South Staffordshire CCGs,
Microbiology Departments
Burton Hospitals NHS Foundation Trust & Mid-
Stafford NHS Foundation Trust,
Public Health England, West Midlands North Health
Protection Team,
Staffordshire and Stoke on Trent Partnership Trust
(Southern Division)
West Midlands Medicines Information

ANTIMICROBIAL PRESCRIBING GUIDELINES
IN GENERAL PRACTICE - 2013
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GENERAL NOTES

These notes have been prepared jointly by the Consultant Microbiologists of Burton Hospitals Foundation Trust, Mid-Staffordshire Hospitals NHS Foundation Trust and University Hospital of North Staffordshire, the Pharmaceutical Advisers of South Staffordshire CCGs, the Consultant in Communicable Disease Control Public Health England General Practitioners and the Head of Infection Control Nurse for the Staffordshire and Stoke on Trent Partnership Trust.

The guidelines have considered the document produced by The Health Protection Agency entitled “Management of Infection Guidance for Primary Care”.

These guidelines aim to limit the use of broad spectrum antibiotics such as cephalosporins, quinolones and co-amoxiclav as they are more prone to select for resistance and increase the risk of Clostridium Difficile infections.

The recommendations are for guidance only and will be updated as resistance patterns change. The doses quoted are usual adult oral doses unless specified otherwise. For newborns and up to the age of 18, prescribers are referred to the latest edition of the British National Formulary for Children. The recommended duration will be the same as in adults unless stated otherwise.

The guidelines are for empirical therapy. It may be necessary to alter therapy following microbiological investigations if the patient is still symptomatic. However in all cases it is important to remember to treat the patient not the laboratory results.

Generic antibiotics are usually to be preferred to brand name prescriptions on the grounds of cost. However, account will be made of the cost of branded drugs and appropriate adjustment applied to primary care prescribing.

The Standing Medical Advisory Committee have issued recommendations to reduce the incidence of antibiotic resistance:-

- no prescribing of antibiotics for simple coughs and colds
- no prescribing of antibiotics for viral sore throats
- limit prescribing for uncomplicated cystitis to 3 days in otherwise fit women
- limit prescribing of antibiotics over the telephone to exceptional circumstances
- limit the use of cephalosporins and quinolones.

The increasing prevalence of antibiotic resistance is a major cause for concern and has led to the development of national and international strategies that aim to address this problem. To limit the risk of antibiotic-induced diarrhoea prescribers are requested:

- To ask whether the patient has a history of antibiotic-induced diarrhoea
- Not to prescribe antibiotics empirically if the patient is not systemically unwell or if there is suspected food poisoning.
Delayed prescriptions have been shown to be a useful strategy to reduce antibiotic use and reduce re-attendance rates\(^3\).

All practitioners are encouraged to engage in Root Cause Analysis (RCA) of individual incidents such as cases of C difficile or MRSA bacteraemia. A RCA is used after an incident has occurred to uncover the primary causes of the particular incident and the circumstances surrounding it. There are many lessons to be gained from this retrospective process that may prevent similar incidents in the future. The process is not about apportioning blame, valuable learning can be gained and shared and we encourage you to participate in these fully.
LOWER RESPIRATORY TRACT INFECTIONS

Cough & Other Lower Respiratory Tract Infections

After patients with chronic lung disease or clinically suspected pneumonia are excluded, antibiotics provide little or no benefit for patients with cough and lower respiratory tract symptoms, including fever and green sputum. Regardless of treatment method, cough will last about three weeks in most patients and for at least a month in 25%. Patients given an immediate prescription for an antibiotic are more likely to expect antibiotics in the future. Providing a verbal explanation about the expected course and potential complications of cough during the consultation is most likely to assure optimal patient satisfaction.

Acute Bronchitis

Almost always viral.

Routine antibiotic use is not warranted in otherwise healthy patients with cough and purulent sputum.

Antibiotic therapy should be considered in the following groups
  - Reduced resistance to infection.
  - Co-existing illness, diabetes, congestive heart failure, asthma, COPD
  - History of previous persistent mucopurulent cough
  - Clinical deterioration.

First Line
Amoxicillin 500mg three times a day for 5 days

Second Line
Doxycycline 200mg on the first day then 100mg daily for a further 4 days

Pneumonia

The British Thoracic Society defines pneumonia as :-
  - Symptoms of an acute LRT illness (cough and at least one other LRT symptom).
  - New focal chest signs on examination.
  - At least one systemic feature (either a symptom complex of sweating, fevers, shivers, aches and pains and / or temp of 38C or more).
  - No other explanation for the illness which is treated as Community Acquired Pneumonia with antibiotics

First Line
Amoxicillin 500mg three times a day for 7 days

For suspected atypical pneumonia or penicillin allergy:
Clarithromycin 500mg twice a day for 7 days
Acute Exacerbations of COPD

Amoxicillin 500mg three times a day for 5 days or

Doxycycline 200mg on the first day then 100mg daily for a further 4 days or

Clarithromycin 500mg twice a day for 5 days

The colour of purulent sputum may take some time to resolve because of the time taken for inflammation to subside. If the patient continues to be ill, consider a change in antibacterial agent, preferably after bacteriological investigation.

NOTES

1. Erythromycin and clarithromycin are active against *Mycoplasma pneumoniae, Chlamydia pneumonia* and *Legionella pneumophila*, but have doubtful efficacy against *Haemophilus influenzae*. Tetracyclines are active against *Mycoplasma* but not *Legionella*. 
UPPER RESPIRATORY TRACT INFECTIONS
Not giving antibiotic prescriptions for sore throats reduces re-attendance rates\textsuperscript{5,6,7}

Pharyngitis/Sore Throat/Tonsillitis
Most are viral and self limiting. Prescribing an antibiotic may be more appropriate if three or more of the Centor criteria are present\textsuperscript{8} i.e

- Tonsillar exudate
- Fever
- Cervical lymphadenopathy
- Absence of cough

If a decision to prescribe an antibiotic is made then treat with:

**Phenoxymethylpenicillin** Tablets 500mg four times a day for 10 days.

If the patient is allergic to penicillin use:
**Clarithromycin** 500mg twice a day for 5 days.

**Sinusitis**\textsuperscript{3}

Most are viral. Reserve antibiotics for severe or persistent symptoms. Patients should be advised that symptoms can be expected to last around two and a half weeks.

**Amoxicillin** 500mg three times a day for 7 days or

**Doxycycline** 200mg immediately then 100mg for a further 6 days

**Acute Otitis Media**

Reviews considering the use of antibiotics in otitis media suggest either selective use in severe cases or shared decision making with the parent\textsuperscript{9,10,11} Antibiotics seem to be most beneficial in children younger than two years of age with infection in both ears and in children with both AOM and discharge from the ear\textsuperscript{12} Deferred prescriptions and the use of information leaflets have proved to be very successful in reducing the number of prescriptions dispensed\textsuperscript{13}

If bacterial infection is suspected:
**Amoxicillin** 500mg three times a day for five days

Treatment failures: **Co-amoxiclav** 625mg three times a day for five days

If allergic to penicillin
**Clarithromycin** 500mg twice a day for 5 days
Otitis Externa

- Remove or treat any precipitating or aggravating factors.
- Prescribe or recommend an analgesic for symptomatic relief. Paracetamol or ibuprofen are usually sufficient. Codeine can provide additional analgesia for severe pain.
- Prescribe a topical ear preparation for 7 days. Options include preparations containing:
  1. A non-aminoglycoside antibiotic and a corticosteroid e.g. flumetasone–clioquinol (Locorten–Vioform®) ear drops.
  2. An aminoglycoside antibiotic (contraindicated if the tympanic membrane is perforated), with or without a corticosteroid.

In the event of treatment failure, take a swab and treat according to sensitivity.

If there is sufficient earwax or debris to obstruct topical medication, consider cleaning the external auditory canal (may require referral).

If there is extensive swelling of the auditory canal, consider inserting an ear wick (may require referral).

Provide appropriate self-care advice
GASTRO-INTESTINAL INFECTIONS

Eradication Of Helicobacter Pylori

A seven day course of:

Lansoprazole 30mg twice a day or Omeprazole 20mg twice a day

Plus two of the following

Amoxicillin 1g twice a day
Clarithromycin 500mg twice a day (250mg twice a day if used with metronidazole)
Metronidazole 400mg twice a day

Gastro-Enteritis

Fluid replacement is essential.

For campylobacter, shigella and salmonella gastroenteritis antibiotics are usually not indicated unless patient is immunocompromised or invasive disease. If the patient is systemically unwell seek advice of a microbiologist, if the patient is systemically unwell. Suspected cases of food poisoning should be notified to the Consultant in Communicable Disease Control (CCDC) who will advise on the exclusion of patients in risk groups if necessary.

Clostridium Difficile Infection

Clostridium Difficile infection is a diagnosis in its own right.

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<tr>
<th>S</th>
<th>Suspect that a case may be infective where there is no clear alternative cause for diarrhoea.</th>
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<td>I</td>
<td>Isolate the patient and consult with the infection control team while determining the cause of the diarrhoea.</td>
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<td>G</td>
<td>Gloves and aprons must be used for all contacts with the patient and their environment.</td>
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<tr>
<td>H</td>
<td>Hand washing with soap and water should be carried out before and after each contact with the patient and the patient’s environment.</td>
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<tr>
<td>T</td>
<td>Test the stool for toxin, by sending a specimen immediately</td>
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Diarrhoea - stools type 5-7 on the Bristol Stool Chart.

Review patient within 12 hours and commence treatment immediately. Ensure adequate hydration is maintained.

Refer to hospital if diarrhoea is still present after toxin result reported and any of the following symptoms are present: fever, dehydration, sepsis, severe abdominal pain, abdominal distension or vomiting.
Stop unnecessary antibiotics to re-establish normal flora.

1. Avoid antidiarrhoeal agents.

2. Antibiotics most likely to be associated with CDAD are cephalosporins, clindamycin, quinolones and penicillin derivatives (e.g. co-amoxiclav). However, CDAD can be associated with any antibiotic.

3. Review use of Proton Pump Inhibitors (PPIs). Prescribing of Proton Pump Inhibitors is associated with Clostridium difficile infection.

**Patients with Clostridium difficile should be reviewed daily, at least in the early days of infection**

*Mild or moderate CDI (for definition see below)*;

Metronidazole 400mg three times a day for 10 to 14 days

If no response within three days treat as for severe CDI

**Severe CDI**

Vancomycin 125mg four times a day for 10-14 days.

These patients are ideally managed within hospital. If no response consult with microbiologist

**Mild Clostridium difficile Infection**

- WCC not increased
- <3 stools of types 5-7 on the Bristol Stool Chart per day

**Moderate Clostridium difficile Infection**

- Raised WCC that is <15x10⁹/l
- 3-5 stools of types 5-7 per day

**Severe Clostridium difficile infection**

Any of the following:

- WCC >15x10⁹/l
- An acute rising serum creatinine (i.e. >50% above baseline)
- Temperature of >38.5°C
- Evidence of severe colitis (abdominal or radiological signs)

The number of stools may be a less reliable indicator of severity

For first recurrence, treat as for previous episode. For second or later recurrences, discuss with microbiologist.
URINARY TRACT INFECTION (LOWER)

Uncomplicated Lower UTI in women

- Consider empirical treatment with an antibiotic for otherwise healthy women aged less than 65 years presenting with severe or ≥ 3 symptoms of UTI.
- Explore alternative diagnoses and consider pelvic examination for women with symptoms of vaginal itch or discharge.
- Consider the possibility of upper UTI in patients presenting with symptoms or signs of UTI who have a history of fever or back pain.
- Use dipstick tests to guide treatment decisions in otherwise healthy women under 65 years of age presenting with mild or ≤2 symptoms of UTI.
- Do not treat non-pregnant women (of any age) with asymptomatic bacteriuria with an antibiotic.

Discuss the risks and benefits of empirical treatment with the patient and manage treatment accordingly.

In elderly patients (over 65 years of age), diagnosis should be based on a full clinical assessment, including vital signs

Empirical Treatment

**Trimethoprim** 200mg twice a day for 3 days

or

**Nitrofurantoin** 50mg four times a day for 3 days or 100mg modified release twice daily for 3 days

Avoid nitrofurantoin if eGFR less than 60ml/min/1.73m²

Failure of empirical treatment; send MSU and consider alternative first line treatment.

**Pregnant Women**

Send a MSU before beginning treatment

**Amoxicillin** 500mg twice a day for 7 days or

**Cefalexin** 500mg twice a day for 7 days

**Men**

Treatment as for women but 7 day course and consider review.
**Children**

Prompt treatment is essential\(^7\) After obtaining MSU for culture and sensitivities, start empirical treatment for seven days with antibiotics listed above.

**Recurrent UTIs**

Recurrent UTIs are a common and debilitating problem. Recurrent UTI is defined as 3 or more episodes of urinary tract infection in the last 12 months or 2 or more in the last 6 months.

Generally antibiotic prophylaxis if necessary, should be given to patients after seeking specialist advice or excluding other causes as a short term (< 2-3 months) measure awaiting definitive treatment like surgical correction. Long term prophylaxis with antibiotics leads to development of resistance to the antibiotic used and infection with those organisms. That makes it one more antibiotic less in the choices we may have to treat the infection. In addition administering long term prophylactic antibiotics leads to infection/ colonisation with drug resistant organisms like MRSA, ESBL producing gram negative bacilli and *Clostridium difficile*.

**Prophylactic antibiotics should only be started by a specialist** i.e. such as a urologist after appropriate investigation and intervention. First line: trimethoprim 100mg at night or nitrofurantoin 50mg for a defined period of 3 months. Quinolones and cephalosporins should be avoided due to risk of *C difficile* and resistance, unless contraindication or no other choice.

Alternatives to antibiotics offer an opportunity for patients to self-manage the prevention of recurrent UTIs, which may improve their quality of life.

Women with recurrent UTI can be advised to use cranberry products to reduce the frequency of recurrence.

Cranberry products (juice, tablets, capsules) are not regulated and the concentration of active ingredients is not known. Concentrations may also fluctuate between batches of the same product.

There is no evidence to support the effectiveness of cranberry products for treating symptomatic episodes of UTI.

Advise patients taking warfarin to avoid taking cranberry products unless the health benefits are considered to outweigh any risks. Consider increased medical supervision and INR monitoring for any patient taking warfarin with a regular intake of cranberry products.

**Methenamine hippurate** may be recommended by a specialist. It is effective at preventing UTI in patients without known upper renal tract abnormalities. Adverse events caused by methenamine are rare.
Cautions: Avoid concurrent administration with sulfonamides (risk of crystalluria) or urinary alkalinising agents; (Please refer to BNF for detailed interactions)

Contra-indications: Severe dehydration, gout, metabolic acidosis, Avoid in Hepatic impairment

Renal impairment: Avoid if eGFR less than 10 mL/minute/1.73 m²—risk of hippurate crystalluria.

Dose: 1 g every 12 hours (may be increased in patients with catheters to 1 g every 8 hours)

Antibiotic prophylaxis to prevent catheter-related UTI

- Do not routinely prescribe antibiotic prophylaxis to prevent symptomatic UTI in patients with catheters.
- Prophylactic antibiotics are not routinely required when changing catheters in patients at increased risk of endocarditis such as those with a heart valve lesion, septal defect, patent ductus, or prosthetic valve¹⁹
- Routine use of antimicrobial prophylaxis during catheter change should be avoided.
- Only consider antibiotic prophylaxis in patients for whom the number of infections are of such frequency or severity that they chronically impinge on function and well-being. Cranberry products or Methenamine hippurate can be used as first line if prophylaxis is indicated.
- When changing catheters, antibiotic prophylaxis should only be used for people with a history of catheter-associated urinary tract infection following catheter change.
- Dip-sticking is not recommended for catheterised patients

Multi-resistant Gram-negative Organisms

Contact the Consultant Microbiologist if the multi-resistant organism found in urine culture is resistant to nitrofurantoin, or nitrofurantoin is otherwise inappropriate.

Note that treatment can treat infection, but not colonisation. In patients residing in community hospital follow Trust flow chart or contact the Community Infection Control Nurses for advice specific to the patient.

NOTES

1. Asymptomatic bacteruria in pregnancy and children should be treated, but not in the elderly.
2. Do not use nitrofurantoin in upper urinary tract infection or renal impairment.
**Acute Prostatitis**

Diagnosis should be made on urine culture. Prostatic massage should not be performed as this would be painful, might result in bacteraemia, and would be unlikely to add to information provided by the urine culture.

General measures include:
- Ample hydration
- Rest
- Stool softener
- Analgesia

Empirical antibiotic therapy should be started immediately after collecting urine for culture, because acute prostatitis is a serious and severe illness. The initial antibacterial choice should be reassessed when the urine culture results are available.

1st Line  
**Ciprofloxacin** 500mg twice a day for 28 days

2nd Line  
**Trimethoprim** 200mg twice a day for 28 days

**Chronic Prostatitis**

The hallmark of chronic bacterial prostatitis is bacterial persistence in repeated urine cultures yielding the same organism. Chronic bacterial prostatitis is very difficult to cure because few antibiotics penetrate well into the non-inflamed prostate. Only trimethoprim and quinolones diffuse into prostatic fluid in high concentration. Antibiotic regimens:

1st Choice  
**Ciprofloxacin** 500mg twice a day for 6 to 12 weeks

2nd Choice  
**Trimethoprim** 200mg twice a day for 6 to 12 weeks

**Epididymo-orchitis - if not chlamydia or gonococcal**

1st choice  
**Ciprofloxacin** 500mg twice a day for 14 days.

If ciprofloxacin contra-indicated  
**Trimethoprim** 200mg twice a day for 14 days
MENINGITIS AND MENINGOCOCCAL DISEASE

Meningococcal Disease Treatment

NICE recommends that children and young people with suspected bacterial meningitis without non-blanching rash should be transferred directly to secondary care without giving parenteral antibiotics. If urgent transfer to hospital is not possible (for example, in remote locations or adverse weather conditions), antibiotics should be administered to children and young people with suspected bacterial meningitis.

For suspected meningococcal disease (meningitis with non-blanching rash or meningococcal septicaemia) parenteral antibiotics (intramuscular or intravenous benzylpenicillin) should be given at the earliest opportunity, either in primary or secondary care, but urgent transfer to hospital should not be delayed in order to give the parenteral antibiotics.

Immediate dose of iv/im benzylpenicillin (parenteral antibiotic) for suspected meningococcal infections

Adults and children aged 10 years or over 1.2g
Children aged 1 to 9 years 600 mg
Children aged under 1 year 300 mg

Meningococcal Disease Prophylaxis

Please notify all suspected meningococcal disease cases to the Health Protection Team without waiting for microbiological confirmation. The team will undertake contact tracing and provide advice on chemoprophylaxis of contacts of the case both in and out of hours.

Choice of agent for chemoprophylaxis

The use of single dose ciprofloxacin is now recommended in all age groups and in pregnancy. Ciprofloxacin has a number of advantages over rifampicin because it is given as a single dose, does not interact with oral contraceptives, and is more readily available in community pharmacies. It is contraindicated in cases of known ciprofloxacin hypersensitivity.

Ciprofloxacin Dosage:
Adults and children over 12 years 500 mg stat
Children aged 5–12 years 250 mg stat
Children 1 month–4 years 125 mg stat

Ciprofloxacin 250mg in 5ml syrup is stocked in the acute and community hospitals

2nd line Rifampicin

Rifampicin is contraindicated in the presence of jaundice or known hypersensitivity to rifampicin. Interactions with other drugs, such as
anticoagulants, phenytoin, and hormonal contraceptives should be considered
and appropriate advice taken. Side effects should be explained including staining
of urine and contact lenses. Written information for patients should be supplied
with the prescription. This is the responsibility of the prescriber.

**Rifampicin** Dosage

Adults and children over 12 years of age 600 mg
Children aged 1–12 years 10 mg/kg
Infants (under 12 months of age) 5 mg/kg

Suitable doses in children based on average weight for age are:
0–2 months 20 mg (1 ml of rifampicin 100mg in 5ml))
3–11 months 40 mg (2 ml of rifampicin 100mg in 5ml)
1–2 years 100 mg (5 ml of rifampicin syrup 100mg in 5ml)
3–4 years 150 mg (7.5 ml of rifampicin syrup in 5ml)
5–6 years 200 mg (10 ml of rifampicin syrup 100mg in 5ml)
7–12 years 300 mg (as capsule/or syrup)

All to be given twice daily for 2 days
GENITAL TRACT INFECTIONS

Bacterial Vaginosis

Consider whether treatment is appropriate or necessary. Bacterial vaginosis is the most common infective cause of vaginal discharge. A seven day course of oral metronidazole is slightly more effective than 2g stat. Avoid 2g stat dose in pregnancy.

**Metronidazole tablets** 400mg twice a day for seven days or 2g stat as a single dose.

In pregnancy or breast feeding a possible alternative is: **Clindamycin** 2% cream 5g applicator full at night for 7 days.

**NOTES**

1. This is the most common cause of vaginosis and is characterised by offensive vaginal discharge and sometimes vulval itching.
2. Thought to be due to a synergistic infection with *Gardnerella vaginalis* and anaerobic bacteria.
3. High vaginal swab is required to look for the presence of *Candida, Trichomonas* and other pathogens. A cervical or urethral swab should be sent for *Neisseria gonorrhoeae*. Send an endocervical/urethral swab for *Chlamydia trachomatis*.
4. Group B streptococci and anaerobic cocci occur as normal commensal vaginal flora.
5. Note in children:- Group A streptococci and *H. influenzae* may cause vaginal infection.

Vaginal Candidiasis

**Clotrimazole pessary** 500mg stat plus **clotrimazole** 2% cream if co-existing vulvitis

**NOTES**

1. Fluconazole 150mg orally stat is an alternative, avoid in pregnancy.
2. Clotrimazole and fluconazole are available OTC.
3. Recurrent infections may be prevented by a variety of measures. These include barrier contraception, antifungal cream and attention to hygiene rather than by repeated courses of oral medication.
4. Remember that Candida can be found in small numbers as normal flora.
**Trichomoniasis**

**Metronidazole** 400mg twice a day for 7 days or 2g as a single dose. Treat partners simultaneously. Refer to GUM for contact tracing.

In pregnancy:
Avoid short, high dose metronidazole regime or use clotrimazole pessary 100mg at night for 6 days for symptomatic relief and treat postnatally.

**Pelvic Inflammatory Disease**

**Metronidazole** 400mg twice a day for 14 days plus **ofloxacin** 400mg twice a day for 14 days or

**Ceftriaxone** 500mg single dose followed by
**Doxycycline** 100mg twice a day plus **Metronidazole** 400mg twice a day for 14 days or

**NOTES**

1. Test for *C. trachomatis* (standard Chlamydia swab) and *N. gonorrhoeae*. (cervical swabs in transport media). Microbiological and clinical cure are greater with ofloxacin than with doxycycline.
2. Refer to GUM or gynaecological outpatients as appropriate. Refer contacts to GUM as appropriate.
3. Avoid alcohol with metronidazole.
4. Ofloxacin should be avoided in patients who are at high risk of gonococcal PID because of increasing quinolone resistance in the UK

**Chlamydia trachomatis**

Refer to GUM clinic for contact tracing. If treating:

**Azithromycin** 1g stat
or
**Doxycycline** 100mg twice a day for 7 days

Azithromycin is appropriate for pregnant women. Alternatives are

- **Clarithromycin** 500mg twice a day for 7 days
- **Amoxicillin** 500mg three times a day for seven days.
SKIN AND SOFT TISSUE INFECTIONS

Acne
Mild acne should be treated with topical preparations. Systemic treatment with oral antibiotics is generally used for moderate to severe acne or where topical preparations are not tolerated, are ineffective or where application to the site is difficult.

**Oxytetracycline** 500mg twice a day for 2-3 months, then 250mg twice a day until improvement occurs or
**Doxycycline** 100mg daily

**NOTES**
1. Avoid in children and pregnancy.
2. Do not take with meals, milk, antacids or iron containing dietary supplements.

Cellulitis

First Line
**Flucloxacillin** 500mg four times a day for 7 days

Facial Cellulitis

**Flucloxacillin** tablets 500mg three times a day for 7 days.

Penicillin allergy:
**Clarithromycin** tablets 500mg twice a day for 7 days

Chronic Wounds Including Leg Ulcers and Pressure Sores

Bacteria will always be present. **Antibiotics do not improve healing**. Culture swabs and antibiotics are only indicated if patient is diabetic or there is evidence of clinical infection (inflammation/redness/cellulitis, increased pain, purulent exudates, wound extension, rapid deterioration of ulcer or pyrexia).

Refer for specialist opinion if severe infection.

Diabetic Foot Infection

Foot infections occur frequently in patients with diabetes and often lead to more serious events such as admission to hospital, amputation and less frequently mortality.

Initial therapy for infections should be empirical as culture results will not be available. Antibiotic therapy for mild infections in patients who have not recently received antibiotic therapy can often be directed at just staphylococci and
streptococci. Empiric therapy for infections that are chronic, moderate or severe, or that occur in patients who have failed previous antibiotic treatment, should usually be broader spectrum. A flow chart for the treatment of diabetic foot infections can be found at the end of this guidance. For more detailed advice, please refer to the Staffordshire and Stoke on Trent Partnership Diabetic Foot Pathway and Management Guidance. Please note that longer course duration and higher doses are often indicated due to underlying perfusion impairment and immuno-suppression. Review antibiotic therapy in line with clinical response and microbiology antibiotic sensitivity information. Treat the patient not the swab. Consult your local microbiology department for case-specific advice.

**Impetigo**

Oral therapy is preferred

- **Flucloxacillin** capsules 500mg four times a day for 5 days.
- Or
- **Clarithromycin** tablets 500mg twice a day for 5 days

**MRSA**

Meticillin resistant *Staphylococcus aureus* (MRSA) causes infection or colonization in the same way as meticillin sensitive S. aureus (MSSA)

**Treatment of Infection**

Antibiotic treatment should only be used on wounds with cellulitis and/or signs of systemic infection. Refer to microbiologist to discuss sensitivities and treatment. Consider discussion/referral to tissue viability specialist.

**Colonisation**

Colonisation may require decolonisation treatment, this is an individual risk assessment for each patient. The infection prevention and control nurses can support the risk assessment if required.

Patients who may benefit from decolonisation therapy;

- Patients who are booked for elective surgery,
- Patients who have frequent admission to hospital
- The hospital has requested decolonisation prior to treatment.
- Patients who are known to have MRSA colonisation and have a planned change of device such as a supra pubic catheter (One course of decolonisation may not eradicate the MRSA, but may help reduce the burden of MRSA at the time of the device insertion, commence decolonisation 5 days before planned insertion)
- Patients who have MRSA colonisation and chronic wounds or pressure ulcers that are not healing

Where patients are found to be MRSA positive and require clearance before being admitted for elective surgery please follow the protocol on treatment and screening regimens from the hospital.
Advice on decolonisation should be sought from the Infection, Prevention and Control nurses. Decolonisation requires nasal mupirocin \((Bactroban)\) applied to the anterior nares three times per day for 5 days plus skin and hair washes which contain chlorhexidine or triclosan for a total of 5 days. Patients with fragile skin can be treated with Skinsan (triclosan 1% skin cleanser)

If the MRSA is resistant to mupirocin (rare), Naseptin four times a day for a total of 10 days should be used instead of the nasal mupirocin \((Bactroban)\).

Instructions for use;
Wet skin; apply approximately 30 mls of solution directly on to the skin using the hands or a disposable cloth.
Don not dilute in the bath or bowl of water.
Use the antiseptic like liquid soap and shampoo. Wash from head to toe. The skin should be rubbed vigorously paying special attention to the following areas;
- Around the nostrils
- Under the arms
- Between the legs
The antiseptic should remain in in contact with the skin for at least one minute and then thoroughly rinsed off.
Dry the skin and use a clean towel each time the treatment is carried out.
Change clothing and bedding daily after body wash.
After 5 days of topical treatment, re screen after 48 hours only for patients requiring hospital admissions.
Decolonisation should not be attempted more than twice within the same episode.

MRSA is not a contraindication to the transfer of a patient to a care home. MRSA carriers do not require special treatment. Patients receiving topical treatment should complete their course but there is no need for routine follow up swabs.

**PVL-toxin positive S.aureus (PVL-SA)**

Skin or soft tissue infection (SSTI) caused by \(S\) aureus strains that produce Panton- Valentine Leucocidin (PVL) toxin tend to be more severe, have a higher risk of recurrence, and often spread within the household or to other close contacts. PVL may be produced by MSSA as well as by Community-Associated MRSA (CA-MRSA). Small boils may heal spontaneously. If cellulitus or a larger infection is present, drainage and/or antibiotic treatment may be helpful.

Practitioners should suspect PVL-SA in case of;
1. Recurrent SSTI
2. SSTI affecting >1 member of the household
3. Unusually large spontaneous skin infection
4. Spontaneous abscess requiring admission to hospital

In the above situations, the practitioner should submit appropriate samples from infected lesions, and provide relevant clinical information and request testing for PVL \(S\).aureus.
**Once PVL-SA has been confirmed**

Enquire about SSTI in the household. If transmission within the household is suspected or confirmed, or if SSTI is recurrent, notify to and obtain advice from the local Public Health England team and provide a PVL leaflet to the household.

Inform the PHE also when:

- There is a healthcare worker in the household of the patient with PVL-SA
- A case of PVL-related infection has occurred in care home or residential facility, prison or barrack, or is associated with a sport/fitness centre
- There is suspicion of spread of PVL-associated infection in families, nurseries, schools and sports facilities

In attempt to prevent further recurrence, simultaneous decolonisation of all household members is likely to be successful only if;

1. All current SSTI in the household have healed/ dried up
2. any underlying chronic skin condition (e.g. eczema) has been treated. Refer to dermatologist or paediatrician first applicable.
3. household members optimize personal hygiene and decontaminate the home environment during the 5 dys of decolonisation, in order to eradicate any PVL-SA surviving in the environment that could be the source of future re infection.

Guidance on the diagnosis and management of PVL-SA infections in England has been issued by the Health protection Agency in 2008, available at [www.hpa.org.uk](http://www.hpa.org.uk)

**Skin disinfection preparation guidance prior to device insertion and/or management**

2% Chlorhexidine with 70% alcohol wipes for device insertion and skin management during Central line and long line treatments
2% Chlorhexidine with 70% alcohol wipes for peripheral cannulation insertion
2% Chlorhexidine with 70% alcohol wipes prior to blood culture collection
70% alcohol wipes prior to venapuncture procedure
70% alcohol prior to IM and SC injections (except insulin and long term SC injections no skin prep required if skin visibly clean, long term use of alcohol in one area can harden skin)

Please allow enough time for skin to dry before insertion of device or procedure.
Dermatophyte Infections

Body and Groin:

**Terbinafine cream** applied twice a day for two weeks

**Clotrimazole or miconazole**) applied twice a day for four to six weeks

Feet and Toe Clefts (Athletes Foot)

**Clotrimazole 1% cream**

Nails

Treatment should not be considered unless patient is distressed by the appearance of the nail. Mycological confirmation of infection should be obtained before commencing treatment.

**Terbinafine:**

**Check LFTs before commencing treatment and after 4-6 weeks of treatment**

Finger nails: 250mg daily for 6 weeks to 3 months.

Toe nails: 250mg daily for up to 6 months.

**NOTES**

1. As no data are available use in children is not recommended.
2. The Summary of Product Characteristics states that cholestasis & hepatitis have been reported rarely and if symptoms of liver dysfunction occur then treatment should be discontinued immediately.
3. Terbinafine is fungicidal and works quicker than imidazole cream.
4. If candida possible infection use imidazole.

Infected Eczema

Children with atopic eczema and their parents or carers should be offered information on how to recognise the symptoms and signs of bacterial infection with staphylococcus and/or streptococcus (weeping, pustules, crusts, atopic eczema failing to respond to therapy, rapidly worsening atopic eczema, fever and malaise).

Diagnosis of bacterial infection relies on the visible appearance, not on microbiological examination, because 90% of atopic eczema patches are colonized by Staphylococcus aureus. Avoid topical antibiotics.

**Flucloxacillin** 500mg four times a day for five days

If penicillin allergic:

**Clarithromycin** 500mg twice a day for five days
Microbiological investigations to ascertain sensitivities are useful if visible infection fails to respond to a first-line antibiotic. Swab severely infected eczema before treating, to reduce delay in switching to an appropriate antibiotic.

The typical appearance of impetigo (crusted lesions that may be yellow) may be difficult to distinguish from eczema. It is common practice, therefore, to assume that severe eczema that unexpectedly deteriorates may have become infected, and to treat it with an oral antibiotic.

Herpes simplex complicating atopic eczema (eczema herpeticum) may be misdiagnosed as a *S.aureus* infection. The presence of punched-out erosions, vesicles, or infected skin lesions that fail to respond to oral antibiotics should raise suspicion of a herpes simplex infection.

Topical antimicrobial/corticosteroid combinations have been shown to be no more effective than topical corticosteroid alone in treating either visibly infected or uninfected flare-ups(24)

**Bites**

Irrigate thoroughly with Sodium Chloride 0.9%

Antibiotics are recommended for:

- Hand, foot or facial bites
- Puncture wounds due to bite
- Wounds involving joints, tendons, ligaments or suspected fractures
- Wounds that have undergone primary closure
- People who have a prosthetic heart valve or joint, diabetes or cirrhosis or who are asplenic or immunosuppressed
- When the wound is clinically infected

**Co-amoxiclav** 625mg three times a day for 7 days

If penicillin allergic:

**Doxycycline** 100mg twice a day for 7 days AND **metronidazole** 400mg three times a day for 7 days

In pregnancy seek advice from the Microbiology Department

**NOTE**

- Prophylactic antibiotics are not usually needed if the wound is more than 2 days old and there are no signs of infection.

Wounds are considered tetanus-prone

- if they are sustained more than 6 hours before surgical treatment
- at any interval after injury and are puncture-type (particularly if contaminated with soil or manure)
- show much devitalised tissue
- are septic
- are compound fractures
- contain foreign bodies.
For all wounds, fully immunised individuals do not require tetanus vaccine. Individuals whose primary immunisation is incomplete or whose boosters are not up to date require a reinforcing dose of a tetanus-containing vaccine, followed by further doses as required to complete the schedule

For tetanus prone wounds, management includes the addition of a dose of tetanus immunoglobulin, given at a different site; in fully immunised patients the immunoglobulin is only required if the infection risk is especially high (e.g. contamination with manure)
VIRAL INFECTIONS

Herpes Simplex Labialis

Topical anti-viral treatments are generally not recommended. They have been shown to reduce time to complete healing by one day and time to loss of pain by 0.6 day. In limited situations, for patients who suffer from recurrent disease and can easily identify the prodrome, clinicians may feel the marginal benefits offered by topical antivirals may be helpful.

Acute Herpes Zoster (Shingles)

Start aciclovir within 72 hours of rash onset for anyone over the age of 50 years with shingles and people of any age with

- Ophthalmic involvement (seek immediate specialist advice or refer immediately)
- Immuno-compromised (seek immediate specialist advice or refer immediately)
- Non-truncal involvement (e.g., shingles affecting neck, limb or perineum)
- Moderate or severe pain
- Moderate or severe rash

For pregnant women, seek specialist advice

Aciclovir 800mg five times a day for 7 days

Chickenpox

For adults and adolescents (aged 14 and over), consider prescribing aciclovir if they present within 24 hours of the onset of the rash (particularly if severe or risk of complications). Aciclovir is not recommended for children with chickenpox.

Aciclovir 800mg five times a day for 7 days.

If the patient presents more than 24 hours from onset of rash then antivirals are not advised. If uncomplicated disease, reassure and review daily or earlier if the patient deteriorates.

If pregnant seek specialist advice

Prophylaxis in Case of Contact with Chickenpox in Pregnancy

Pregnant contacts who report having previously had chickenpox can be reassured and no further action needs to be taken.

Pregnant contacts who do not remember having chickenpox should be tested for immunity. Take 10ml blood (plain clotted) asking for urgent chickenpox immunity (VZV-IgG).

Immune contacts may be reassured. If patient is not immune then advice should be sought from the Health Protection Team or Consultant Microbiologist with regard to obtaining Varicella Zoster immunoglobulin.
Influenza

In the event of a Pandemic Flu situation, please refer to current guidelines.

Vaccination
In accordance with National Guidance vaccination of all patients aged over 65 years and patients in the “At Risk” groups is highly recommended.

The following guidance only applies when it is known that either influenza A or influenza B is circulating in the community. GP practices will receive notification from Public Health England when flu levels rise above the threshold when drug treatment should begin.

The clinical at risk groups are defined in the in the updated chapter on Influenza in the Green book- immunisation against infectious diseases

Treatment
Oseltamivir and zanamivir are recommended to prevent flu if all of the following apply:

- The amount of flu virus going around is enough that if someone has a flu-like illness it is likely it has been caused by the flu virus (see comment above)
- The person is in an at-risk group
- 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)
- The person has not been effectively protected by vaccination

Post Exposure Prophylaxis

Oseltamivir and zanamivir are recommended, within their marketing authorisations, for the post-exposure prophylaxis of influenza if all of the following circumstances apply.

- National surveillance schemes have indicated that influenza virus is circulating.
- The person is in an at-risk group.
- The person has been exposed) to an influenza-like illness and is able to begin prophylaxis within the timescale specified in the marketing authorisations of the individual drugs (within 36 hours of contact with an index case for zanamivir and within 48 hours of contact with an index case for oseltamivir).
- The person has not been effectively protected by vaccination
DENTAL ABSCESSES

Patients should be referred to their dental practitioner or for emergency dental treatment and advised to take paracetamol or ibuprofen for pain relief.

In the absence of immediate attention by a dental practitioner, prescribe an antibiotic if the person has

- signs of severe infection (e.g. fever, lymphadenopathy, cellulitis, diffuse swelling).
- systemic symptoms (e.g. fever or malaise).
- A high risk of complications (e.g. people who are immunocompromised or diabetic or have valvular heart disease).

If an oral antibiotic is indicated prescribe a 5-day course of either amoxicillin (500 mg three times a day), or phenoxymethylpenicillin (500-1000 mg four times day).

If the person has a true penicillin allergy prescribe clarithromycin (500 mg twice a day) for 5 days.

Consider concomitant treatment with metronidazole (400 mg three times as day for 5 days) if the infection is severe or spreading (lymph node involvement, or systemic signs ie fever or malaise).

If an adult is allergic to, or cannot tolerate metronidazole, clindamycin (300 mg four times a day for 5 days) may be considered as an alternative to metronidazole.

When prescribing an antibiotic, explain to the person that antibiotic therapy is prescribed to reduce the spread of infection. It is not a substitute for dental treatment.
PARASITIC INFESTATIONS

Threadworm (Enterobius Vermicularis)

Mebendazole 100mg as a single dose.
or
Piperazine (Pripsen) One sachet, stirred into a small glass of water and drunk immediately. See BNF for children’s doses. Repeat after 14 days.

Roundworm (Ascaris)

Mebendazole 100mg twice a day for three days.

NOTES
1. Pripsen contains sennosides and therefore also carries the same cautions, contra-indications and side effects as senna.
2. Mebendazole is NOT suitable for pregnant patients or children under 2 years.
3. Threadworm and Roundworm - treat whole household.
4. Piperazine and mebendazole can be purchased over the counter from pharmacies.

Head Lice
1. Patient should only be treated if live lice are seen.
2. Offer the individual a choice of treatments (dimeticone or insecticide) and explain the advantages and disadvantages of each.
3. The choice of treatment will depend on the individual and treatment history.
4. If insecticide strategy is chosen, malathion or phenothrin is recommended first line and
   - The treatment should be repeated after 7 days.
   - Lotions are the treatment of choice; foams and shampoos are not recommended.
   - Alcohol preparations are not recommended for the very young or patients with asthma or eczema
5. All close contacts should be checked with a detection comb on wet hair and treated if found to have live lice.
6. Parents/carers must be encouraged to continue regular grooming with detection combs even after successful treatment to prevent further established infection.
7. Some parents who refuse pharmacological treatments can be offered wet-combing.
Scabies

A toolkit containing more detailed advice and guidance can be obtained from the Health Protection Team

1. Successful treatment relies on accurate identification, treatment and monitoring of the case and all individuals having prolonged skin to skin contact with the case within the last 6-8 weeks
2. Use either of these treatments which are also available over the counter:

   - **Malathion**  0.5% aqueous basis
   - **Permethrin**  5% dermal cream.

3. Treatments should be reapplied according to manufacturer’s instructions and left for the correct amount of time. Reapply if washed off during treatment time.
4. Repeat treatment after 7 days.
5. For outbreaks in Care Homes please refer to the Health Protection Unit Nurses.
6. The community infection control nurses should be notified of cases within the community hospitals

   It is not uncommon for a person to have skin irritation for up to 4 weeks after successful treatment. Antihistamines may be helpful. In residents with dry skin conditions emollient cream will moisturise the skin.

Scabies in the frail elderly:

A highly contagious form of scabies called the hyperkeratotic or Norwegian scabies can occur in immune-deficient individuals like the frail elderly. Infection often appears as a generalised dermatitis, more widely distributed than the boring and the usual severe itching may be reduced or absent. Large numbers of mites are present in the skin scales and hence this form of scabies is highly contagious. Treatment is as above, but note that patients with hyperkeratotic scabies may require 2 or 3 applications of topical treatment on consecutive days to ensure that enough penetrates the skin crusts and kill all the mites. Repeat treatment after 7 days as above. If condition not responding to above treatment discuss with dermatology or Microbiology.
## COMMON & IMPORTANT DRUG INTERACTIONS

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Nature of Interaction</th>
</tr>
</thead>
</table>
| Clarithromycin (and other macrolides) | **Nature of Interaction**
| | Inhibits the metabolism of a large number of drugs, increasing their blood levels. Significant effects may occur with warfarin, theophylline, carbamazepine, ciclosporin, tacrolimus, statins, clozapine, disopyramide amongst others. Check most recent BNF or contact your local Medicines Information Service if in doubt. Azithromycin may be less likely to interact, but check if unsure. |
| Penicillins | Reduced excretion, therefore possible increased toxicity of methotrexate. Increased risk of rash if given with allopurinol |
| Tetracyclines | Milk, antacids, iron preparations chelate antibiotic and prevent absorption. Milk does not need to be avoided with doxycycline. Tetracyclines may enhance effect of warfarin. Ciclosporin levels may be increased by doxycline. Avoid concurrent use of retinoids due to increased risk of benign intracranial hypertension |
| Metronidazole | Alcohol (can get disulfiram-like reaction), Phenytoin, warfarin (increased anticoagulant effect), lithium |
| Rifampicin | Enzyme inducer, can reduce effects of many drugs including oral contraceptives, warfarin, phenytoin, theophylline, disopyramide, ketoconazole and clarithromycin. |
| Ciprofloxacin (and other quinolones) | Antacids, sucralfate and iron preparations reduce absorption. Administration should be separated by at least two hours. Possible increased risk of convulsions when given with NSAIDs or theophylline. |
| Fluconazole (multiple dose) | Inhibits metabolism of many drugs: potentially significant increases in blood levels of warfarin, sulphonylureas, phenytoin, ciclosporin, celecoxib and tacrolimus. |
| Trimethoprim | Increases plasma concentration of phenytoin (also increased antifolate effect) Avoid with methotrexate. |

This list is not exhaustive. Please check latest BNF for information.

New guidance was published in January 2011 by the Faculty of Sexual and Reproductive Healthcare on drug interactions with hormonal contraception. Women taking combined oral contraceptives no longer require additional contraceptive precautions during or after courses of antibiotics (unless those antibiotics induce liver enzymes, e.g. rifampicin).
ANTIBIOTICS IN PREGNANCY
(Correct as at BNF 65 please refer to the most recent edition)

Aciclovir Not known to be harmful – manufacturers advise use only when potential benefit outweighs risk.

Amoxicillin Not known to be harmful.

Azithromycin Manufacturer advises use only if adequate alternatives not available.

Benzylpenicillin Not known to be harmful.

Cefalexin Not known to be harmful.

Cefotaxime Not known to be harmful.

Ceftriaxone Not known to be harmful.

Ciprofloxacin Avoid – arthropathy in animal studies; safer alternatives available.

Clarithromycin Manufacturer advises avoid unless potential benefit outweighs risk.

Clindamycin Not known to be harmful.

Co-amoxiclav Not known to be harmful.

Doxycycline Tetracyclines should not be given to pregnant women.

Erythromycin Not known to be harmful.

Ertapenem Manufacturers advise avoid unless potential benefits outweigh risk

Flucloxacillin Not known to be harmful.

Fusidic Acid Not known to be harmful; manufacturer advises use only if potential benefit outweighs risk.

Metronidazole Manufacturer advises avoidance of high-dose regimens.

Nitrofurantoin May produce neonatal haemolysis if used at term.
<table>
<thead>
<tr>
<th><strong>Oxytetracycline</strong></th>
<th>Avoid. Effects on skeletal development in animal studies. Dental discolouration.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rifampicin</strong></td>
<td>Manufacturers advise very high doses teratogenic in animal studies. Risk of neonatal bleeding may be increased if used during the last few weeks of pregnancy.</td>
</tr>
<tr>
<td><strong>Trimethoprim</strong></td>
<td>Teratogenic risk in first trimester (folate antagonist); manufacturers advise avoid.</td>
</tr>
<tr>
<td><strong>Vancomycin</strong></td>
<td>Manufacturer advises use only if potential benefit outweighs risk – plasma vancomycin concentration monitoring essential to reduce risk of fetal toxicity.</td>
</tr>
</tbody>
</table>
ANTI-INFECTIVE AGENTS AND BREAST-FEEDING

Note: These guidelines are based on the mother feeding a normal, healthy, full-term infant. They may not apply if the baby is premature or has significant health problems. In such cases, or where the mother is on multiple therapy, expert advice is available from the UK Drugs in Breast-milk Service: contact your local Medicines Information service or West Midlands Medicines Information Service (Tel: 0121 311 1974).

Aciclovir

Significant amounts in milk after systemic absorption-not known to be harmful but manufacturer advises caution.

Azithromycin

Present in milk: use only if no suitable alternatives

Cefalexin (and other cephalosporins)

Levels in milk are low. Although there is a theoretical risk of allergic reaction or sensitisation in the infant, the benefits outweigh the risks and they are regarded as safe.

Clarithromycin

Manufacturer advises avoid unless potential benefit outweighs risk-present in milk

Ciprofloxacin

Amount probably too small to be harmful but manufacturer advises avoid

Co-amoxiclav

Milk levels are low. Regarded as safe.

Doxycycline

Tetracyclines should not be prescribed to women who are breastfeeding

Ertapenem

Manufacturer advises avoid unless potential benefit outweighs risk

Erythromycin

Only small amount in milk-not known to be harmful

Fluconazole

Present in milk but amount probably too small to be harmful

Mebendazole

Amount too small to be harmful but manufacturer advises avoid

Metronidazole

Significant amount in milk; manufacturer advises avoid large single doses

Nitrofurantoin

Avoid. Only small amounts in milk but could be enough to produce haemolysis in G6PD-deficient infants

Penicillins

Levels in milk are low. Although there is a theoretical risk of allergic reaction or sensitisation in the infant, these effects have not been seen in routine practice. The benefits of use outweigh the risks and they are regarded as safe.
<table>
<thead>
<tr>
<th>Medicine</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifampicin</td>
<td>Levels in milk low (although may be enough to cause faint discolouration of milk). Regarded as safe.</td>
</tr>
<tr>
<td>Tetracyclines</td>
<td>Tetracyclines should not be prescribed to women who are breastfeeding</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>Oral use: systemic absorption is very low and breast-milk levels are negligible. Safe.</td>
</tr>
</tbody>
</table>
References

(1) www.hpa.org.uk/infections/topics_az/primary_care_guidance/menu.htm

(2) Standing Medical Advisory Committee. The Path of Least Resistance. September 1998

(3) NICE Clinical Guideline 69 July 2008 Respiratory tract infections-antibiotic prescribing


(8) Management of Sore Throat and Indications for Tonsillectomy SIGN Guideline No 117 June 2010


(10) Diagnosis and Management of Childhood Otitis Media in Primary Care SIGN Guideline No. 66 February 2003.

(11) Rovers MM et al Predictors of pain and/or fever at 3 to 7 days for children with acute otitis media not treated initially with antibiotics: a meta-analysis of individual patient data. Paediatrics 2007; 119(3)


(13) Delayed antibiotics for respiratory infections GKP Spurling, CB Del Mar, L Dooley, R Foxlee Cochrane Database of Systematic Reviews July 2007

(14) Clinical knowledge www.cks.library.nhs.uk.
(15) Updated Guidance on the management and treatment of Clostridium Difficile infection May 2013
http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317138914904


(17) NICE Clinical Guideline No 54 August 2007 Urinary tract infection in children: diagnosis, treatment and long-term management

(18) Christiaen et al. Randomised Controlled Trial of Nitrofurantoin versus Placebo in the Treatment of uncomplicated Urinary Tract Infection in Adult Women, British Journal of General Practice 2002, 52 729-734

(19) NICE Clinical Guidance 64 Antimicrobial Prophylaxis for Infective Endocarditis March 2008

(20) Guidance for public health management of meningococcal disease in the UK Health Protection Agency Updated January 2011


(22) NICE Guidance on atopic eczema in children CG57 December 2007


(24) Amantadine, oseltamivir, and zanamavir for the treatment of influenza Technology Appraisal 168 February 2009

(25) Oseltamivir, amantadine and zanamivir for the prophylaxis of influenza Technology Appraisal 158 September 2008
For further advice please contact your Health Protection Team, Trust Microbiologist, Pharmaceutical Adviser or the West Midlands Medicines Information Unit.

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Diabetic Foot Infection
Empiric Treatment

**Mild**
- Two or more signs of local inflammation
  - erythema,
  - pain
  - warmth,
  - induration)
- Plus superficial Cellulitis extends < 2 cm around the ulcer

**Empiric Treatment**
- Oral Flucloxacillin 1g four times daily for 7 days
  - REVIEW
  - Duration of therapy 1-2 weeks
- Penicillin allergy or not responding to Flucloxacillin
  - Oral Doxycycline 100 mg twice daily for 7 days
  - or
  - Oral Clarithromycin 500mg twice daily for 7 days
  - REVIEW
  - Duration of therapy 1-2 weeks

**Moderate**
- As per mild criteria plus one or more of:
  - Cellulitis extends >2 cm around the ulcer
  - Lymphangitic streaking
  - Localised dry gangrene
  - Deep tissue involvement
- Systemically well and metabolically stable

**Empiric Treatment**
- Oral Co-Amoxiclav 625mg three times daily for 7 days
  - REVIEW
  - Duration of therapy 1-3 weeks
- Penicillin allergy or not responding to Co-Amoxiclav
  - Oral Ciprofloxacin 750mg twice daily for 7 days
  - plus
  - Oral Clindamycin 300-600mg four times daily for 7 days
  - REVIEW
  - Duration of therapy 1-3 weeks

**Severe**
- As per moderate criteria plus systemic toxicity/sepsis

**Employing hospital admission**
- Management as per acute care guidance
- Still not responding discuss with consultant microbiologist

**General Principles**
- Consider Osteomyelitis
  - Ulcer area >2cm² or TEXAS Grade 3 ulcers
  - Visible cortical bone in the ulcer
  - Positive probe-to-bone test (depending on the nature of ulcer)
- Microbiology
  - Sample before use of topical antimicrobials or oral antibiotic use if possible
  - Samples should be taken after wound debridement and cleansing
  - Consider use of topical antimicrobial dressings for very localised, mild infections of TEXAS grade 1 ulcers (as per Partnership Trust wound dressing formulary.)
  - TREAT THE PERSON NOT THE SWAB