Introduction

These guidelines have been produced for General Practitioners in Tameside and Glossop Primary Care Trust as a simple guide to antimicrobial prescribing. Much of the advice has come from the Health Protection Agency’s (HPA) template guidelines and the Clinical Knowledge Summaries service (CKS - the successor to Prodigy) which are both evidence based. However local antibiotic sensitivity data has been used to provide advice specific to the local area at this time.

The Consultant Medical Microbiologists at Tameside and Glossop Acute Services NHS Trust are always happy to help general practice colleagues and are available during office hours on the numbers below.

Dr P F Unsworth
0161 331 6500 or bleep via hospital switchboard 0161 331 6000.

Dr H Sacho
0161 922 4086 or by mobile phone via hospital switchboard as above.

Aims of the Guidelines

- To provide a simple, empiric (best guess) approach to the treatment of common infections.
- To promote the safe, effective and economic use of antibiotics (and to use antibiotics only if indicated).
- To minimise the emergence of bacterial resistance in the community and to prevent the development of antibiotic associated Clostridium difficile diarrhoea.
Principles of Treatment

This guidance is based on the best available evidence at the time and its application must be modified by professional judgement.

1. Prescribe an antibiotic only when there is likely to be a clear clinical benefit, and most notably when there is a bacterial infection present.

2. A dose and duration of treatment is suggested - however in severe or recurrent cases consider a higher dose or longer course.

3. Do not prescribe an antibiotic for simple coughs or colds and viral sore throats.

4. Do not prescribe antibiotics for chronic lower limb ulcers or pressure sores unless there is an associated spreading cellulitis, induration of the tissues, abscess formation or systemic toxicity with constitutional symptoms.

5. Limit prescribing over the telephone to exceptional cases – rather clinically assess the case first.

6. Always prescribe antibiotics generically unless it is necessary to state the brand name to ensure the clarity of formulation.

7. Avoid broad spectrum antibiotics (e.g. co-amoxiclav, quinolones and cephalosporins) when narrower spectrum and less expensive antibiotics are effective, as they increase the risk of Clostridium difficile, MRSA and resistant UTIs.

8. Limit the use of topical antibiotics to selected conditions e.g. Impetigo, fungal skin infections, Acne, herpes labialis, especially if they are also available as a systemic preparation.

9. In pregnancy avoid tetracyclines, aminoglycosides, quinolones, and high dose metronidazole. Short term use of trimethoprim (theoretical risk in first trimester in patients with a poor diet, as it is a folate antagonist) or nitrofurantoin (at term, theoretical risk of neonatal haemolysis) is unlikely to cause a problem to the foetus. For empirical treatment of UTIs in pregnancy see later in the guidelines.

10. Clarithromycin is a suitable alternative for those who are unable to tolerate erythromycin due to side effects. Clarithromycin is now available as a generic.

11. Alternatives are always given in these guidelines for use in penicillin allergy.

12. If empirical treatment has failed or special circumstances exist contact the Consultant Medical Microbiologists at Tameside General Hospital for advice.

13. If samples are sent to the laboratory they should be collected before antibiotic therapy is started. If the patient is already on antibiotics please give a clear drug history on the request form.

14. The laboratory usually reports on antibiotic sensitivities for organisms they believe to be clinically significant, but the clinical picture must be taken into account before deciding if and how to treat. Treat the patient and not the microbiology result! If you have any queries please feel free to speak to either of the Medical Microbiologists.

Upper Respiratory Tract Infections

Influenza

Annual vaccination is essential for all those at risk of influenza. Follow the current Department of Health advice. Treat “at risk” patients with antivirals, when influenza is circulating in the community, within 48 hours of onset of symptoms. At risk groups include those aged 65 or over or those with one or more of the following conditions: chronic respiratory disease (including asthma and COPD), immunocompromised, significant respiratory disease (not hypertension), diabetes mellitus, chronic renal disease and chronic liver disease.
Treatment (for adults, for children see BNF for doses)

- Oseltamivir 75mg capsule BD for 5 days or
- Zanamivir 10mg (2 inhalations via diskhaler) BD for 5 days. There is a risk of bronchospasm so a short-acting bronchodilator should be available, use with caution in asthma and COPD.

Prophylaxis (for adults, for children see BNF for doses)

Treat only unvaccinated at risk patients (adults and children) within 48 hours of close contact. Prophylaxis is also recommended for residents in chronic care establishments (regardless of influenza vaccination) using oseltamivir within 48 hours of influenza-like illness being present in the establishment.

- Oseltamivir 75mg capsule OD for 10 days or
- Zanamivir 10mg (via diskhaler) OD for 10 days

Pharyngitis/sore throat/tonsillitis

The majority of sore throats are viral and self-limiting. Consider antibiotics in patients with 3 or 4 centor criteria (history of fever, purulent tonsils, cervical adenopathy, absence of cough) or history of otitis media (however need to treat 30 children or 145 adults to prevent one case of otitis media). Centor criteria, used as above in unwell patients, are predictive of Group A_ haemolytic streptococcus (GABHS, Strep. pyogenes) infection.

*Throat swabs can indicate GABHS carriage as well as infection. If you have carried out a throat swab before prescribing antibiotics and it is reported negative for Strep. Pyogenes do not prescribe antibiotics, if already commenced antibiotics then stop them.*

Otitis Media

Many cases are viral and otitis media resolves in 80% of cases without antibiotics. You need to treat 20 children aged over 2 years to get pain relief in one child, at 2 – 7 days. A poor outcome is unlikely if there is no vomiting and the temperature is below 38.5 °C. Recent evidence suggests that antibiotics seem to be most beneficial in children younger than 2 years of age with bilateral acute otitis media, and in children with both acute otitis media and otorrhoea. The best option is to use pain relief for 24 hours (ibuprofen or paracetamol) before deciding if antibiotics are needed. On a Friday consider giving a “just in case” prescription to use if symptoms don’t improve in 24 hours. 3 days treatment may be sufficient so parents can stop the antibiotics before the end of the course if their child has recovered.

Treatment

- Amoxycillin for 5 days
  1 month – 1 year 62.5mg/125mg TDS
  1 year – 5 year 125mg/250mg TDS
  5 years – 11 years 250mg/500mg TDS
  12+ 500mg – 1g TDS
- Erythromycin for 5 days
  1 month – 2 years 125mg QDS
  2 – 8 years 250mg QDS
  8+ 250mg/500mg QDS
- Clarithromycin can be used second line to erythromycin if allergic to penicillin see cBNF/BNF for doses.
Sinusitis

Many cases of sinusitis are viral and two thirds will resolve without antibiotics. Reserve antibiotics for those with severe or persistent (10 days plus) symptoms. Steam inhalations will encourage drainage and can give relief.

Treatment

• Amoxicillin 500mg TDS for 7 days or
• Doxycycline 200mg stat then 100mg OD for 7 days in total or
• Erythromycin 250mg QDS or 500mg BD for 7 days

If failure to respond to the above first line antibiotics use

• Co-amoxiclav 625mg TDS for 7 days or if penicillin allergic
• Doxycycline 200mg stat then 100mg OD for 7 days in total if not had previously or
• Clarithromycin 250mg BD for 7 days or Azithromycin 500mg OD for 3 days (more expensive) if not had a macrolide previously

Lower Respiratory Tract Infections

Many infections are viral but the principal bacterial pathogens in acute lower respiratory tract infections are Streptococcus pneumoniae (which is the commonest cause of community-acquired pneumonia), Haemophilus influenzae and atypical organisms such as Legionella and Mycoplasma. Staphylococcus aureus lower respiratory infections can occur as a complication following influenza. Pseudomonas may be isolated from sputum cultures but, in the community, this would usually reflect colonisation and should not be treated. It may be helpful to discuss with a microbiologist, if in doubt.

For most community acquired lower respiratory tract infection, first line treatment should be amoxicillin or erythromycin, but see notes below for specific examples. Avoid use of low dose amoxicillin which may encourage bacterial resistance. Note that excessive use of quinolones (e.g. ciprofloxacin) and co-amoxiclav is implicated in development of MRSA and C difficile infections.

Acute Bronchitis

Systematic reviews indicate antibiotics have marginal benefits in otherwise healthy adults. Explain to patients why they have not been prescribed antibiotics. Consider prescribing antibiotics for people who have a pre-existing co-morbid condition that impairs their ability to deal with infection or is likely to deteriorate with acute bronchitis. This includes patients who are over the age of 75 years with fever, with COPD, with heart failure, who are immunocompromised, including people with cancer or insulin dependent diabetes.

Treatment

• Amoxicillin 500mg TDS for 5 days or
• Doxycycline 200mg stat then 100mg OD for 5 days in total or
• Erythromycin 250mg QDS for 5 days
Acute Exacerbation of COPD

About 30% of cases are viral, 30 - 50% are bacterial and the rest are undetermined. Antibiotics are not indicated in the absence of purulent/mucopurulent sputum especially if not associated with increased dyspnoea or clinical toxicity.

Treatment

- Amoxicillin 500mg TDS for 5 days or
- Doxycycline 200mg stat then 100mg OD for 5 days in total or
- Erythromycin 250 – 500mg QDS for 5 days

If there is no clinical response to the first line treatment, give co-amoxiclav 625mg TDS for 5 days or in penicillin allergy one of the other first line choices.

Community Acquired Pneumonia (CAP)

The CRB-65 score can be used to determine if the patient needs hospital referral or is suitable for home treatment. The patient scores one point for any of the below features

- Confusion (new in onset)
- Respiratory rate ≥ 30 breaths/min
- BP: systolic < 90 mmHg or diastolic ≥ 60 mmHg
- Age ≥ 65 years

A score of 0 = patient suitable for home treatment.
A score of 1 – 2 = consider hospital referral.
A score of 3 – 4 = urgent hospital admission

If home treated, start an antibiotic immediately and if there is no response in 48 hours consider hospital admission or adding erythromycin or a tetracycline to cover mycoplasma (rare in over 65s).

Treatment

Amoxicillin 500mg – 1gram TDS for 7-10 days or if allergic to penicillin: Erythromycin 500mg QDS for up to 7-10 days.

ADD Erythromycin 500mg QDS to Amoxicillin if atypical infection suspected (mycoplasma) or if no response in 24 - 48 hours

Post influenza pneumonia can be due to S. aureus so add flucloxacillin 500mg QDS for up to 10 days.

Following recovery consider if pneumococcal vaccination is necessary.

Meningitis

Rapid transfer to hospital remains the highest priority whether or not penicillin is given – minutes are precious. The HPA recommends all GPs carry benzylpenicillin and it should be given whilst transfer to hospital is being arranged. It should be given to all patients unless there is a history of immediate allergic reaction after administration of a penicillin, in which case ceftriaxone (2g for adults) can be given.

Dose of benzylpenicillin – ideally IV but IM if a vein cannot be found

- 10 years and over  1.2g
- 1 – 9 years 600mg
- Less than 1 year 300mg
Household and close contacts of meningococcal infection should receive chemoprophylaxis (with oral rifampicin, oral ciprofloxacin, or IV/IM ceftriaxone). Chemoprophylaxis should be prescribed following discussion with the specialist team at the Greater Manchester Health Protection Unit (tel 0161 786 6710 within office hours and via Tameside General Hospital switchboard out of hours – ask for the health protection on call). Tameside General Hospital will arrange the supply of antibiotic prophylaxis for household contacts of patients treated there.

**Urinary Tract Infections (UTIs)**

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.

**Uncomplicated UTI in Non Pregnant Women**

If there is fever, flank or back pain then it is likely to be an upper UTI and antibiotic treatment for 7 - 14 days is needed, see pyelonephritis section. If symptoms are mild, the woman may wish to consider no antibiotics, as UTIs often resolve spontaneously in a few days. If the woman has more than 3 typical symptoms of an UTI, and no vaginal discharge, then treat empirically with antibiotics as below. If the woman has 2 or less or mild symptoms obtain a urine sample and perform a urine dipstick test with nitrite and leukocyte esterase. If the results are negative for leucocytes and nitrites then there is a 95% negative predictive value. If both are positive or nitrite and protein are positive then treat. If only leucocytes are positive only treat if symptoms are severe and send urine for culture.

**Empirical Treatment**

- Trimethoprim 200mg BD for 3 days **or**
- Nitrofurantoin 50mg QDS for 3 days (urine alkalinising agents should not be taken at the same time and avoid in renal failure).

If there is treatment failure send the urine off for culture and sensitivity. Extended-spectrum Beta-lactamase enzymes (ESBLs) in gram-negative bacilli such as E. coli are increasing, and these ESBL producing E. coli are multi-resistant but remain sensitive to nitrofurantoin. Consider a diagnosis of Chlamydia trachomatis in sexually active young women (in which case urine or endocervical specimens should be submitted for Chlamydia PCR assay).

**Recurrent UTI in Non Pregnant Women**

Comprehensively assess the problem and refer if necessary to a specialist gynaecologist or urologist. Ensure that at least one culture has been done in the recent past to confirm a diagnosis of a bacterial UTI.

If there are 3 or more episodes during the year consider one of the following options

- Patient-initiated antibiotics for new episodes
- Professional-initiated antibiotics for new episodes
- Antibiotic prophylaxis with trimethoprim 100mg nocte or nitrofurantoin 50mg nocte
- If related to sexual intercourse consider a single dose of antibiotic post intercourse as above

**SIGN** have actually recommended high dose cranberry capsules to prevent recurrent UTIs (avoid if on warfarin).
UTI in Pregnancy

A MSU (mid stream urine sample) should be sent off for culture at the first antenatal visit, as asymptomatic bacteriuria can be associated with pyelonephritis and premature delivery. If the patient presents with signs of a UTI send off a MSU for culture. Treat empirically until sensitivity data comes back. Repeat the MSU after treatment has been completed to ensure it has been successful.

**Empirical Treatment**

- Amoxicillin 500mg TDS for 7 days in first trimester.
- Trimethoprim 200mg BD for 7 days (avoid in first trimester) or
  - Nitrofurantoin 50mg QDS for 7 days (avoid near to term and in women with G6PD deficiency)

UTI in Men

Always send a MSU off to the lab for culture. Consider a diagnosis of prostatitis and refer if necessary. In sexually active young men with urinary symptoms consider Chlamydia trachomatis.

**Empirical Treatment**

- Trimethoprim 200mg BD for 7 days or
- Nitrofurantoin 50mg QDS for 7 days

UTI in Children

Send a MSU for culture and rule out or manage associated conditions (e.g. constipation, urinary tract obstruction). In a child over 60 days old with mild symptoms or another possible cause a urine dipstick test can be performed. If negative for nitrates and leukocyte esterase, antibiotics can be delayed until culture results become available. With moderate symptoms start antibiotics and review treatment when the culture results are back.

**Empirical Treatment**

- Trimethoprim 4mg/kg (maximum 200mg) BD for 3 days
  - An alternative antibiotic should be used if the child is already on trimethoprim prophylaxis (in which case the trimethoprim should be stopped), has had it in the last 3 months or has had previous infections resistant to it e.g.
  - Cephalexin dosed as in BNF for 3 days or
  - Nitrofurantoin dosed as in BNF for 3 days

Recent NICE guidance suggests 3 days treatment for lower UTI; however if the child is still unwell after 24 - 48 hours, therapy needs reviewing.

Very young or ill children may need hospital admission. In recurrent UTIs or in under fives consider specialist referral for investigation.
Acute Pyelonephritis

Always send a MSU off for culture and treat empirically with antibiotics until sensitivities come back. Severe pyelonephritis and pyelonephritis in pregnancy may need hospital admission. Review all patients after 48 hours to check for signs of improvement and against sensitivity results. Advise the patient if there are no signs of improvement in 24 hours to contact you as hospital admission may be necessary.

**Empirical Treatment**

- Ciprofloxacin 500mg BD for 7 days or
- Co-amoxiclav 625mg TDS for 14 days

Acute Prostatitis

Send a MSU off for culture and prescribe empirical antibiotics. Review antibiotic therapy when sensitivity results come back.

**Empirical Treatment**

- Ciprofloxacin 500mg BD for 4 weeks or if not tolerated
- Trimethoprim 200mg BD for 4 weeks

In sexually active young men consider a diagnosis of Chlamydia trachomatis. Refer all men for investigation by a specialist after recovery to exclude a structural cause.

Gastro-Intestinal Infections

Gastroenteritis

Check the patient's travel, food, hospitalisation and antibiotic history (C. difficile is increasing). Fluid replacement is the mainstay of treatment. Antibiotic therapy is not usually indicated because food-borne associated gastroenteritis is usually a self-limiting condition, and treatment only reduces diarrhoea by 1 - 2 days and can cause antibiotic resistance. Initiate antibiotics, on the advice of the microbiologist, if the patient is systemically unwell (ongoing pyrexia, diarrhoea, dehydration, and clinical toxicity). If the patient has suspected food poisoning or Clostridium difficile send a stool specimen to the lab. These conditions can then be treated according to the results.

Traveller’s diarrhoea

Pre-travel: provide advice on prevention and consider vaccination if appropriate. A 'just in case' course of antibiotics may be carried by people travelling to remote areas and for people in whom an episode of infective diarrhoea could be dangerous. If used in this way Ciprofloxacin 500mg BD, a 3 day course should be prescribed. This should be by means of a private prescription.

Post-travel: send a stool sample to the lab for culture if the patient is systemically unwell or symptoms persist. Consider empirical treatment with ciprofloxacin for those who are at high risk or present with dysentery (500mg BD).

Eradication of Helicobacter pylori

Eradication is beneficial in duodenal ulcers, gastric ulcers and low grade MALT lymphoma but not in GORD. In non ulcer dyspepsia only 8% of patients benefit. Breath test or stool antigen are the favoured diagnostic tests. The tests require a 2 week washout period of antibiotics and PPIs.
Management of Infections in Primary Care

Genital Tract Infections

General

Think of Chlamydia in anyone who is (or has been) sexually active who presents with a genital infection.

To identify Chlamydia infection first catch urine sample after holding urine in bladder for at least 1 hour can be sent to Manchester Royal Infirmary Virology department. A test for Chlamydia on first catch urine is very reliable. The machine at the virology laboratory at the MRI also now automatically looks for Gonorrhoea. All Gonorrhoea positive cases should be referred to a GUM clinic.

Candidiasis

Many products are available over the counter, so check whether the patient has already self-treated. Miconazole may be effective where clotrimazole has failed because of its wider anti-candidal spectrum. Systemic treatments are best reserved for failures of topical treatment and for those patient who prefer oral treatment to topical.

Empirical Treatment

- Clotrimazole 10% vaginal cream 5g single dose
- Clotrimazole pessary 500mg as a single dose
- Fluconazole 150mg orally stat or
- Miconazole pessary 100mg x 14 nights
- Itraconazole capsule 200mg bd for 1 day

\[ \text{Clostridium difficile treatment - See health care associated infections} \]

\[ \text{Threadworms - See parasite section} \]
Bacterial vaginosis

A seven day course of metronidazole is slightly more effective than 2g stat. Clindamycin gel is expensive but is a useful alternative if metronidazole cannot be tolerated and during early pregnancy.

Empirical Treatment

- Metronidazole 400mg bd for 7 days or Metronidazole 2g Stat or Metronidazole vaginal gel 0.75% 5g nightly for 5 nights or Clindamycin 2% vaginal cream 5g nightly for 7 nights (expensive) During pregnancy avoid high dose regimens of metronidazole (2g stat dose).

Trichomoniasis

Is a sexually transmitted infection and treatment of partner is important. Other sexually transmitted infections may be present as well as trichomonas. Refer to GUM clinic for confirmation of diagnosis, treatment and partner notification. There is emerging evidence that pregnant women with trichomoniasis should be treated, but there is no alternative to metronidazole. Wait until the second trimester before treating with 400mg bd for 7 days.

Empirical Treatment

- Metronidazole 400mg bd for 7 days or Metronidazole 2g stat
  During pregnancy avoid high dose regimens of metronidazole (2g stat dose).

Chlamydia

Treat with a “stat” dose of azithromycin one hour before or two hours after food. A seven day course of oxytetracycline or erythromycin is cheaper but compliance may be poor.

Empirical Treatment

- Azithromycin 1g Stat, one hour before or two hours after food or Doxycycline 100mg bd for 7 days in pregnancy/breast feeding Erythromycin 500mg bd for 14 days or 500mg qds for 7 days.

Gonorrhoea

Because of varying antibiotic sensitivities gonorrhoea can be tricky to treat, and a test of cure is important. It is recommended that management of gonorrhoea should be undertaken at a GUM clinic, particularly in a climate of emerging antibiotic resistance.

Pelvic inflammatory disease

Take appropriate specimens for chlamydia and gonococci then give a choice of treatment regimen as indicated below. Note that all Gonorrhoea positive cases should be referred for treatment to a GUM clinic.

Empirical Treatment

- Cefixime 400mg stat and Metronidazole 400mg bd 14 days plus Doxycycline 100mg bd 14 days or Cefixime 400mg stat and Metronidazole 400mg bd 14 days plus Ofloxacin 400mg bd 14 days
Skin and Soft Tissue Infections

Impetigo

Use topical therapy for small, localised patches of impetigo fusidic acid cream/ointment four times a day for 5 days. Mupirocin should be reserved for MRSA. If widespread or long standing impetigo use systemic antibiotics (see BNF for children’s doses)

- Flucloxacillin 500mg QDS for 7 days or
- Erythromycin 500mg QDS for 7 days

Cellulitis

If the patient is afebrile, not clinically toxic and otherwise healthy use

- Flucloxacillin 500mg QDS for 7 – 10 days or
- Erythromycin 500mg QDS for 7 – 10 days

If there is history of exposure to fresh water, ie rivers or streams (Aeromonas hydrophilia) at the site add ciprofloxacin (750mg twice daily 7 days) and if there is history of exposure to salt water (Vibrio vulnificus) add doxycycline (200mg stat then 100mg daily 7 days total).

In facial cellulitis use co-amoxiclav 625mg three times a day for 7 - 10 days (if penicillin allergic discuss with microbiologist)

If the patient is febrile and acutely ill, refer to hospital for IV treatment.

Animal Bite

If the skin is not broken just clean it, but if the skin is broken irrigate it with warm, running water. Send the patient to A & E if severe. Check tetanus status and immunise if necessary. Consider rabies risk especially if bitten abroad. Prophylaxis is advised for puncture wounds, any bite involving the hand, face, foot, joint tendon, ligament, immunocompromised, diabetics, elderly, asplenic.

Treatment and prophylaxis

- Co-amoxiclav 375 - 625mg TDS for 7 days or
- Metronidazole 200 - 400mg TDS plus doxycycline 100mg BD for 7 days

Human Bite

Antibiotic prophylaxis is recommended for all wounds under 72 hours old even if there is no sign of infection. Consider if tetanus prophylaxis is needed. Assess the HIV and hepatitis B and C risk and if necessary discuss with a Consultant in Communicable Disease Control.

Treatment and prophylaxis

- Co-amoxiclav 375 - 625mg TDS for 7 days or
- Metronidazole 200 - 400mg TDS plus erythromycin 250 - 500mg QDS for 7 days but review after 24 and 48 hours if the wound is infected.
Leg ulcers/pressure sores

Bacteria will always be present, culture swabs and antibiotics are only indicated if there is evidence of clinical infection (e.g. increasing pain, pyrexia, spreading cellulitis, tissue induration, enlarging ulcer). It is preferable to do a tissue biopsy for culture and avoid sending superficial swabs from the ulcer.

**Empirical treatment until sensitivities known**

- Flucloxacillin 500mg QDS for 7 days or
- Erythromycin 500mg QDS for 7 days

For diabetic foot ulcers co-amoxiclav 625mg TDS for 7 days (review response) after 3 days. If severe refer to the diabetes centre for specialist opinion.

Acne

Oral antibiotics can be used in moderate and severe acne. In moderate acne try topical therapy first, however in both scenarios oral antibiotics can be combined with topical therapy (retinoids or benzoyl peroxide). Use an oral tetracycline first line. Erythromycin can be used if a tetracycline can not be tolerated. Minocycline should be reserved for second line use, after a previous tetracycline has failed, due to its adverse side effects. Results of antimicrobial treatment may not be seen until a couple of months have elapsed.

**Treatment**

- Oxytetracycline 500mg BD or doxycycline 50mg OD or if not suitable
- Erythromycin 500mg BD or 3rd line
- Lymecycline 408mg BD

Conjunctivitis

**Treatment**

- First line: chloramphenicol 0.5% eye drops 1 drop 2 hourly at first, reducing to QDS as the infection improves
- Second line: fusidic acid 1% eye drops 1 drop BD

Continue both for 48 hours after resolution of symptoms.

Swab the eye for culture and sensitivity if the infective conjunctivitis is not resolving after 7 days of treatment. Swab all people who are sexually active, for gonococcal and chlamydial infection, who have a conjunctivitis that persists for 14 days despite treatment.

Fungal Infection of the Nails

If you suspect a dermatophyte infection of the proximal fingernail or toenail, take nail clippings for fungal culture. Only start treatment if infection is confirmed by the laboratory. This condition is rare in children so refer them for specialist advice.

**Treatment**

- If infection is superficial 5% amorolfin nail lacquer 1 - 2 times a week for 6 months (fingers) or 12 months (toes) or
- Terbinafine 250mg OD for 6 - 12 weeks (fingers) or 3 - 6 months (toes) or
- For infections with yeasts and non-dermatophyte moulds use pulsed itraconazole 200mg BD for 7 days repeated monthly. For fingernails use 2 courses and for toenails use 3 courses.

Rarely idiosyncratic liver reactions occur with terbinafine, tell patients to watch for signs of liver toxicity. Itraconazole should be avoided in patients at risk of heart failure and in patients taking statins (risk of myopathy) and it also can cause liver toxicity.
Dermatophyte Infection of the Skin

Take skin scrapings for culture. Topical azoles, clotrimazole 1% or miconazole 2%, are useful if you are not sure if there is candida or dermatophyte infection. The azoles can take 4 - 6 weeks to work. Topical 1% terbinafine although more expensive can work in a week. Consider oral treatment only if disease is extensive or severe (however, consider referral) or if topical treatment has failed. Discuss scalp infections with a specialist.

Chickenpox (Varicella zoster)

Always seek specialist advice for treatment and prophylaxis in pregnant women (speak to a Consultant in Communicable Disease Control, obstetrician or Consultant Virologist). In healthy adults and children with uncomplicated chickenpox no antiviral treatment is recommended. Antivirals are indicated in all patients who are immunocompromised and always seek specialist advice for these patients. If the patient is severely immunocompromised they will need hospital referral for intravenous aciclovir as well as varicella-zoster immunoglobulin. Antivirals can be used in an adult, in severe pain within 24 hours of onset of the rash using the same doses as in shingles.

Shingles (Herpes zoster)

Antivirals should be started within 72 hours of onset of the rash. They should be used in adults over 50 years, in the immunocompromised, in anyone with ophthalmic involvement, in anyone in severe, acute pain or with an extensive rash; they can also be used in people who are likely to come in close contact with “at risk” groups (e.g. immunocompromised, pregnancy). Specialist advice should be sought for immunocompromised patients.

Treatment

- Aciclovir 800mg orally five times a day for 7 days

Aciclovir is by far the cheapest antiviral. If compliance is an issue valaciclovir or famciclovir can be given less frequently but these drugs are approximately 10 times more expensive (provided you prescribe aciclovir generically!).
Parasites

Scabies

Treat the patient and all members of the household, close contacts and sexual contacts with a topical insecticide. Permethrin 5% dermal cream should be used as first line treatment. Most adults should only need one tube of cream. The cream should be washed off after 8 – 12 hours. Malathion 0.5% aqueous solution can be used second line if permethrin is unsuitable (e.g. if the patient is allergic to chrysanthemums) and washed off after 24 hours. The insecticide should be applied twice with applications one week apart. Treat the whole body including scalp, face, neck, ears and under the nails. Treating the face and scalp is important in the immunocompromised, very young and elderly. Refer if there is crusted scabies or if there has been multiple treatment failures.

Headlice

Advise the individual or parent to use detection combing on wet or dry hair to confirm head lice infestation. All close contacts and household members should be checked. Only the presence of live lice confirms infestation and then treatment is necessary. There are 3 treatment options, none of which are 100% effective, which can be discussed with the patient or parent.

1. Insecticide

2. Wet combing

3. Dimeticone lotion.

The latter 2 options are suitable in pregnancy and breast feeding.

Insecticides

- Malathion 0.5% aqueous solution or
- Phenothrin 0.5% aqueous solution

Apply to dry hair, wash off after 12 hours and repeat in 7 days (unlicensed use – based on expert opinion). 200ml should be sufficient for an adult to have 2 treatments.

Treatment failure maybe due to resistance, reinfection from another household member or poor treatment technique.

Wet combing

Four sessions are needed over 2 weeks, using conditioner and a detection comb. Continue if live lice are seen. The Nittygritty® kit is available on prescription.

Dimeticone

Rub into dry hair and scalp and shampoo off after 8 hours (or overnight), repeat after 7 days.
Threadworms (Enterobius vermicularis)

Treat both the patient and all household members unless contraindicated. Good hygiene is very important in breaking the lifecycle of the worms. Hands should be washed after using the toilet and nails should be kept short. Showering or bathing in the morning, washing around the anus, is recommended. Hygiene methods should be used for 2 weeks if drug treated, in those who do not receive drug treatment (e.g. under 3 months, pregnant or breastfeeding women) they should be continued for 6 weeks.

Treatment

- Mebendazole (over 2 years) 100mg repeat in 2 weeks if infection persists or if under 2
- Piperazine and sennosides sachet: 3 - 12 months 2.5ml spoon (from sachet in water), 1 - 6 years 5ml spoon repeat in 2 weeks.

There is information in the cBNf on mebendazole dosing from 6 months of age. However this is unlicensed so the patient information leaflet may cause alarm to the parent.

Healthcare Associated Infections and Antimicrobial Prescribing:

1. Introduction

In December 2003 The Department of health published a National Plan that set out the actions to control the transmission of Healthcare Associated Infections, Winning Ways: Working Together to reduce Healthcare Associated Infections in England. ‘Action Area Five’ of the plan refers to the ‘Prudent use of Antibiotics’. The key issue states that:

‘Indiscriminate and inappropriate use of antibiotics to treat infection within a clinical service promotes the emergence of antibiotic resistant organisms and ‘super bug’ strains.

2. Key Department of Health Recommendations:

- Antibiotics normally to be used only after a treatable infection has been recognised or there is a high degree of suspicion of infection.
- Choice of antibiotic normally to be governed by local information about trends in antibiotic resistance or a known sensitivity of the organism.
- Antibiotics only to be taken by patients over the prescribed period at the correct dose.
- Prescription of the antibiotics for children to be carefully considered; they are often unnecessarily prescribed for common viral infections and the child is subsequently more likely to develop a resistance to infection.
- Support for prudent antibiotic prescribing to be provided by clinical pharmacists, medical microbiologists and infection disease physicians.
- Antibiotics to be used for prevention of infection only where benefit has been proven.
- Narrow spectrum antibiotics to be preferred to the broad-spectrum groups.
3. Guidance on the prevention and Treatment of specific Healthcare Associated infections:

3.1 Clostridium Difficile Toxin:

Prevention of C. difficile infection relies on ensuring that patients do not become susceptible through disruption of their normal gut flora and on preventing as far as possible their exposure to the organism. These approaches are implemented through careful measures to control antibiotic usage and through routine infection control procedures.

3.1.1 Key Recommendations in the Control of Antibiotic usage For Clostridium Difficile Toxin:

For the purpose of preventing C. Difficile infection, it is believed that the main component of an antibiotic policy should be:

- The avoidance of unnecessary antibiotic use;
- The use of narrow spectrum antibiotics whenever the causative pathogen is known:
- Review of “blind” empirical antibiotic therapy as soon as the causative pathogen has been identified.
- Avoidance, wherever possible, of the use of antibiotic ‘cocktails’
- Regular prescription review to ensure that antibiotics are discontinued as soon as possible.
- Strict control of the use of antibiotics for surgical prophylaxis; they should be given for short periods if possible, i.e. pre-operatively.

Intravenous Antibiotic therapy:

In the Tameside and Glossop community, Intravenous antibiotic therapy is to be commenced for patients at home. (Please refer to the Policy for short-term home antibiotic IV therapy)

If C. Difficile is known to be a problem;

- It should be noted that parenteral aminoglycosides, when given alone, have never been associated with C. Difficile infection, although their potential toxicity must be recognised.
- Consideration should be given to whether the intramuscular or intravenous route should be used, since parenteral antimicrobials can be less likely than oral preparations to predispose to C. Difficile infection.

3.1.2 Treatment of Clostridium difficile associated diarrhoea

Initiate treatment after receiving a positive result from a stool sample if the diarrhoea is not settling. Withdraw antibiotics if possible. Mild cases will often resolve without treatment if antibiotics are stopped. Consider stopping PPIs if possible.

**First line**
- Metronidazole 400mg TDS for 7 to 14 days

Consider also a probiotic yoghurt drink (Actimel) twice a day for 7 days.

**Refractory disease**
- Vancomycin 125mg QDS for 10 days

Good hygiene is important to prevent re-infection, the patient should wash their hands, after using the toilet and before eating, with soap and water.

Cases can be discussed with the hospital microbiologists.
Management of Infections in Primary Care

For further information on the prevention and control of C. Difficile associate disease, please refer to the PCT infection Prevention Service C. difficle policy or contact the Microbiologist, or the PCT Infection Prevention Service staff, for advice on individual cases, if required.

3.2 MRSA

3.2.1 Key Recommendations in the Control of Antibiotic Usage for MRSA:

- Avoid inappropriate or excessive antibiotic therapy and prophylaxis.
- Ensure antibiotics are given at the correct dosage and for an appropriate duration.
- Limit the use of glycopeptide antibiotics to situations where their use has been shown to be appropriate. If possible, prolonged courses of glycopeptide therapy should be avoided.
- Reduce the use of broad-spectrum antibiotics, particularly third-generation cephalosporins and fluoroquinolones, to what is clinically appropriate.
- Instituting antibiotic stewardship programmes in healthcare facilities, key components of which include the identification of key personnel who are responsible for this, surveillance of antibiotic resistance and antibiotic consumption, and prescriber education.

To combat resistance, the PCT Clinical Lead for Infection prevention recommends that:

- For community patients, repeated topical therapies should not be prescribed.
- Community patient’s wounds need not be swabbed unless there are clinical signs of infection, (Consultation can be sought from the PCT Tissue Viability Nurse Specialist).
- Advice on good personal and home hygiene must be given to promote a reduction in MRSA colonisation.

3.2.2 MRSA Topical Decolonisation Regime

Topical intra-nasal mupirocin or Chlorhexidine can be effective for nasal decolonisation:

- BACTROBAN (Mupirocin) nasal ointment three times daily in both nostrils N.B. Naseptin Nasal Cream QDS can be used where the strain of MRSA is resistant to Mupirocin.

The effectiveness of this approach is approximately 60% and may be short lived.

Using disinfectant while bathing or showering has also been shown to be effective decolonisation.

- HIBISCRUB (4% Chlorhexidine) once daily

As there are concerns about development of resistance it is recommended that topical antibiotic use should be confined to a single course of 5 days.

For further guidance on MRSA, please refer to the PCT MRSA policy.

For further information on the prevention and control of MRSA colonisation/infections, please refer to the PCT Infection Prevention Service MRSA Policy or contact the Microbiologist, or the PCT Infection Prevention Service staff, for advice on individual cases, if required.
Systemic Antibiotic Therapy:

The need for systemic antibiotic therapy should be considered in compromised patients or those with severe disease, based on clinical judgement and local susceptibilities of strains. It is important to ensure empirical treatment also provides cover against Streptococcus pyogenes. Contact the Microbiologist for advice, if required.

3.3 Community Associated MRSA (Panton – Valentine Leukocidin) (PVL)

A new pattern of disease due to Panton – Valentine Leukocidin (PVL) – positive strains of Staphylococcus aureus is emerging in the UK and Worldwide. PVL is a toxin, which destroys white blood cells and is carried by <2% of clinical isolates of S. aureus. PVL can be detected in both meticillin sensitive S. aureus (MSSA) and meticillin resistant S. aureus (MRSA). To date the majority of isolates causing infection in the UK have been MSSA. Community associated MRSA (CA-MRSA) are more likely to produce PVL than hospital associated MRSA. PVL-positive S. Aureus are normally associated with necrotising pyogenic cutaneous infections and occasionally with cellulitis or tissue necrosis. However, they can cause other severe invasive infections such as septic arthritis, bacteraemia, purpura fulminans or community acquired necrotising pneumonia.

3.3.1 Key Recommendations in the Control of Antibiotic usage for Community Associates MRSA (Panton – Valentine Leukocidin (PVL)

Currently, most UK PVL-positive Staph aureus strains are susceptible to flucloxacillin and usually sensitive to erythomycin and clindamycin. Consider combinations of doxycycline and rifampicin for CA-MRSA.

In Tameside and Glossop:

Community associated MRSA (Paton – Valentine Leukocidin PVL) is rare in Tameside and Glossop community. However, if it was isolated, the Microbiologist would support prescribers. Greater Manchester Health Protection Unit and the PCT Infection prevention Service currently perform surveillance of PVL and it is likely that medical staff will be contacted to assist with a Root Cause Analysis.

3.4 Extended Spectrum Lactamase (ESBL) infections:

Lactam antibiotics are commonly used to treat bacterial infections. The groups of antibiotics in this category include penicillin, cephalosporins, carbapenems and monobactams. Increased use of antibiotics, particularly the third generation cephalosporins, has been associated with the emergence of lactamases – a common mechanism of bacterial resistance. These enzymes that cause resistance lead to the development of extended spectrum lactamase (ESBL) producing bacteria.

3.4.1 Key Recommendations in the Control of Antibiotic Usage for Extended Spectrum Lactamase (ESBL) Infections:

Effective control measures are less well understood than for other types of antibiotic resistant bacteria for example C. difficile.

Until we know more about how to control these bacteria it is suggested that:

All care establishments should ensure that hand washing and other infection control procedures are rigorously enforced. Visitors and patients should also practice good hand hygiene

In some circumstances patients with ESBL producing bacteria will be isolated whilst in hospital to prevent spread to others

Individuals’ known to be colonised should not share a room with someone with a urinary catheter or IV line.
Minimising the use of antibiotics is crucial to helping reduce spread.

Thorough cleaning should also be undertaken to maintain a clean and safe environment.

For further information on the prevention and control of ESBL infections, please refer to the PCT Infection Prevention Service.

4. Further Reading:

Department of Health. Resistance to Antibiotics and other Antimicrobial agents; action for the NHS following the Government’s response to the House of Lords Science and Technology Select Committee report. Department of Health; 1999. (Health Service Circular: HSC (99) 049.)


JE Coia a, CG Duckworth b, DI Edwards c, M Farrington d, C Fry e, H Humphreys f *, C Mallaghan g, D R Tucker h, for the Joint Working Party of the British Society of Antimicrobial Chemotherapy, the Hospital Infection Society and the Infection Control Nurses Association.


Clostridium Difficile infection prevention and management, a report by a Department of Health / Public Health Laboratory Service Joint Working Group 1994.

References:


3. BNF September 2007 (no 54) and cBNF 2007 www.bnf.org/bnf


13. HPA (last reviewed 2006) Diagnosis for UTI quick reference Guide for Primary Care www.hpa.org.uk

15. HPA (last reviewed 2006) Diagnosis of H.pylori Quick Reference Guide for Primary Care [www.hpa.org.uk]


17. BASSH website.

Authors

Naomi Hornby  Antibiotic Specialist Pharmacist
Tameside and Glossop Acute NHS Trust

Dr R Rani  Consultant on GUM and Sexual Health
Tameside and Glossop Primary Care Trust

Collette Saunders  Clinical Lead Infection Control
Tameside and Glossop Primary Care Trust

Reviewed by

Dr Howard Sacho  Consultant Medical Microbiologist
Tameside and Glossop Acute NHS Trust

Dr Philip Unsworth  Consultant Medical Microbiologist
Tameside and Glossop Acute NHS Trust

Tony Sivner  Chief Pharmacist
Tameside and Glossop Acute NHS Trust

Dr Lorraine Lighton  Consultant in Communicable Disease Control
Greater Manchester Health Protection Unit

Also

Dr J Doldon  Prescribing Lead
Tameside and Glossop Primary Care Trust

Dr Alan Dow  Clinical Governance Lead
Tameside and Glossop Primary Care Trust

Dr A Rothery  Medical Director
Tameside and Glossop Primary Care Trust

P Howarth  Prescribing Advisor
Tameside and Glossop Primary Care Trust

J Dickinson  Senior Nurse Infection Control
Tameside and Glossop Acute NHS Trust
Clostridium difficile drug-resistant bacteria, coloured transmission electron micrograph (TEM). This bacterium, also known as C. diff, is a normal member of the intestinal flora in humans. It is resistant to many antibiotics, however, and if the rest of the gut flora is killed by a course of antibiotics, C. diff can flourish. In such cases it can cause severe gut infections, including the potentially fatal pseudomembranous colitis. The bacteria can form spores (pink ovals), which are resistant to heat and many chemicals. C. diff is one of the most common hospital-acquired infections.

Magnification: x4300 when printed 10cm wide.