**

**Executive Sign-Off**

This document has been endorsed by the Medical  
Director of NHSG Grampian

Signature:



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**Title:** NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

**Unique Identifier:** NHSG/Guid/EmpP/MGPG335

**Replaces:** NHSG/Guid/EmpP/MGPG296

**Lead Author/Co-ordinator:** Specialist Antibiotic Pharmacists

**Subject (as per document registration categories):** Prescribing Policy

**Key word(s):** Antibiotics, Antimicrobials, Infections, Empirical Therapy, Primary Care

**Policy, Protocol, Procedure or Process Document:** Guideline  
(Antimicrobial Prescribing Guideline for Primary Care)

**Document application:** NHS Grampian - Primary Care

**Purpose/description:** To provide prescribers working in Primary Care in NHS Grampian guidance on empirical antibiotic therapy choices for common infections in adults and children.

**Group/Individual responsible for this document:** Antimicrobial Management Team

**Policy statement:** It is the responsibility of all staff to ensure that they are working to the most up-to-date and relevant policies, protocols and procedures.  
It is the responsibility of individual prescribers to ensure the management of infections in primary care patients is within the guidance laid down in this document. By doing so, the quality of the services offered will be maintained, and the chances of staff making erroneous decisions which may affect patient, staff or visitor safety and comfort will be reduced.

**Responsibilities for ensuring registration of this document on the NHS Grampian Information/Document Silo:**

Development Pharmacist – medicines management

**Physical location of the original of this document:**

Pharmacy Medicines Unit, Westholme

**Job title of creator of this document:**

Specialist Antibiotic Pharmacists

**Job/group title of those who have control over this document:**

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**Responsibilities for disseminating document as per distribution list:**

Lead Author/Co-ordinator: Specialist Antibiotic Pharmacists

**Responsibilities for implementation:**

**Organisational:** Operational Management Team and Chief Executive  
**Sector:** General Managers, Medical Leads and Nursing Leads  
**Departmental:** Clinical Leads  
**Area:** Line Manager

**Review frequency and date of next review:** Annually (or sooner if required)

**Responsibilities for review of this document:**

**Lead Author/Co-ordinator:** Specialist Antibiotic Pharmacists

**Revision History:**

<b>Revision Date</b>	<b>Previous Revision Date</b>	<b>Summary of Changes (Descriptive summary of the changes made)</b>	<b>Changes Marked* (Identify page numbers and section heading )</b>
February 2010		Major changes to remove the 4C antibiotics and include paediatrics	See appendix 4 page 30

\* Changes marked should detail the section(s) of the document that have been amended i.e. page number and section heading.

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## **General Notes**

Resistance to antibiotics and other antimicrobials is recognised locally and nationally as a major threat to public health and patient safety. The prevalence of antimicrobial resistant bacteria and other healthcare associated infections is partly governed by antimicrobial usage. Prescribers are therefore encouraged to prescribe antibiotics prudently and follow local and national guidelines as a matter of good clinical governance.

## **Aim**

To provide guidance for the treatment of common infections within Primary Care as detailed in the Grampian Joint Formulary, taking into account the bacterial susceptibility patterns in Grampian. The aim is to minimise the emergence of bacterial resistance and healthcare associated infection in the community and to encourage the rational and cost-effective use of antibiotics.

## **Principles of Treatment**

1. Prescribe an antibiotic only when there is likely to be a clear clinical benefit.
2. It is important to use the correct dose and appropriate course length.
3. Do not prescribe an antibiotic for viral sore throat, simple coughs and colds.
4. Consider delayed prescriptions for acute sinusitis and otitis media if symptoms suggest that an antibiotic may be indicated.
5. Limit prescribing for telephone consultations to exceptional cases.
6. 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.
7. Where a 'best guess' therapy has failed or special circumstances exist, microbiological advice can be obtained from the on call microbiologist via ARI switchboard (0845 456 6000).
8. Consider the use of ABLE (Accelerated Bacteriology Laboratory Evaluation).

## **Specialist Advice**

For patients with a history of infection with meticillin-resistant staphylococcus aureus (MRSA) or extended spectrum beta-lactamases (ESBLs) specialist advice about choice of antibiotics should be sought from medical microbiology.

Further advice on treatment is available from the on-call Medical Microbiologist, Specialist Antimicrobial Pharmacist or Infection Unit Physician.

Suitable samples should be taken where appropriate and sent to microbiology with a clinical history. On the receipt of culture results, the choice of antimicrobial should be reviewed, taking into consideration antimicrobial sensitivities, patient factors (refer to [penicillin allergy policy](#)), toxicity, and cost-effectiveness.

If there is no response to initial treatment or if the infection recurs, specialist advice should be sought.

## Structure of the Guidance

The guidance is organised into body systems, with the infections likely in each system listed in tables. Likely organisms are also stated, indicating the spectrum covered by the empirical antibiotics suggested. Treatment choices are listed, for most indications with a first choice, and then an alternative treatment. The alternative treatment is not a suggested 2<sup>nd</sup> line treatment for when the initial treatment has failed, but gives an alternative treatment should the first line be unsuitable, for example due to allergy. The column furthest to the right indicates reference sources which can be referred to for further information (and many of which are the basis of the treatment choices) and any other information which may be of help in managing the patient. There are links to some national patient information leaflets within the comments column. Links to NHS Grampian leaflets can be found in [appendix 1](#).

## Dosing and Duration

Recommended **adult** doses and durations of treatment have been included but often this will depend upon clinical judgement in the individual case. Most infections will normally respond to a three to ten day course. Doses in the policy are for adults only unless otherwise stated, and assume normal renal and hepatic function. The table below details **paediatric** doses for more commonly used antibiotics, assuming average weight. See [children's BNF](#) for more detailed information.

### COMMON PAEDIATRIC DOSES -assuming average weight.

\* Some doses can be doubled in severe infections.

Phenoxymethyl - penicillin 4 x daily	Amoxicillin* 3 x daily	Erythromycin* 4 x daily	Flucloxacillin* 4 x daily	Trimethoprim 2 x daily
1mth - 1 yr 62.5mg	1mth - 1yr: 62.5mg	1mth - 2 yrs 125mg	1mth - 2 yrs 62.5mg	6mths-6yrs 50mg
1-5 yrs 125mg	1-5yrs 125mg	2-8 yrs 250mg	2 - 10 yrs 125mg	6-12 yrs 100mg
6-12 yrs 250mg	Over 5yrs 250mg	Over 8 yrs 250-500mg	Over 10 yrs 250mg	

**NB.** Tetracycline antibiotics should not be used in children under 12 years of age. Quinolones are not recommended in children and growing adolescents ([see BNFC](#)). Doses of phenoxymethylpenicillin can be increased to ensure at least 12.5mg/kg four times daily ([see BNFC](#)). Please refer to [children's BNF](#) for doses outwith the above age ranges.

## Further Reference Sources

Prescribers should refer to the BNF ([www.bnf.org.uk](http://www.bnf.org.uk)), BNF for children (<http://bnfc.org/bnfc/>) or the manufacturers' summary of product characteristics ([www.medicines.org.uk](http://www.medicines.org.uk)) for further information.

For information on the use of antibiotics in pregnant or breastfeeding women, or in patients with renal or hepatic impairment, please refer to BNF (information in individual drug monographs), or contact Medicines Information (Tel: 01224 552316).

Please also note the recent MHRA advice for the use of cough and cold preparations in children if advising on self care (see references).

Where the suggested antibiotic choices in the table are not suitable, prescribers are encouraged to follow guidance in any of the references indicated in the text for further treatment options (national evidence based guidelines).

### **Clostridium difficile and high risk antibiotic agents**

The '4C' antibiotics (clindamycin, ciprofloxacin and other quinolones, co-amoxiclav and the cephalosporins, especially third generation) are associated with a higher risk of *Clostridium difficile* infection. The use of these agents has been restricted to try and reduce the rate of this infection by 30% in line with the Scottish Government HEAT target. These agents are therefore not recommended as first line treatments for common primary care infections. There may be situations where these are the most appropriate antibiotics to give, and should only be prescribed after careful consideration of the risks and clinical benefit of prescribing. Specific consideration should be made to using these agents in patients over the age of 65 years who are particularly at risk of the development of this infection.

The specific measure for primary care in relation to this HEAT target is to reduce the seasonal variation in quinolone prescribing to  $\leq 5\%$ , to indicate that these antibiotics are not being inappropriately used for respiratory tract infections.

### **Co-trimoxazole**

Co-trimoxazole is recommended as empirical treatment throughout this document on the advice of our local microbiology consultant. Co-trimoxazole is currently restricted by the CSM for a very limited range of indications, and empirical use in this way is unlicensed. Co-trimoxazole has not been restricted in the same way in other countries, including the USA, and is recommended for empirical use in primary care by NHS Greater Glasgow and Clyde. Our local urology consultants have also reviewed the change in practice for urinary infections. It has been used locally for approximately 6 months to treat urinary, intra-abdominal and severe respiratory infections in inpatient areas which have had a full restriction on the 4C antibiotics. To date, we have had only one report of a patient developing significant side effects (hyponatraemia). Prescribers are encouraged to weigh the risks and benefits of this treatment, and to consider alternative treatments in patients who take concurrent interacting medication or who are at greater risk of developing serious side effects. Any adverse effects noticed should be reported to the Antimicrobial Management Team via [grampian.antibioticpharmacists@nhs.net](mailto:grampian.antibioticpharmacists@nhs.net).

### **Erythromycin**

Where erythromycin is indicated as a choice, please prescribe 250mg e/c tablets.

### **Some abbreviations used**

CKS – Clinical Knowledge Summaries

NICE – National Institute for Health and Clinical Excellence

SIGN – Scottish Intercollegiate Guidelines Network

BNF – British National Formulary

SPC – Summary of Product Characteristics

HPA – Health Protection Agency

HPS – Health Protection Scotland

BTS – British Thoracic Society

MSU – mid stream urine

MHRA – Medicines and Healthcare products Regulatory Agency

BSAC – British Society of Antimicrobial Chemotherapy

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

1 Gastro-intestinal Tract and Intra-abdominal				
<ul style="list-style-type: none"> <li>• <b>Seek specialist advice if appropriate.</b></li> <li>• <b>For all infectious causes provide hand and environmental hygiene advice. Advise not to return to work/ school until 48 hours after symptoms have settled. Public Health will advise on specific exclusions if required.</b></li> </ul>				
INFECTION	<i>Likely organisms</i>	1 <sup>st</sup> Choice Treatment	Alternative option	Comments / notes / references
Infective gastroenteritis  <b>Antibacterials not usually indicated. Frequently self limiting and may not be bacterial.</b> Contact Medical Microbiology for advice if severe or prolonged illness.  Severity markers include: presence of blood/ mucus in stool, abdominal pain, fever, tenesmus or risk factors for hypochlorhydria.	<i>Campylobacter</i> Usually no antibiotic therapy required. Contact medical microbiology for advice if severe or prolonged illness.	First choice antibiotic once confirmed by culture Erythromycin 250mg oral four times daily for 5 days	Contact Medical Microbiology.	CKS – Gastroenteritis, BNF
	Bacillary dysentery/ travellers' diarrhoea <i>Shigella spp</i> <i>Salmonella spp</i> (not <i>S. typhi</i> or <i>S. paratyphi</i> )	If treatment indicated: Ciprofloxacin 500mg oral twice daily for 1 day (5 days if <i>Shigella dysenteriae</i> type 1)	Contact Medical Microbiology.	For children treat only according to sensitivities. <b>Quinolones not recommended in children or growing adolescents.</b>  Travellers' diarrhoea – see additional notes below CKS – Gastroenteritis, BNF, SPC
	E. coli O157	No treatment with antibiotics or antimotility drugs		<b>Seek expert clinical advice</b> <b>Contact Public Health</b>
	<i>Giardia spp</i>	Metronidazole 400mg oral three times daily for 5 days or 2g once daily for 3 days	Contact Medical Microbiology.	Child 1–3 years : 500 mg once daily for 3 days Child 3–7 years : 600–800 mg once daily for 3 days Child 7–10 years : 1 g once daily for 3 days Child 10–18 years : 2 g once daily for 3 days Recurrence of giardiasis is high even with optimal treatment, therefore follow up stool sample is advised.
	Viruses	No treatment with antibiotics		
Travellers' diarrhoea (seek specialist advice in children)	Limit prescription of antibacterial to be carried abroad and taken if illness develops (ciprofloxacin 750mg as single dose) to people travelling to remote areas and for people in whom an episode of infective diarrhoea could be dangerous. In areas of high ciprofloxacin resistance (Asia), can advise prophylactic bismuth subsalicylate (Pepto Bismol) 2 tablets four times daily.			NHS advice website <a href="http://www.fitfortravel.nhs.uk/advice/disease-prevention/travellers-diarrhoea.aspx">http://www.fitfortravel.nhs.uk/advice/disease-prevention/travellers-diarrhoea.aspx</a> Ref: <a href="http://www.nathnac.org/pro/factsheets/trav_dir.htm">http://www.nathnac.org/pro/factsheets/trav_dir.htm</a>

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1 Gastro-intestinal Tract and Intra-abdominal				
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INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative option	Comments / notes / references
Clostridium difficile infection (CDI) - antibiotic associated colitis	<i>Clostridium difficile</i>	<ul style="list-style-type: none"> <li>Ensure infection control measures are in place – do not wait for confirmation of diagnosis</li> <li>Stop any (non-<i>Clostridium difficile</i>) antimicrobial treatment in patients with CDI if possible</li> <li>Rehydrate patient.</li> <li>Assess symptoms and severity of disease taking into account individual risk factors for patient:</li> </ul> <p><b>Severity Markers</b></p> <ul style="list-style-type: none"> <li>Temperature &gt;38.5°C</li> <li>Major risk factors (immunosuppression)</li> <li>Suspicion of pseudomembranous colitis, toxic megacolon, ileus</li> <li>Colonic dilatation &gt;6cm</li> <li>White blood cell count &gt;15 x 10<sup>9</sup> cells/L</li> <li>Creatinine &gt;1.5 x baseline</li> <li>Albumin &lt;25g/L</li> </ul>		<p>For further information refer to local policy [<a href="#">infection control home page on intranet</a>] or HPS guidance (September 2009) <a href="http://www.documents.hps.scot.nhs.uk/about-hps/hpn/clostridium-difficile-infection-guidelines.pdf">http://www.documents.hps.scot.nhs.uk/about-hps/hpn/clostridium-difficile-infection-guidelines.pdf</a>.</p> <ul style="list-style-type: none"> <li>Review any concurrent gastric acid suppressant therapy and reduce or stop if appropriate.</li> <li>Review and stop any antimotility agents to reduce the risk of toxic megacolon development.</li> <li>Ensure patient aware to stop laxatives for duration of symptoms.</li> </ul> <p>NB. Alcohol gel does not kill <i>C. difficile</i> spores.</p>
	Patient has <2 severity markers	Metronidazole 400mg oral three times daily for 10-14 days. If condition does not improve after 5 days, switch to oral vancomycin.		
	Patient has ≥2 severity markers OR no response after 5 days of metronidazole	Vancomycin 125mg oral four times daily for 10-14 days. Refer to hospital.		

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

1 Gastro-intestinal Tract and Intra-abdominal				
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INFECTION	<i>Likely organisms</i>	1 <sup>st</sup> Choice Treatment	Alternative option	Comments / notes / references
Threadworms	Pinworms <i>Enterobius vermicularis</i>	All over 2 years: Mebendazole 100mg oral as a single dose. A second dose may be given after 2 weeks.	Under 2 years: piperazine/senna 3mth-1yr: 2.5mL spoonful 1-6 yrs: 5mL spoonful >6yrs: 1 sachet. As a single dose in the morning. Repeat dose after 2 weeks.	Treat whole family. Morning showers or baths, stress importance of hand hygiene, including scrubbing under finger nails. Avoid shared towels.  Pripsen (piperazine/senna) is prepared by stirring into water or milk.  CKS Patient Information Leaflet <a href="http://www.cks.nhs.uk/patient_information_leaflet/Threadworms">http://www.cks.nhs.uk/patient_information_leaflet/Threadworms</a>
Cholecystitis	<i>Escherichia coli</i> <i>Klebsiella spp</i> <i>Proteus spp</i> Enterococci Anerobes e.g. <i>Bacteroides fragilis</i>	Refer to secondary care.		CKS – acute cholecystitis.  Note that it is recommended that patients be admitted to secondary care for assessment due to the high mortality rate.
Diverticulitis	Anaerobes Gram negative rods.	Metronidazole 400mg oral three times daily PLUS doxycycline* 100-200mg daily for 7 days	Metronidazole 400mg oral three times daily PLUS co-trimoxazole 960mg [unlicensed – see general notes] twice daily for 7 days	CKS – acute diverticulitis. Check criteria for admission. CKS states 7 days treatment should be given.  <b>*NB Doxycycline not suitable in those under 12 years.</b>

## NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

2 Respiratory system			
INFECTION	Likely organisms	Treatment choices	Comments/ notes / references
<p>Influenza</p> <p>Only to be used when predefined threshold is reached and announcement made by Scottish Office</p> <p>Continued overleaf.....</p>	<p><i>Influenza A &amp; B</i></p> <p>NB This guidance refers to seasonal influenza and not pandemic strains</p>	<p>Annual vaccination is essential for all those at risk of influenza.</p> <p>Oseltamivir and zanamivir are recommended for post-exposure prophylaxis of treatment of flu if <b>all</b> of the following apply:</p> <ul style="list-style-type: none"> <li>• The amount of flu virus circulating is enough that if someone has a flu-like illness it is likely that it has been caused by the flu virus</li> <li>• The person is in an at-risk group and has not been effectively protected by vaccination</li> <li>• The person has been in contact with someone with a flu-like illness and can start treatment within 36 hours (for zanamivir) or within 48 hours (for oseltamivir).</li> </ul> <p>At risk patients are those who have one or more of the following conditions:</p> <ul style="list-style-type: none"> <li>• 65 years and over</li> <li>• Chronic respiratory disease (including COPD and asthma)</li> <li>• Significant cardiovascular disease (not hypertension)</li> <li>• Immunocompromised</li> <li>• Diabetes mellitus</li> <li>• Chronic renal disease</li> <li>• Chronic liver disease</li> <li>• Chronic neurological disease.</li> </ul>	<p>Please refer to: HPA Influenza guidance <a href="http://www.hpa.org.uk/HPA/Topics/InfectiousDiseases/InfectionsAZ/1202115586990/">http://www.hpa.org.uk/HPA/Topics/InfectiousDiseases/InfectionsAZ/1202115586990/</a></p> <p>NICE guidance <a href="http://guidance.nice.org.uk/TA168">http://guidance.nice.org.uk/TA168</a> Refer to NICE technology appraisal guidance 58 which includes a cost-effectiveness assessment.</p> <p>NICE, February and September 2003 (from BNF) includes:</p> <ul style="list-style-type: none"> <li>• Oseltamivir and zanamivir are not recommended for seasonal prophylaxis against influenza</li> <li>• Oseltamivir and zanamivir are not recommended for post-exposure prophylaxis, or treatment of otherwise healthy individuals with influenza.</li> </ul> <p>Grampian Guidance for the use of antivirals in special patient groups [intranet] <a href="http://intranet.grampian.scot.nhs.uk/ccg_nhsg/files/Grampian%20Summary%20Guidance%204-1.pdf">http://intranet.grampian.scot.nhs.uk/ccg_nhsg/files/Grampian%20Summary%20Guidance%204-1.pdf</a></p> <p><b>Dose update of oseltamivir in young children – current BNF doses may be incorrect. Please refer to Grampian Guidelines (above).</b></p>

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

2 Respiratory system																																			
INFECTION	Likely organisms	Treatment choices	Comments/ notes / references																																
Influenza (continued)		Use oseltamivir 75mg oral twice daily for 5 days in adults and children over 13 years (once daily for 10 days for post-exposure prophylaxis) or zanamivir 10mg by inhalation twice daily for 5 days in adults & children over 5 years for treatment (10mg by inhalation once daily for 10 days for post-exposure prophylaxis). See Grampian guidance (right and link on previous page) for further guidance on children's doses.	<table border="1"> <thead> <tr> <th>Age</th> <th>OR</th> <th>Body Weight (kg)</th> <th>Oseltamivir dose for 5 days</th> </tr> </thead> <tbody> <tr> <td>Birth – 1 month</td> <td></td> <td></td> <td>2 mg/kg twice daily</td> </tr> <tr> <td>1 – 3 months</td> <td></td> <td></td> <td>2.5 mg/kg twice daily</td> </tr> <tr> <td>3 months – 1 year</td> <td></td> <td></td> <td>3 mg/kg twice daily</td> </tr> <tr> <td>1 – 2 years *</td> <td></td> <td>≤15</td> <td>30mg twice daily</td> </tr> <tr> <td>3 – 6 years *</td> <td></td> <td>&gt;15 to 23</td> <td>45mg twice daily</td> </tr> <tr> <td>7 -12 years *</td> <td></td> <td>&gt;23 to 40</td> <td>60mg twice daily</td> </tr> <tr> <td>13 years or older *</td> <td></td> <td>&gt;40</td> <td>75mg twice daily</td> </tr> </tbody> </table> <p>* If the child is large or small for their age, use the dose based on body weight.</p>	Age	OR	Body Weight (kg)	Oseltamivir dose for 5 days	Birth – 1 month			2 mg/kg twice daily	1 – 3 months			2.5 mg/kg twice daily	3 months – 1 year			3 mg/kg twice daily	1 – 2 years *		≤15	30mg twice daily	3 – 6 years *		>15 to 23	45mg twice daily	7 -12 years *		>23 to 40	60mg twice daily	13 years or older *		>40	75mg twice daily
Age	OR	Body Weight (kg)	Oseltamivir dose for 5 days																																
Birth – 1 month			2 mg/kg twice daily																																
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13 years or older *		>40	75mg twice daily																																
Lower respiratory tract infection – acute cough		In previously well patients, antibiotic treatment is of no, or minimal, benefit in those who do not have signs on the chest or features of severity	Patient leaflets can reduce antibiotic use – see <a href="#">appendix 1</a> . Consider symptomatic relief and self-care advice. See MHRA guidance on cough and cold preparations in children ( <a href="#">link in references</a> ) if applicable. See community-acquired pneumonia (below) where appropriate.																																
Upper respiratory tract infection – pharyngitis 'sore throat'	Mostly viral	<p><b>Consider no or delayed prescription.</b></p> <p><b>Only if antibiotic indicated according to criteria in comments section:</b> Phenoxymethyl-penicillin 500mg oral four times daily for 7 - 10 days</p> <p>Erythromycin 500mg oral four times daily for 7 - 10 days</p>	Most patients do not benefit from antibiotics. Consider a delayed antibiotic strategy and explain soreness will take about 8 days to resolve. See <a href="#">appendix 1</a> . Patients with 3 of 4 Centor criteria (history of fever, purulent tonsils, cervical adenopathy, absence of cough) or a history of otitis media may benefit more from antibiotics. You need to treat 30 children or 145 adults to prevent one case of otitis media. Antibiotics only reduce duration of symptoms by 8 hours.																																
Aspiration pneumonia		Refer to secondary care	See hospital guidelines for further information.																																
Tuberculosis		Seek specialist advice																																	
Tonsillitis	75% viral	<b>No antimicrobial treatment</b>																																	
	<i>Streptococcus pyogenes</i>	<p><b>Consider no or delayed prescription.</b> Phenoxymethyl-penicillin 500mg oral four times daily for 7 - 10 days</p> <p>Erythromycin 500mg oral four times daily for 7 - 10 days</p>	Avoid amoxicillin, co-amoxiclav or ampicillin due to probable reactions if glandular fever present.  CKS patient information leaflet: <a href="http://www.cks.nhs.uk/patient_information_leaflet/Tonsillitis">http://www.cks.nhs.uk/patient_information_leaflet/Tonsillitis</a>																																

## NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

2 Respiratory system				
INFECTION	Likely organisms	Treatment choices		Comments/ notes / references
Infective exacerbations of COPD or chronic bronchitis	30% infections are viral, 30 – 50% are bacterial, the rest are undetermined.	Antibiotics should be given to patients with: <ul style="list-style-type: none"> <li>Increased sputum purulence with either increased sputum volume or increased dyspnoea (GOLD, 2009)</li> </ul> Note: use of an antibiotic is <b>not</b> recommended in the absence of purulent sputum. Please send sputum sample to microbiology for culture. Consider delayed prescription if appropriate.		
Mild-moderate	<i>Streptococcus pneumoniae</i> <i>Haemophilus influenzae</i>	Amoxicillin 500mg oral three times daily for 5 days	Erythromycin 500mg oral four times daily OR Doxycycline* 200mg stat then 100mg once daily for 5 days	Patient leaflets can reduce antibiotic use. See link ( <a href="#">appendix 1</a> ). In primary care, antibiotics have marginal benefits in otherwise healthy adults in acute cough, bronchitis. GOLD Guidelines for COPD, 2008; Management of Exacerbation of COPD, Thorax, 2004; CKS Refer to guidelines for advice on additional treatment with oral prednisolone. <b>*NB Doxycycline is not suitable in those under 12 years.</b>
Community-acquired pneumonia (CAP)  70% of CAP is due to <i>Streptococcus pneumoniae</i> . In NHS Grampian resistance to <i>Streptococcus pneumoniae</i> is rare.	<i>Streptococcus pneumoniae</i> (lobar pneumonia) <i>Mycoplasma pneumoniae</i> (atypical pneumonia) <i>Chlamydia pneumoniae</i>	Assessment of severity should be made using the CRB-65 criteria <ul style="list-style-type: none"> <li>Confusion – (defined as mental test score of 8 or less, or new disorientation in person, place or time)</li> <li>Respiratory rate &gt;30/min</li> <li>BP systolic &lt;90mmHg or BP diastolic &lt;60mmHg</li> <li>65 or more years of age</li> </ul> <b>Start antibiotic immediately</b> <b>CRB-65 = 0 without co-morbidity or clinical concern may treat at home with oral antibiotics</b> <b>CRB-65 = 1-2 or co-morbidity or clinical concern consider hospital referral</b> <b>CRB-65 ≥3 denotes severe pneumonia which requires urgent admission to hospital.</b> Also treat as severe if multilobar consolidation or cavitation on chest X-ray.  Refer to BTS Guidelines, Thorax 2009 for further information. <a href="http://www.brit-thoracic.org.uk/Portals/0/Clinical%20Information/Pneumonia/Guidelines/CAPGuideline-full.pdf">http://www.brit-thoracic.org.uk/Portals/0/Clinical%20Information/Pneumonia/Guidelines/CAPGuideline-full.pdf</a>		
<b>CRB-65 = 0 (Mild, uncomplicated, treat in community)</b>		Amoxicillin 500mg oral three times daily for 7 - 10 days	Erythromycin 500mg oral four times daily OR Doxycycline* 200mg stat then 100mg daily for 7 – 10 days	Primary treatment failure refer to secondary care. If no response in 48 hours consider admission. If severe refer to secondary care.  <b>*NB Doxycycline is not suitable in those under 12 years.</b>
Post-influenza associated CAP	<i>Staphylococcus aureus</i>	ADD flucloxacillin 1g [unlicensed dose] oral four times daily. Treat for 14-21 days.		Add to empiric treatment for community-acquired pneumonia.

## NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

3 Central nervous System				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative Treatment	Comments/ notes / references
Bacterial meningitis  <b>Admit to hospital</b>  <b>Treatment should not be delayed in suspected cases of bacterial meningitis. Empirical antimicrobial therapy should be given prior to lumbar puncture if there is any delay.</b>	<i>Neisseria meningitides</i> <i>Streptococcus pneumoniae</i>  >50 yrs in addition: <i>Listeria monocytogenes</i> Aerobic Gram negative bacilli - coliforms  Under 2 years: Group B <i>streptococcus</i> <i>Listeria monocytogenes</i> (more commonly <1mth) <i>E coli</i> <i>H. influenzae</i> <i>S. pneumoniae</i>	Benzylpenicillin as single dose before admission to hospital  Ideally give as IV bolus but may be given IM  ≥ 10 yrs: 1200mg 1 – 9 yrs: 600mg < 1yr: 300mg	Cefotaxime as single dose before admission to hospital  Ideally give as IV bolus but may be given IM  > 12 yrs: 1g < 12 yrs: 50mg/kg  In severe penicillin allergy consider chloramphenicol IV	<b>Contact Public Health.</b>  See British Infection Society guidelines <a href="http://www.meningitis.org">www.meningitis.org</a>  SIGN 102; Management of invasive meningococcal disease in children and young people <a href="http://www.sign.ac.uk/pdf/sign102.pdf">http://www.sign.ac.uk/pdf/sign102.pdf</a>  <b>Treatment for prevention of secondary cases of meningitis should only be prescribed on the advice of Public Health Consultant.</b>

## NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

4 Urinary Tract				
<ul style="list-style-type: none"> <li>Always use urine testing strips for leukocytes, nitrites, blood and protein, to help diagnosis</li> <li>For elderly, males, pregnant patients or children, or where there is fever, back/loin pain always send off an MSU sample</li> </ul>				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Asymptomatic bacteriuria in adult men and non-pregnant women (including catheterised)	Enterobacteriaceae <i>Escherichia coli</i> <i>Staphylococcus saprophyticus</i> <i>Proteus mirabilis</i> <i>Klebsiella spp.</i>	No treatment required <b>except</b> in: <ul style="list-style-type: none"> <li>Pregnancy</li> <li>Childhood</li> <li>Urinary tract abnormality/obstruction</li> <li>Men or women about to undergo an invasive genitourinary procedure</li> </ul> See below for further details.		All children presenting with first UTIs should be referred for investigation. Urgently admit all children under 3 months with suspected UTI (CKS). SIGN 88 – Management of suspected bacterial UTI in adults. NICE – UTI in children <a href="http://www.nice.org.uk/nicemedia/pdf/CG54NICEguideline.pdf">http://www.nice.org.uk/nicemedia/pdf/CG54NICEguideline.pdf</a> See leaflet link, <a href="#">appendix 1</a> .
Uncomplicated lower UTI i.e. no fever or flank pain in men, women and children or acute cystitis		Trimethoprim 200mg oral twice daily for 3 days in women or 7 days in men Treat for 3 days in children.	Nitrofurantoin 50mg oral four times daily or 100mg MR twice daily for 3 days in women or 7 days in men, 3 days in children.	Extended spectrum beta-lactamase enzyme producing bacteria (ESBLs) are increasing so perform culture in all treatment failures. Consider specialist referral for recurrent infection. Nitrofurantoin should be avoided in renal impairment.
Asymptomatic bacteriuria in pregnancy		Treatment should be based on sensitivity results.		Check antibiotic is suitable for use in pregnancy (BNF (information in individual drug monographs), or contact Medicines Information (Tel: 01224 552316).
Lower UTI in pregnancy		Trimethoprim ( <b>avoid in 1<sup>st</sup> trimester</b> ) 200mg twice daily for 7 days	Nitrofurantoin ( <b>avoid in 3<sup>rd</sup> trimester</b> ) 50mg oral four times daily or 100mg MR twice daily for 7 days	Send MSU for culture but start antibiotics immediately. Short term use of nitrofurantoin in pregnancy is unlikely to cause problems to the foetus. Nitrofurantoin should also be avoided in renal impairment. Avoid trimethoprim if low folate status or taking folate antagonist (e.g. antiepileptic or proguanil). Alternative antibiotic which can be used at any stage in pregnancy (if trimethoprim not suitable in 3 <sup>rd</sup> trimester or nitrofurantoin not suitable in 1 <sup>st</sup> trimester): cefalexin 500mg twice daily for 7 days.

## NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

4 Urinary Tract				
<ul style="list-style-type: none"> <li>Always use urine testing strips for leukocytes, nitrites, blood and protein, to help diagnosis</li> <li>For elderly, males, pregnant patients or children, or where there is fever, back/loin pain always send off an MSU sample</li> </ul>				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Pyelonephritis (Upper urinary tract infection) Complicated UTI	<i>Escherichia coli</i> <i>Proteus spp</i> <i>Klebsiella spp</i>	Trimethoprim (only if susceptible) 200mg twice daily for 14 days	Co-trimoxazole 960mg twice daily for 14 days [unlicensed – see general notes]	Send MSU for culture. RCT shows 14 days co-trimoxazole as good as 7 days ciprofloxacin. Admit if no response in 24 hours. Consider referring child to paediatrician. For serious, or potentially life-threatening, infection consider use of ciprofloxacin (500mg twice daily), with appropriate microbiology specimens, and review and rationalise treatment after 24 hours. European Association of Urology: Guidelines on urological infections <a href="http://www.uroweb.org/fileadmin/tx_eauguidelines/2009/Full/Urological_Infections.pdf">http://www.uroweb.org/fileadmin/tx_eauguidelines/2009/Full/Urological_Infections.pdf</a> . See also CKS.
Catheter UTI	<i>Escherichia coli</i> , other intestinal aerobes	Bacterial colonisation of long-term indwelling catheters is very common. <b>Antimicrobial therapy is not indicated unless the patient has evidence of systemic infection</b> e.g. pyrexia, loin pain, raised white cell count or acute confusion in the elderly. <b>Smelly or cloudy urine, or catheter blockage are not indications for antimicrobials.</b> If systemic treatment is likely, treat as for <b>pyelonephritis</b> . Evidence suggests that catheter change prior to treatment results in more rapid symptom resolution and lower rates of treatment failure. Consider referral to continence services.		
Long term prophylaxis (women and children)		Trimethoprim 100mg oral at night for up to 6 months	In treatment failure or allergy nitrofurantoin 50-100mg oral at night for up to 6 months	Consider prophylaxis in children with recurrent UTI. Do not prescribe prophylaxis in children with asymptomatic bacteriuria. (NICE). Please see NICE guidance for advice on recurrent UTI in children. Recurrent UTI in women (British Medical Journal): - 3 episodes of UTI in 12 months or - 2 episodes in 6 months CKS (further guidance) <a href="http://www.cks.nhs.uk/urinary_tract_infection_lower_women/management/quick_answers/scenario_recurrent_cystitis/preventive_treatments#-390041">http://www.cks.nhs.uk/urinary_tract_infection_lower_women/management/quick_answers/scenario_recurrent_cystitis/preventive_treatments#-390041</a>

## NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

5 Genital system				
<ul style="list-style-type: none"> <li>For full guidelines (British Association of Sexual Health and HIV) see <a href="http://www.bashh.org/guidelines">http://www.bashh.org/guidelines</a></li> <li>If STI diagnosed then refer to GUM (Genitourinary Medicine) Clinic (01224 555486) for partner notification and advice if required.</li> </ul>				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Uncomplicated genital chlamydia in men and women	<i>Chlamydia trachomatis</i>	Azithromycin 1g oral stat 1 hour before, or 2 hours after food.	Doxycycline 100mg twice daily for 7 days	Refer to GUM for partner notification and advice. In pregnancy and breastfeeding azithromycin can be used but it is 'off label'. This is recommended by SIGN 109. Doxycycline is contra-indicated in pregnancy. Advise to avoid sexual contact until treatment complete (or 7 days after azithromycin). Retest within 3 – 12 months.
Gonorrhoea	<i>Neisseria gonorrhoeae</i>	Cefixime 400mg oral as single dose Or as per sensitivities		Referral to GUM for further management advice and partner notification. Ref: BASHH guideline 2005
Pelvic inflammatory disease	<i>Chlamydia trachomatis</i> , <i>Neisseria gonorrhoeae</i> , and others	Doxycycline 100mg oral twice daily + / - *Metronidazole 400mg oral twice daily for 14 days	Refer to GUM for further advice and partner notification	Ceftriaxone 250mg IM to be added if gonorrhoea strongly suspected or confirmed. BASHH: Management of PID (2005) *Metronidazole has been added to cover anaerobes, which have a greater importance in severe PID. Metronidazole can be omitted in mild to moderate PID or if not tolerated.
Primary genital herpes	<i>Herpes simplex virus 1 or 2</i>	Aciclovir 400mg oral three times daily for 5 days		Duration may need to be longer if new lesions appear during treatment or healing incomplete. BASHH 2007. Refer for recurrent management.
Urethritis (non-gonorrhoea)	Organism unidentified	Azithromycin 1g oral stat	Doxycycline 100mg twice daily for 7 days	Ref: BASHH guideline Dec 2008. For persistent or recurrent infection refer to GUM clinic.
Trichomoniasis	<i>Trichomoniasis vaginalis</i>	Metronidazole 2g as single dose	Metronidazole 400mg twice daily for 7 days	Refer to GUM. Treat partners simultaneously. BASHH 2007. Avoid 2g single dose metronidazole in pregnancy or breastfeeding (as manufacturer advises avoidance of high dose regimens).
Vaginal candidiasis	<i>Candida albicans</i>	Clotrimazole pessary 500mg or 5g 10% vaginal cream as single dose at night	Fluconazole 150mg oral as single dose	All topical and oral azoles give 80-95% cure. In pregnancy avoid oral azole.

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

5 Genital system				
<ul style="list-style-type: none"> <li>For full guidelines (British Association of Sexual Health and HIV) see <a href="http://www.bashh.org/guidelines">http://www.bashh.org/guidelines</a></li> <li>If STI diagnosed then refer to GUM (Genitourinary Medicine) Clinic (01224 555486) for partner notification and advice if required.</li> </ul>				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Bacterial vaginosis	Various organisms.	Metronidazole 2g as single dose	Metronidazole 400mg twice daily for 7 days	Avoid 2g dose in pregnancy and breastfeeding (as manufacturer advises avoidance of high dose regimens). Topical treatment gives similar cure rates but is more expensive.
Epididymitis	>35yrs or low risk of STD <i>Escherichia coli</i> (80%), <i>Enterococcus spp</i> , intestinal aerobes, Coagulase negative staphylococci	Doxycycline 100mg twice daily for 10 - 14 days	Co-trimoxazole 960mg twice daily [unlicensed – see general notes] for 10 – 14 days	Refer to BASHH guidance. 2009 guideline due to be launched shortly. Guidance available at time of writing from 2001.
Epididymitis	<35yrs or high risk of STD <i>Chlamydia trachomatis</i> <i>Neisseria gonorrhoeae</i>	Doxycycline 100mg oral twice daily for 10-14 days		Refer to GUM for further management advice/partner notification.
Infective balanitis	Candidal	Clotrimazole 1% cream topical twice daily until symptoms settle	For severe symptoms: fluconazole 150mg oral stat	Ref: BASHH guideline 2008
	Anaerobic	Metronidazole 400mg oral twice daily for 7 days		Ref: BASHH guideline 2008
	Aerobic	As per sensitivities		
Crab lice	<i>Phthirus pubis</i>	Permethrin 5% dermal cream, should be left on the skin for 24 hours. The treatment areas should then be thoroughly washed. [Note: BNF recommends 12 hour contact time]. Reapply after 7 days.	Malathion 0.5% aqueous lotion, apply over whole body. Wash off after 12 hours or after leaving on overnight. Reapply after 7 days.	Pay particular attention to the pubic hair, hair around the anus, between the legs, and other hairy areas of the body. Check for involvement of more distant sites such as eyebrows. See CKS for further information. <a href="http://www.cks.nhs.uk/pubic_lice/management/prescribing_information/issues_prescribing_an_insecticide/how_to_apply">http://www.cks.nhs.uk/pubic_lice/management/prescribing_information/issues_prescribing_an_insecticide/how_to_apply</a> Note: re-application is based on expert opinion and has been accepted as standard practice, although not licensed.

## NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care

5 Genital system				
<ul style="list-style-type: none"> <li>For full guidelines (British Association of Sexual Health and HIV) see <a href="http://www.bashh.org/guidelines">http://www.bashh.org/guidelines</a></li> <li>If STI diagnosed then refer to GUM (Genitourinary Medicine) Clinic (01224 555486) for partner notification and advice if required.</li> </ul>				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Prostatitis, acute bacterial	<i>Escherichia coli</i> , <i>Proteus spp</i> , <i>Klebsiella spp</i> , <i>Pseudomonas spp</i> , <i>Enterococci</i> , <i>Staphylococcus aureus</i> , <i>Bacteroides spp</i> .	Co-trimoxazole 960mg oral twice daily for 28 days [unlicensed - see general notes]	Trimethoprim 200mg twice daily for 28 days	4 weeks treatment may prevent chronicity. Note that bacterial infection (acute and chronic) account for <5% of all prostatitis diagnoses; their precise incidence is unknown. (UK National Guidelines 2008, BASHH). NB IV therapy may be required.
Prostatitis, chronic bacterial	<i>Escherichia coli</i> , <i>Enterococcus faecalis</i> , <i>Staphylococcus aureus</i>	Doxycycline 100mg twice daily for 28 days, or longer if necessary	Contact Medical Microbiology.	BSAC guidelines for Chronic Prostatitis. Chronic bacterial prostatitis may require 6-12 weeks treatment. Note that bacterial infection (acute and chronic) account for <5% of all prostatitis diagnoses; their precise incidence is unknown. (UK National Guidelines 2008, BASHH). Note that BASHH states that antibiotic sensitivity testing is important to ensure that the urinary pathogens are not tetracycline resistant. Refer to this guideline for alternative empirical choices if doxycycline unsuitable, or contact microbiology for advice.

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

6 Eye				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments
Blepharitis	<i>Staphylococcus aureus</i> <i>Staphylococcus epidermidis</i>	Good lid hygiene + chloramphenicol 1% eye ointment applied four times daily for 7 days	Good lid hygiene + fusidic acid 1% viscous eye drops applied twice daily for 7 days	If patient cannot avoid wearing contact lenses then alternative treatments containing no preservatives should be used. Consider ophthalmic lubricant if dry eyes. If meibomian gland dysfunction or rosacea, consider tetracycline antibiotic at low dose for 6 - 12 weeks (CKS).
Chalazion - cellullitic	<i>Staphylococcus aureus</i>	Flucloxacillin 500mg oral four times daily for 7 days	Erythromycin 500mg oral four times daily for 7 days	
Conjunctivitis, viral	<i>Herpes simplex virus</i> , <i>Adenoviruses</i> <i>Enteroviruses</i>	Aciclovir 3% eye ointment, apply 5 times daily (continue for at least 3 days after complete healing)		Adenovirus infection is often self-limiting and no treatment required.
Conjunctivitis - purulent	<i>Staphylococcus spp</i> , <i>Streptococcus pneumoniae</i> , <i>Haemophilus influenzae</i> , <i>Moraxella catarrhalis</i>	Chloramphenicol 0.5% eye drops applied every 2 hours then reduce frequency as infection controlled (use throughout the day) AND/OR Chloramphenicol 1% eye ointment, apply at night only if using drops during the day, or apply 3 – 4 times daily if used alone. For 7 days or until symptom free for 48 hours	Fusidic acid 1% viscous eye drops applied twice daily for 7 days or until symptom free for 48 hours	Most bacterial infections are self-limiting (64% resolve on placebo). Usually unilateral with yellow- white mucopurulent discharge. Fusidic acid has less Gram negative activity. Remove contact lenses until all symptoms and signs of infection resolved and treatment complete for 24 hours. Fusidic acid would be preferred treatment in pregnancy. CKS – Infective conjunctivitis
Neonatal chlamydia conjunctivitis	<i>Chlamydia trachomatis</i>	Erythromycin oral [neonate] 12.5mg/kg four times daily for 14 days		Treat mother and her sexual partner (see section 5)
Herpes simplex corneal infection		Aciclovir 3% eye ointment five times daily		Continue for at least 3 days after complete healing
Ophthalmic zoster	<i>Varicella zoster</i>	Aciclovir oral 800mg five times daily for 7 days		Co-prescribe aciclovir 3% eye ointment

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

7 Ear, nose, and oropharynx				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative Treatment	Comments / notes / references
Otitis externa	<i>Staphylococcus aureus</i>	Aural toilet + Gentisone® HC ear drops apply 2-4 drops into ear four times daily and at night for 7 days	Aural toilet + Betnesol – N® ear drops apply 2-3 drops into ear four times a day for 7 days	Gentamicin and neomycin are contra-indicated in patients with a perforated tympanic membrane. Consider systemic antibacterial if spreading cellulitis or patient systemically unwell (flucloxacillin or erythromycin).
	Fungal; <i>Candida</i> spp, airborne fungi	Aural toilet + clotrimazole 1% topical solution instil into the ear 2-3 times daily, for at least 14 days after disappearance of infection		These infections may be difficult to treat and it is recommended to seek specialist advice.
	<i>Pseudomonas aeruginosa</i>	Aural toilet + gentamicin 0.3% ear drops apply 2-3 drops into the ear three to four times daily and at night for 3-5 days	More serious infection: seek specialist advice	Gentamicin is contra-indicated in patients with a perforated tympanic membrane. Seek ENT, medical microbiology advice before prescribing an oral option.
Tonsillitis	<b>See section 2</b>	<b>Consider no or delayed prescription.</b>		See leaflet link, <a href="#">appendix 1</a> .
Acute otitis media – only when clinically indicated. Many cases are not bacterial and resolve without antimicrobials	<i>Streptococcus pneumoniae</i> , <i>Haemophilus influenzae</i> , Beta haemolytic streptococci, <i>Staphylococcus aureus</i>	<b>Consider no or delayed prescription</b>  Amoxicillin Children: 40mg/kg/day in 3 divided doses. Max 1g three times daily for 5 days	Erythromycin <2yrs: 125mg 4 x daily 2-8yrs: 250mg 4 x daily >8yrs: 250 – 500mg 4 x daily for 5 days	<b>Many are viral. Illness resolves over 4 days in 80% without antibiotics.</b> Use NSAID or paracetamol. Need to treat 20 children >2y and seven 6-24m old to get pain relief in one at 2-7 days. Antibiotics do not reduce pain in first 24 hours, subsequent attacks or deafness. Children with otorrhoea, or <2years with bilateral acute otitis media, have greater benefit but are still eligible for delayed prescribing. <i>Haemophilus</i> is an extracellular pathogen, thus macrolides, which concentrate intracellularly, are less effective treatment. <b>Consider delayed prescription.</b>

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

7 Ear, nose, and oropharynx				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative Treatment	Comments / notes / references
Acute sinusitis	<p><b>Mostly viral</b></p> <p><i>Streptococcus pneumoniae</i> <i>Haemophilus influenzae</i> Beta haemolytic streptococci, <i>Staphylococcus aureus</i></p> <p>Treatment should be based on culture results.</p>	<p><b>If antibiotics indicated;</b></p> <p><b>Consider no or delayed prescription</b></p> <p>Amoxicillin 500mg oral three times daily for 7 days</p>	<p>Erythromycin 500mg oral four times daily for 7 days Or doxycycline* 200mg stat then 100mg daily for 7 days</p> <p><b>*NB Doxycycline is not suitable for those under 12 years.</b></p>	<p>In acute sinusitis prescribe xylometazoline 0.1% 2-3 drops into each nostril 2-3 times daily for 5 days (Paediatric drops available for 6 - 12 yrs – see BNF <b>but</b> also see MHRA guidance on cough &amp; cold treatments in children – link in <a href="#">references</a>)</p> <p><b>Many are viral. Symptomatic benefit of antibiotics is small</b> - 69% resolve in 7-10 days without antibiotics; and 84% resolve with antibiotics. Reserve for severe or symptoms &gt;10 days.</p> <p>Consider antibiotic for those at high risk of complications (e.g. immunosuppressed, cystic fibrosis).</p>
Chronic sinusitis (frequent or recurrent symptoms lasting more than 12 weeks)	<p><b>Mostly viral</b></p> <p><i>Streptococcus pneumoniae</i> <i>Haemophilus influenzae</i> <i>Moraxella catarrhalis</i> Group A <i>Streptococcus</i></p>	<p>Send ear and nose swabs to microbiology.</p> <p>Treat as per sensitivities.</p>		<p>Also intranasal steroids +/- decongestant. (if treating a child, see MHRA guidance on cough and cold treatments in children – link in <a href="#">references</a>) Limit treatment to one course only. Refer to ENT.</p>
Oral thrush	<i>Candida albicans</i>	Nystatin oral suspension 1mL four times daily after food usually for 7 days (continue for 2 days after lesions resolve)	Amphotericin lozenges one lozenge four times daily for 10-15 days (continue for 2 days after lesions resolve) Use miconazole gel in children – see cBNF.	<p>Adult immunocompromised: Fluconazole 50 - 100mg daily once daily for 7-14 days</p> <p>Note that there have been issues of choking in young children using miconazole gel. Use nystatin in very young children. Miconazole gel not licensed in those less than 4 months.</p>
Dental abscess, severe gingivitis	<i>Streptococcus spp</i> Anaerobes	<p>Gingivitis - metronidazole 200mg three times daily for 3 days</p> <p>Abscess - amoxicillin 250mg three times daily for 5 days</p>	<p>Gingivitis - Amoxicillin 250mg three times daily for 3 days</p> <p>Abscess - metronidazole 200mg three times daily for 5 days</p>	<p>Refer to dentist.</p> <p>Antibiotic treatment required only if systemic features of infection.</p> <p>Refer to SDCEP Drug Prescribing in Dentistry <a href="http://www.sdcep.org.uk/index.aspx?o=2334">http://www.sdcep.org.uk/index.aspx?o=2334</a> Amoxicillin dose may be doubled in severe infections</p>

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

8 Skin				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Eczema		Using antibiotics, or adding them to steroids, in eczema encourages resistance and does not improve healing unless there are visible signs of infection. In infected eczema, use treatment as for <b>impetigo</b> .		
Cellulitis	Group A beta haemolytic streptococci <i>Staphylococcus aureus</i>	Flucloxacillin 500mg oral four times daily for 7 - 14 days	Erythromycin 500mg oral four times daily for 7 - 14 days	If the patient is afebrile and healthy other than cellulitis, flucloxacillin alone may be used as drug treatment. If water exposure or face involved, discuss with microbiology. If febrile and ill, admit for IV treatment.
Impetigo	<i>Staphylococcus aureus</i>	<b>If localised</b> , fusidic acid 2% cream, apply 3-4 times daily for 5 days OR (if MRSA), mupirocin 2% cream applied up to three times daily for 5 days	<b>If widespread</b> , flucloxacillin 500mg oral four times daily OR erythromycin 500mg oral four times daily for 7 days	Topical and oral treatment produces similar results but as resistance is increasing, reserve topical antibiotics for very localised lesions.
Bites – Animal	<i>Streptococcus pyogenes</i> <i>Pasteurella multocida</i>	Amoxicillin 500mg three times daily for 7 days	Doxycycline* 100mg twice daily for 7 days *Children <12 years – Clarithromycin, see <a href="#">BNFC for doses</a>	Cleanse wound. Assess tetanus and rabies risk. Assess risk of blood borne viruses e.g. Hep B & C, HIV. Antibiotic prophylaxis advised for puncture wound; bite involving hand, foot, face, joint, tendon, ligament; immunocompromised, diabetics, elderly, asplenic, and for all human bites.
Bites – Human	<i>Streptococcus pyogenes</i> <i>Staphylococcus aureus</i> Oral anaerobes	Doxycycline* oral 100mg twice daily for 7 days  See Note  *Children <12 years – Co-amoxiclav <b>alone</b> 1 month - 1 yr 0.25 mL/kg of 125/31 1 - 6 yrs: 125/31 6 - 12 yrs 250/62 three times daily for 7 days; dose doubled in severe infection	Clarithromycin 500mg twice daily for 7 days  See Note.	<b>*NB Doxycycline is not suitable for those &lt;12yrs.</b>  Note: Metronidazole should be added to doxycycline and clarithromycin for severe human bites (400mg three times daily for 7 days).

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

8 Skin				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Herpes simplex - prodromal		Aciclovir 5% cream applied 5 times daily for 5 - 10 days at first sign of attack		
Herpes simplex - lesions		Aciclovir 200mg oral five times daily for 5 days		
Chickenpox (NB treatment not usually indicated in children)	<i>Varicella zoster</i>	Aciclovir 800mg oral five times daily for 7 days		In immunocompetent patients value of antivirals minimal unless severe pain, or adult, or on steroids, or secondary household case AND treatment started <24 hours of onset of rash.
Shingles	<i>Herpes zoster</i>	Aciclovir 800mg oral five times daily for 7 days	Valaciclovir oral 1g three times daily for 7 days	If pregnant/immunocompromised seek advice. Always treat if active ophthalmic, immunocompromised, non-truncal involvement, moderate to severe pain or rash. Non-ophthalmic shingles: Treat >50 yrs if <72 hrs of onset of rash, as post-herpetic neuralgia rare in <50 yrs but occurs in 20% >50 yrs.
Infected leg ulcers		Depend on culture and sensitivities		Bacteria will always be present. <b>Antibiotics do not improve healing.</b> Culture swabs and antibiotics are only indicated if there is evidence of clinical cellulitis: increased pain, enlarging ulcer or pyrexia.

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

8 Skin				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Lice  Only treat infected individuals – not whole household.		<p><b>NHS Grampian does not recommend a policy of rotating between specified insecticides.</b> Treatment <b>must be reapplied after 7 days</b> to ensure any lice that hatch following the first application are killed.</p> <p>Head lice treatments available and in use in the UK without prescription are:</p> <ul style="list-style-type: none"> <li>• <b>Malathion</b>, e.g. Derbac-M<sup>®</sup> liquid, Quellada M<sup>®</sup> liquid</li> <li>• <b>Pyrethroid (phenothrin)</b>, e.g. Full Marks<sup>®</sup> Liquid</li> <li>• <b>Dimeticone</b>, e.g. Hedrin<sup>®</sup> lotion</li> </ul> <p>Some preparations contain alcohol, which may produce adverse effects in certain individuals e.g. those suffering from eczema or severe asthma. In such cases, an aqueous preparation should be considered.</p>		<p>HPS Guidance Document <a href="http://www.documents.hps.scot.nhs.uk/environmental/guidance-notes/lice.pdf">http://www.documents.hps.scot.nhs.uk/environmental/guidance-notes/lice.pdf</a></p> <p>HPA Guidance <a href="http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947351577">http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947351577</a></p> <p>A contact time of 12 hours, or overnight, is recommended for lotions and liquids.</p>
Scabies  Treat whole body including scalp, face, neck, ears, under nails  Treat all household contacts	<i>Sarcoptes scabiei</i>	<p>Permethrin 5% cream, apply to the whole body from the neck down, taking care to treat the webs of fingers and toes and under the nails. Wash off after 8 – 12 hours. Re-apply after 7 days. Re-apply to hands if washed within 8 hours of application.</p>	<p>Malathion 0.5% aqueous solution, apply to the whole body from the neck down taking care to treat the webs of fingers and toes and under the nails. Wash off after 24 hours. Re-apply after 7 days. Re-apply to hands if hands washed within 24 hours of application.</p>	<p>Aqueous solution is preferable to alcoholic.</p> <p>Manufacturers recommend that some patient groups do not require treatment above the neck but BNF, HPA and CKS all recommend to include scalp, face, neck and ears in all patients.</p> <p>Treat all household contacts simultaneously.</p>

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

8 Skin				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Onychomycosis	<i>Trichophyton rubrum</i> , <i>Trichophyton mentagrophytes</i> var. <i>interdigital</i> , <i>Candida spp.</i> , <i>Aspergillus</i> , <i>Fusarium</i> , <i>Scopulariopsis</i> , <i>Acremonium</i>	Terbinafine 250mg oral once daily for 6 to 12 weeks for finger nails and for 3-6 months for toe nails	Itraconazole 200mg oral capsules once daily for 3 months or 200mg twice daily for 7 days and repeated after 21 days for 3 cycles for toe nails, or two cycles for finger nails	Take nail clippings and only start treatment if infection is confirmed. Idiosyncratic liver reactions occur rarely with terbinafine. It is more effective than the azoles. Itraconazole is also effective against yeasts. In non-dermatophyte moulds use itraconazole.
Acute paronychia	<i>Staphylococcus aureus</i>	Flucloxacillin 500mg oral four times daily for 7 days	Erythromycin 500mg four times daily for 7 days in penicillin allergy	Antibiotics should be considered if fever or cellulitis or other co-morbidities (e.g. diabetes). Advise warm soaks and analgesia. If no response to treatment or if infection is recurrent or chronic, the choice of antibiotic should be guided by sensitivities (CKS).
Pityriasis versicolor	<i>Malassezia furfur</i>	Ketoconazole 2% shampoo applied once daily for a maximum of 5 days (leave preparation on for 3-5 mins before rinsing)	Selenium sulphide 2.5% shampoo (unlicensed indication) used as a lotion (diluted with water to reduce irritation) and left on for at least 30 mins or overnight, 2-7 times over 14 days and the course repeated if necessary	If topical therapy fails, or if the infection is widespread, treat systemically with itraconazole 200mg once daily for 7 days. Relapse is common, especially in the immunocompromised. NB oral terbinafine is NOT effective. Selenium sulphide is not suitable for children under 5 years.
Intertrigo	<i>Candida spp.</i>	Clotrimazole 1% cream applied 2-3 times daily continuing for at least 14 days after apparent healing		

**NHS Grampian Staff Prescribing Guidance for the Empirical Treatment of Infection in Primary Care**

8 Skin				
INFECTION	Likely organisms	1 <sup>st</sup> Choice Treatment	Alternative treatment	Comments / notes / references
Dermatophytes (ring worm)  Systemic therapy is appropriate if topical therapy fails, if many areas affected or if the site of infection is difficult to treat	<i>Tinea capitis- Trichophyton tonsutans</i> <i>Microsporum spp</i> <i>Trichophyton verucosum</i>	Griseofulvin 1g oral once daily or in divided doses for 8 -10 weeks. May need up to 12 weeks in <i>M. canis</i> and <i>T. tonsurans</i> infections.	Terbinafine 250mg oral daily (unlicensed indication) for 4 weeks (see cBNF for weight based regimen in children)	Topical treatment (ketoconazole shampoo) should be used in addition to reduce transmission. If intractable consider itraconazole. Discuss scalp infections with specialist. HPA guidance <a href="http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947321499">http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947321499</a>
	<i>Tinea corporis, cruris &amp; pedis - Epidermophyton floccosum</i> <i>Trichophyton rubrum</i> <i>Trichophyton mentagrophytes</i>	Clotrimazole 1% cream or 1% topical solution applied 2-3 times daily, continue for 14 days after lesions have healed	Terbinafine 1% cream applied 1-2 times daily for up to 7 days in tinea pedis or 1-2 weeks in tinea corporis and cruris (not licensed in children < 12 yrs)	Take skin scrapings for culture if not localised.

**Consultation List**

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**References**

- Management of Infection Guidance for Primary Care for Consultation and Local Adaptation. Health Protection Agency. July 2009.  
[http://www.hpa.org.uk/web/HPAwebFile/HPAweb\\_C/1194947340160](http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947340160)
- British National Formulary accessed online at <http://www.bnf.org> and [www.bnfc.org](http://www.bnfc.org)
- NHS Grampian Hospital Antimicrobial Empirical Therapy Guidelines March 2009.
- Summary of Product Characteristics ([www.medicines.org.uk](http://www.medicines.org.uk))
- Clinical Knowledge Summaries (<http://www.cks.nhs.uk/home>)
- NICE guidelines [accessed online <http://www.nice.org.uk/>]
- SIGN guidelines [accessed online <http://www.sign.ac.uk/>.]
- BASHH guidelines [accessed online <http://www.bashh.org/guidelines>.]
- GOLD guidelines 2009 [accessed online <http://www.goldcopd.org/>.]
- BTS Guidelines. [Accessed online] <http://www.brit-thoracic.org.uk/Portals/0/Clinical%20Information/Pneumonia/Guidelines/CAPGuideline-full.pdf>
- MHRA guidance on the use of cough and cold medicines in children  
[\[http://www.mhra.gov.uk/Safetyinformation/Safetywarningsalertsandrecalls/Safetywarningsandmesagesformedicines/CON038908\]](http://www.mhra.gov.uk/Safetyinformation/Safetywarningsalertsandrecalls/Safetywarningsandmesagesformedicines/CON038908).
- Other guidelines indicated in the comments section where applicable.

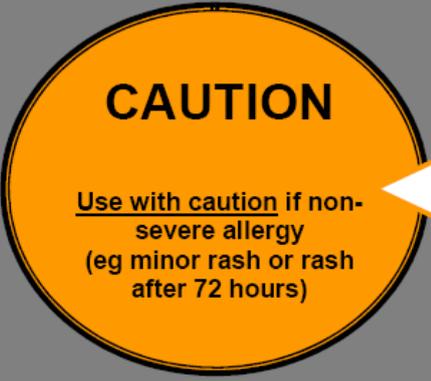
**Appendix 1: NHS Grampian Leaflet Links**

- Cough leaflet
  - <http://intranet.grampian.scot.nhs.uk/foi/files/Coughleaflet.pdf>
- Sore throat leaflet
  - <http://intranet.grampian.scot.nhs.uk/foi/files/Sorethroatleaflet.pdf>
- COPD leaflet
  - <http://intranet.grampian.scot.nhs.uk/foi/files/COPDillustratedleaflet060208.pdf>
- Cystitis leaflet
  - <http://intranet.grampian.scot.nhs.uk/foi/files/Cystitisleaflet190707.pdf>
- Earache leaflet
  - <http://intranet.grampian.scot.nhs.uk/foi/files/Earacheleaflet.pdf>
- Sinusitis
  - <http://intranet.grampian.scot.nhs.uk/foi/files/Sinusitisleaflet.pdf>

**Appendix 2: Penicillin allergy**

This is a hospital policy and many of the agents listed are not suitable for use in primary care. It is included for general guidance only

**Penicillin Allergy**  
 All drug-allergies must be specified on medication charts (with the patient's reaction)  
 In TRUE penicillin allergy\* ALL penicillins, cephalosporins and other beta-lactam antibiotics should be avoided

 <p><b>CONTRA-INDICATED</b></p>	<p>Antibiotics to be <u>avoided</u> in penicillin allergy</p> <p>Amoxicillin                  Benzylpenicillin                  Co-amoxiclav (Augmentin®)                  Flucloxacillin                  Penicillin V                  Piperacillin / Tazobactam (Tazocin®)</p>																								
 <p><b>CAUTION</b></p> <p>Use with caution if non-severe allergy (eg minor rash or rash after 72 hours)</p>	<p>Antibiotics to be <u>used with caution</u> in non-severe penicillin allergy</p> <p><u>Cephalosporins</u> :                  Cefixime, Cefotaxime, Ceftazidime, Ceftriaxone, Cefuroxime, cefradine, cefalexin</p> <p><u>Other beta-lactam antibiotics</u>                  Aztreonam, Ertapenem, Imipenem, Meropenem</p>																								
 <p><b>CONSIDERED SAFE</b></p>	<p>Antibiotics safe in penicillin allergy (not an exhaustive list)</p> <table border="0"> <tr> <td>Amikacin</td> <td>Linezolid</td> </tr> <tr> <td>Azithromycin</td> <td>Metronidazole</td> </tr> <tr> <td>Ciprofloxacin</td> <td>Nitrofurantoin</td> </tr> <tr> <td>Clarithromycin</td> <td>Ofloxacin</td> </tr> <tr> <td>Clindamycin</td> <td>Rifampicin</td> </tr> <tr> <td>Colistin</td> <td>Sodium Fusidate</td> </tr> <tr> <td>Co-trimoxazole</td> <td>Teicoplanin</td> </tr> <tr> <td>Daptomycin</td> <td>Tetracycline</td> </tr> <tr> <td>Doxycycline</td> <td>Tigecycline</td> </tr> <tr> <td>Erythromycin</td> <td>Trimethoprim</td> </tr> <tr> <td>Gentamicin</td> <td>Vancomycin</td> </tr> <tr> <td>Levofloxacin</td> <td></td> </tr> </table>	Amikacin	Linezolid	Azithromycin	Metronidazole	Ciprofloxacin	Nitrofurantoin	Clarithromycin	Ofloxacin	Clindamycin	Rifampicin	Colistin	Sodium Fusidate	Co-trimoxazole	Teicoplanin	Daptomycin	Tetracycline	Doxycycline	Tigecycline	Erythromycin	Trimethoprim	Gentamicin	Vancomycin	Levofloxacin	
Amikacin	Linezolid																								
Azithromycin	Metronidazole																								
Ciprofloxacin	Nitrofurantoin																								
Clarithromycin	Ofloxacin																								
Clindamycin	Rifampicin																								
Colistin	Sodium Fusidate																								
Co-trimoxazole	Teicoplanin																								
Daptomycin	Tetracycline																								
Doxycycline	Tigecycline																								
Erythromycin	Trimethoprim																								
Gentamicin	Vancomycin																								
Levofloxacin																									

\*TRUE penicillin allergy includes anaphylaxis, urticaria or rash immediately after penicillin administration. In cases of INTOLERANCE to penicillins (eg gastrointestinal upset) or a rash occurring >72 hours after administration, penicillins/ related antibiotics should not be withheld unnecessarily in severe infection but the patient must be monitored closely after administration.

The full guidance on antibiotic choice for patients with penicillin hypersensitivity is available at [www.nhsgrampian/gjf](http://www.nhsgrampian/gjf) - Chapter 5 Infections

NHS Grampian Antimicrobial Management Team (with thanks to NHS Tayside) May 2009 Review: May 2011

# SUMMARY GUIDE TO TREATMENT OF COMMON INFECTIONS IN PRIMARY CARE

**Note: Doses are oral and for adults unless otherwise stated, and apply to normal renal and hepatic function.**

For information on the use of antibiotics in pregnant or breastfeeding women, or in patients with renal or hepatic impairment please refer to BNF (information in individual drug monographs)

For paediatric doses, see page 2, or consult [BNF for children](#) or Summary of Product Characteristics ([www.medicines.org.uk](http://www.medicines.org.uk)).

**Aim:** To provide guidance for the treatment of common infections within Primary Care as detailed in the Grampian Joint Formulary, taking into account the bacterial susceptibility patterns in Grampian. The aim is to minimise the emergence of bacterial resistance and healthcare associated infection in the community and to encourage the rational and cost-effective use of antibiotics.

## Principles of Treatment

1. Prescribe an antibiotic only when there is likely to be a clear clinical benefit.
2. It is important to use the correct dose and appropriate course length.
3. Do not prescribe an antibiotic for viral sore throat, simple coughs and colds.
4. Consider delayed prescriptions for acute sinusitis and otitis media if symptoms suggest that an antibiotic may be indicated.
5. Limit prescribing for telephone consultations to exceptional cases.
6. 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.
7. Where a 'best guess' therapy has failed or special circumstances exist, microbiological advice can be obtained from the on call microbiologist via ARI switchboard (0845 456 6000).
8. Consider the use of ABLE.

INDICATION	COMMENTS	FIRST-CHOICE TREATMENT	ALTERNATIVE TREATMENT	DURATION
<b>URINARY TRACT INFECTIONS</b>				
<b>Note:</b> Amoxicillin resistance is common, therefore ONLY use if culture confirms susceptibility. In the elderly (>65 years), do not treat asymptomatic bacteriuria; it occurs in 25% of women and 10% of men and is not associated with increased morbidity. In the presence of a catheter, antibiotics will not eradicate bacteriuria; only treat if systemically unwell or pyelonephritis likely.				
<b>Uncomplicated UTI</b> (i.e. no fever or flank pain)	Increasing incidence of multi-resistant <i>E. coli</i> with extended-spectrum beta-lactamase (ESBL) enzymes, so perform culture in all treatment failures.	Trimethoprim 200 mg 2 x daily	Nitrofurantoin 50mg 4 x daily OR 100 mg m/r 2 x daily	3 days (7 days for men)
<b>UTI in pregnancy</b>	Send MSU for culture. Short-term use of nitrofurantoin in pregnancy is unlikely to cause problems to the foetus. Avoid trimethoprim if low folate status or taking folate antagonist (e.g. antiepileptic or proguanil).	Trimethoprim (avoid in first trimester) 200 mg 2 x daily	Nitrofurantoin (avoid in third trimester) 50mg 4 x daily OR 100 mg m/r 2 x daily	7 days
<b>Pyelonephritis</b>	Send MSU for culture. RCT shows 14 days co-trimoxazole is as good as 7 days ciprofloxacin. Admit if no response in 24hrs. For serious, or potentially life threatening, infection consider ciprofloxacin (500mg twice daily) and review after 24 hours when micro results available.	Trimethoprim (if susceptible) 200 mg 2 x daily.	Co-trimoxazole 960mg 2 x daily [unlicensed – see general notes in main guidance].	14 days
<b>LOWER RESPIRATORY TRACT INFECTIONS</b>				
<b>Note:</b> Low doses of penicillins are more likely to select out resistance. The quinolones; ciprofloxacin and ofloxacin, have poor activity against pneumococci but they can be used to treat PROVEN sensitive pseudomonal infections.				
<b>Acute cough, bronchitis</b>	<b>Antibiotics have only marginal benefits in otherwise healthy adults.</b> Patient leaflets can reduce antibiotic use.	No antibiotic recommended.		
<b>Acute exacerbation of COPD</b>	<b>30% viral, 30-50% bacterial, rest undetermined.</b> Use antibiotics if increased sputum purulence plus either increased sputum volume or dyspnoea. Consider sputum sample for culture with delayed prescription	Amoxicillin 500 mg 3 x daily	Erythromycin 500 mg 4 x daily OR *Doxycycline 200mg stat then 100mg daily	5 days
<b>Community-acquired pneumonia</b>	<b>Start antibiotics immediately.</b> If no response in 48 hours consider admission.	Amoxicillin 500 mg 3 x daily <a href="#">See BNFC for children's doses</a>	Erythromycin 500 mg 4 x daily OR *Doxycycline 200mg stat then 100mg daily	7 - 10 days
<b>UPPER RESPIRATORY TRACT INFECTIONS: Consider delayed antibiotic prescriptions.</b>				
<b>Pharyngitis / sore throat / tonsillitis</b>	<b>The majority of sore throats are viral; most patients do not benefit from antibiotics.</b> Consider a delayed antibiotic strategy and explain soreness will take about 8 days to resolve. Patients with 3 of 4 centor criteria (history of fever, purulent tonsils, cervical adenopathy, and absence of cough) or history of otitis media may benefit more from antibiotics. Antibiotics only shorten duration of symptoms by 8 hours. You need to treat 30 children or 145 adults to prevent one case of otitis media.			
Consider no or delayed prescription	Evidence indicates that penicillin for 7 days is more effective than 3 days.	Phenoxymethylpenicillin 500 mg 4 x daily	Erythromycin 500mg 4 x daily	7 - 10 days
<b>Otitis media</b> (childrens doses – see BNF for adult doses)	<b>Many are viral. Illness resolves over 4 days in 80% without antibiotics.</b> Use NSAID or paracetamol. Need to treat 20 children >2y and seven 6-24mth old to get pain relief in one at 2-7 days. Antibiotics do not reduce pain in first 24 hours, subsequent attacks or deafness. Children with otorrhoea, or <2years with bilateral acute otitis media, have greater benefit but are still eligible for delayed prescribing. Haemophilus is an extracellular pathogen, thus macrolides, which concentrate intracellularly, are less effective treatment. <b>Consider delayed prescription.</b>	Amoxicillin 40 mg/kg/day in 3 divided doses Max. 1g 3 x daily	Erythromycin <2 yrs: 125 mg 4 x daily  2-8 yrs: 250 mg 4 x daily  >8 yrs: 250-500 mg 4 x daily	5 days
Consider no or delayed prescription				
<b>Acute sinusitis</b>	<b>Many are viral. Symptomatic benefit of antibiotics is small</b> - 69% resolve in 7-10 days without antibiotics; and 84% resolve with antibiotics. Reserve for severe or symptoms >10 days.	Amoxicillin 500 mg 3 x daily	Erythromycin 500mg 4 x daily OR *Doxycycline 200 mg stat then 100mg daily	7 days
Consider no or delayed prescription				

# SUMMARY GUIDE TO TREATMENT OF COMMON INFECTIONS IN PRIMARY CARE

Prescribers are reminded that any treatment choices should be patient specific. If the treatment choices listed in the table are unsuitable for the patient, please refer to the full guideline which refers to national guidelines which will list alternative treatments.

INDICATION	COMMENTS	FIRST-CHOICE TREATMENT	ALTERNATIVE TREATMENT	DURATION
<b>SKIN/SOFT TISSUE INFECTIONS</b>				
<b>Impetigo</b>	Systematic review indicates topical and oral treatment produces similar results As resistance is increasing reserve topical antibiotics for very localised lesions.	<b>If localised:</b> Fusidic acid 2% cream topically 3-4 x daily <b>OR</b> if MRSA Mupirocin 2% topically 3 x daily	<b>If widespread:</b> Flucloxacillin 500mg 4 x daily <b>OR</b> Erythromycin 500mg 4 x daily	5 days for topical  7 days oral
<b>Eczema</b>	Using antibiotics, or adding them to steroids, in eczema encourages resistance and does not improve healing unless there are visible signs of infection. In infected eczema, use treatment as for impetigo.			
<b>Cellulitis</b>	If patient afebrile and healthy other than cellulitis flucloxacillin alone may be used. If water exposure or face involved, discuss with microbiology. If febrile and ill, admit for IV treatment.	Flucloxacillin 500mg 4 x daily	Erythromycin 500mg 4 x daily	7 - 14 days
<b>Leg ulcers</b>	Bacteria will always be present. <b>Antibiotics do not improve healing.</b> Culture swabs and antibiotics are only indicated if there is evidence of clinical cellulitis; increased pain; enlarging ulcer or pyrexia.			
<b>Bites (animal)</b>	Antibiotic prophylaxis advised for - puncture wound; bite involving hand, foot, face, joint, tendon, ligament; immunocompromised, diabetics, elderly, asplenic, and for all human bites.	Amoxicillin 500mg 3 x daily	Doxycycline 100mg 2 x daily (Clarithromycin for children < 12 years <a href="#">see BNFC</a> for doses)	7 days
<b>Bites (human)</b>	Co-amoxiclav doses 1 month - 1 yr 0.25 mL/kg of 125/31 1 - <6 yrs: 125/31 6 - 12 yrs 250/62 - three times daily for 7 days; dose doubled in severe infection	Doxycycline oral 100mg twice daily + (if severe) metronidazole 400mg 3 x daily (Co-amoxiclav <b>alone</b> for children < 12 years <a href="#">see BNFC</a> )	Clarithromycin 500mg 2 x daily + (if severe) metronidazole 400mg 3 x daily	7 days
<b>Purulent Conjunctivitis</b>	<b>Most bacterial infections are self-limiting</b> (64% resolve on placebo). They are usually unilateral with yellow-white mucopurulent discharge. Fusidic acid has less Gram-negative activity.	Chloramphenicol 0.5% drops 2 hourly reducing to 4 x daily <b>AND/OR</b> 1% ointment at night (3-4 x daily if used alone)	Fusidic acid 1% gel 2 x daily	48 hours after resolution
<b>Herpes zoster</b>	If pregnant/immunocompromised seek advice.	Aciclovir 800 mg 5 x daily	Valaciclovir 1g 3 x daily	7 days
<b>GENITAL TRACT INFECTIONS</b>				
<b>Note:</b> If STI diagnosed then refer to GUM Clinic (01224 555486) for partner notification and advice if required.				
<b>Vaginal candidiasis</b>	All topical and oral azoles give 80-95% cure. In pregnancy avoid oral azole	Clotrimazole 500 mg pessary <b>OR</b> 10% 5g vaginal cream	Fluconazole 150 mg orally	Stat (topical treatment at night)
<b>Bacterial vaginosis</b>	Avoid 2g dose in pregnancy and breastfeeding. Topical treatment gives similar cure rates but is more expensive.	Metronidazole 2g as single dose	Metronidazole 400mg 2 x daily	Stat or 7 days
<b>Uncomplicated genital chlamydia infection in men and women</b>	Treat contacts and refer to GUM clinic. In pregnancy or breastfeeding: azithromycin can be used but is 'off label'. Doxycycline contraindicated in pregnancy. Retest within 3 – 12 months.	Azithromycin 1 g single dose 1 hour before or 2 hours after food	*Doxycycline 100mg 2 x daily	Stat or 7 days
<b>Acute bacterial prostatitis</b>	4 weeks treatment may prevent chronicity. Note that bacterial infection (acute and chronic) account for <5% of all prostatitis diagnoses; their precise incidence is unknown. (BASHH guidance) NB IV therapy may be required.	Co-trimoxazole 960mg 2 x daily [unlicensed – see general notes in main guidance]	Trimethoprim 200 mg 2 x daily	28 days
<b>GASTRO-INTESTINAL TRACT INFECTIONS</b>				
<b>Infectious diarrhoea</b>	Antibiotic therapy not usually indicated. Contact microbiology if severe or prolonged illness.			
<b>Clostridium difficile</b>	Stop unnecessary antibiotics and/or PPIs to re-establish normal flora. Review and stop antimotility agents and laxatives. Severe if T >38.5; WCC >15, rising creatinine or signs/symptoms of severe colitis.	1 <sup>st</sup> /2 <sup>nd</sup> episodes Metronidazole 400mg 3 x daily (switch to vancomycin if no response after 5 days)	3 <sup>rd</sup> episode/severe Vancomycin 125mg 4 x daily Refer to hospital	10-14 days
<b>MENINGITIS</b>				
<b>Suspected meningococcal disease</b>	<b>Transfer all patients to hospital immediately.</b> Administer benzylpenicillin prior to admission. ideally IV but IM if a vein cannot be found.	Benzylpenicillin ≥10 yr: 1200 mg 1 - 9 yr: 600 mg <1 yr: 300 mg	Cefotaxime >12 yrs: 1g <12 yrs: 50mg/kg	Single dose
<b>Prevention of secondary case of meningitis:</b> Only prescribe following advice from Public Health Consultant				

**COMMON PAEDIATRIC DOSES - assuming average weight. See [BNF for children](#). Some doses can be doubled in severe infections\*.**

Phenoxymethyl-Penicillin 4 x daily	Amoxicillin* 3 x daily	Erythromycin* 4 x daily	Flucloxacillin* 4 x daily	Trimethoprim 2 x daily	Nitrofurantoin 4 x daily
1mth-1 yr 62.5mg	1mth-1 yr: 62.5mg	1mth-2 yrs 125mg	1mth -2 yrs 62.5mg	6mths-6yrs 50mg	750 micrograms/kg
1-5 yrs 125mg	1-5yrs 125mg	2-8 yrs 250mg	2-10 yrs 125mg	6-12 yrs 100mg	
6-12 yrs 250mg	Over 5yrs 250mg	Over 8 yrs 250-500mg	Over 10 yrs 250mg		

\*NB. Tetracycline (doxycycline) antibiotics should not be used in children under 12 years of age.

Quinolones are not recommended in children and growing adolescents (see [BNFC](#))

Doses of phenoxymethylpenicillin may be increased to ensure at least 12.5mg/kg four times daily in severe infections.

**Appendix 4: Version Control Statements  
Changes from Version 1 (April 2009)**

**General**

1. Clarithromycin removed as a general treatment option throughout the document.
2. Penicillin allergy guideline summary included.

**General Notes Section**

1. Addition of paediatric information and dosing. Explanation of the removal of the 4C antibiotics and detailing of the Government CDI HEAT target. Additional information about co-trimoxazole, guidance summary, aim and treatment principles.

**Section 1: Gastrointestinal**

1. Addition of references.
2. Addition of paediatric information for quinolone antibiotics and dosing for *Giardia* spp.
3. Update length of treatment for *Shigella dysenteriae* type 1 and *Giardia* spp.
4. Inclusion of travellers diarrhoea.
5. Addition of further notes in relation to treatment of *Clostridium difficile*.
6. *Clostridium difficile* associated disease (CDAD) updated to *Clostridium difficile* infection (CDI).
7. Severity markers updated to be more relevant to primary care.
8. Treatment updated as per HPS guidance.
9. Threadworm treatment – second-choice offered to cover those under 2 years. Link to patient information leaflet included.
10. Cholecystitis and diverticulitis treatment advice included.

**Section 2: Respiratory**

1. Influenza advice updated in line with NHS Grampian guidance for use of antivirals in special groups and NICE guidance.
2. Inclusion of consideration for no or delayed prescription for pharyngitis and tonsillitis.
3. Infective exacerbation of COPD, update as per GOLD guidance 2009. Management of severe exacerbation removed. Amoxicillin dose reduced to 500mg three times daily.
4. CAP – doxycycline included as a treatment option for adults. Removal of greater CRB-65 option – refer to secondary care.
5. Indication of unlicensed dose of flucloxacillin for post-influenza CAP.
6. Aspiration pneumonia guidance changed to referral to secondary care.

**Section 3: Central Nervous System**

1. Bacterial meningitis: first choice treatment amended to benzylpenicillin. Children's doses included.

**Section 4: Urinary Tract**

1. Comments included regarding treatment of UTI in children. References to national guideline included.
2. Cefradine removed as empirical treatment option for uncomplicated UTI.
3. Complicated UTI in men removed.
4. Information added regarding where to check the suitability of antibiotic in pregnancy.
5. Treatment options for lower UTI in pregnancy amended from cefradine first-line to trimethoprim. Information included on the safety of both trimethoprim and nitrofurantoin in pregnancy.
6. Pyelonephritis treatment changed from ciprofloxacin first-line to changed to trimethoprim (if susceptible) and co-amoxiclav changed to co-trimoxazole.
7. Consider referral to continence services for catheter UTI.
8. Long term prophylaxis includes children. Further details of definition of recurrent UTI given and links for further information.

**Section 5: Genital System**

1. Order of infections changed to reflect frequency of presentation.
2. Statement for referral to GUM amended to reflect current process.
3. Erythromycin and ofloxacin removed from chlamydia treatment options.
4. Ciprofloxacin removed as second line option for gonorrhoea
5. Further information on the inclusion of metronidazole in PID, and second-line treatment option removed, with referral to GUM added.
6. Famciclovir removed as second-line option in genital herpes.
7. Advice for persistent/recurrent urethritis removed, and referral to GUM added.
8. Option for treatment failure in trichomoniasis removed.
9. Additional information given regarding the treatment of vaginal candidiasis.
10. Clindamycin vaginal cream removed as a treatment option for bacterial vaginosis.
11. Ciprofloxacin removed as a treatment option for epididymitis.

12. Information included about the application of treatment for crab lice.
13. Scabies moved to the skin section.
14. Ciprofloxacin removed as a treatment option for prostatitis. Information included about the expected frequency of bacterial prostatitis.

#### **Section 6: Eye**

1. Additional information included regarding the treatment of blepharitis.
2. Viral conjunctivitis included.
3. Additional information included regarding conjunctivitis – purulent
4. Neonatal chlamydia conjunctivitis included
5. Herpes simplex corneal infection included.
6. Ophthalmic zoster included.

#### **Section 7: Ear, nose and oropharynx**

1. Ciprofloxacin removed as treatment option for *Pseudomonas aeruginosa* otitis externa.
2. Tonsillitis removed and referral made to section 2.
3. Children's doses included for acute otitis media. Information included regarding incidence and additional measures.
4. Co-amoxiclav recommendation for primary treatment failure of acute sinusitis removed.
5. Treatment recommendation removed for chronic sinusitis.
6. Addition of miconazole gel to be used in children, including safety advice.
7. Treatment length for dental abscess changed from 7 days to 5 days.

#### **Section: 8 Skin**

1. Eczema not included in large guide.
2. Penicillin V removed as treatment option for cellulitis. Further information regarding referral included.
3. Treatment length for bites amended to 7 days.
4. Co-amoxiclav removed as treatment option for human bites, except for children.
5. Acne removed.
6. Herpes simplex duration extended to 10 days treatment if needed.
7. Information included for when to treat chickenpox.
8. Famciclovir removed as second-line option in shingles, amended to valaciclovir on cost grounds.
9. Further information and references included for head lice. Discontinued preparations removed.
10. Early Lyme disease removed.

11. Further drug information included in treatment of onychomycosis.
12. Acute paronychia treatment reduced to *Staphylococcus aureus* only. Alternative treatment included along with information regarding when to treat.
13. Systemic therapy option included for pityriasis versicolor. Licensed status of treatment indicated.

#### **Summary Guide**

1. Format changed to include comments and more closely reflect HPA guidance.
2. Changes reflect those detailed above.
3. Influenza, otitis externa, dental infections, complicated UTI in men, catheter UTI, gonorrhoea, epididymitis and threadworms removed.
4. Paediatric dosing table added.