NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

Aims

- To provide a rational empirical approach to the treatment of common infections
- To promote the safe, effective and economic use of antibiotics
- To minimise the emergence of bacterial resistance in the community

Principles of Treatment

1. This guidance is based on the best available evidence but its application must be modified by professional judgement.
2. A dose and duration of treatment is suggested. In severe or recurrent cases consider a larger dose or longer course.
3. Limit prescribing over the telephone to exceptional cases
4. Use simple generic antibiotics first whenever possible. Avoid broad spectrum antibiotics (e.g. co-amoxiclav, quinolones and cephalosporins) when standard and less expensive antibiotics remain effective, as broad spectrum antibiotics increase risk of *Clostridium difficile*, MRSA and resistant UTIs
5. Avoid widespread use of topical antibiotics (especially those agents also available as systemic preparations).
6. Proton Pump Inhibitors (PPIs) are thought to increase the risk of *C.difficile*, especially when co-prescribed with antibiotics. To limit the occurrence of *C.difficile* it is sensible to limit the prescribing of PPIs to those patients where the benefit of potent acid suppression outweighs these potential risks. Please see the 'North of Tyne Area Prescribing Committee Proton Pump Inhibitors (PPIs) Prescribing Guidance'. If the patient has had previous *C.difficile* and requires antimicrobials, please contact microbiology.
7. Contraindications, cautions and drug interactions are not listed in this guidance and should be considered when prescribing any of the recommended agents.
8. In pregnancy AVOID tetracyclines, aminoglycosides, quinolones, and *high dose* metronidazole (e.g. 2g single doses). Trimethoprim (theoretical risk in first trimester in patients with poor diet, as folate antagonist but BNF advises to avoid). Nitrofurantoin (BNF advises to avoid at term as theoretical risk of neonatal haemolysis). Clarithromycin (no direct evidence of harm but manufacturer advises to avoid). Azithromycin, manufacturer advises use only if adequate alternative not available.
9. Itraconazole, the CSM advises caution in patients with high risk of heart failure.
10. Clarithromycin is an acceptable alternative, except in pregnancy (see above) in those who are unable to tolerate erythromycin because of side effects.
11. Restricting the use of cephalosporins leads to a reduction in *C. difficile* cases occurring in hospital. General Practitioners are asked to restrict their use of cephalosporins, particularly in those patients aged 65 and over who are at greatest risk of developing *Clostridium difficile* associated diarrhoea.
12. For further information on individual drugs please refer to the BNF/SPC (please note that the doses in the following guideline may differ from those stated in the BNF/SPC).
13. Be aware that oral suspensions and liquids can be significantly more expensive than solid dosage forms and, therefore, should only be used where clinically appropriate.
14. Where a 'best guess' therapy has failed or special circumstances exist, microbiological advice can be obtained from:

CONTACTS

Northumbria Healthcare Foundation Trust
☎ 0191 2932538
Consultants: Dr Jayanta Sarma, Dr Bryan Marshall, Dr Victoria Cleeve, Dr Tamsin Oswald and Dr David Tate.

Newcastle upon Tyne Hospitals NHS Foundation Trust
☎ 0191 2336161
Consultants: Professor Kate Gould, Dr Kathy Walton, Dr Muhammad Raza, Dr Julie Samuel, Dr Manjusha Narayanan and Dr Ali Robb.

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

These guidelines are based on the HPA template[1] with updated information from PRODIGY (formerly Clinical Knowledge Service, CKS)[3] and BNF 63 March 2012

Visit PRODIGY for additional and detail information on any specific topic

Produced for the Area Prescribing Committee by the North of Tyne Antimicrobial Chemotherapy Subgroup

Version 3. Date of preparation: August 2012 Review date: August 2014.

Chemotherapy Subgroup contact for review of content of this document: Dr Tamsin Oswald (contact number as above)

1. http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947333801

3. http://prodigy.clarity.co.uk/home

ILLNESS	COMMENTS	DRUG	DOSE	DURATION
UPPER RESPIRATORY TRACT INFECTIONS Patient Decision Aids designed to describe the risks and benefits of antibiotic treatment for common RTIs have been produced by the National Prescribing Centre.				
Influenza HPA Influenza	**Annual vaccination is essential for all those at risk of influenza**. For otherwise healthy adults antivirals not recommended. **Treat 'at risk' patients**, when influenza is circulating in the community and **within** 48 hours of onset or in a care home where influenza is likely. **At risk:** pregnant (including up to two weeks post partum), 65 years or over, chronic respiratory disease (including COPD and asthma) significant cardiovascular disease (not hypertension), immunocompromised, diabetes mellitus, chronic neurological, renal or liver disease. Use 5 days treatment with oseltamivir 75 mg bd or if there is resistance to oseltamivir use 5 days zanamivir 10 mg BD (2 inhalations by diskhaler). For prophylaxis, see NICE. (NICE Influenza). Patients under 13 years see HPA Influenza link.			
Acute Sore Throat PRODIGY	**Avoid antibiotics** as 90% resolve in 7 days without, and pain only reduced by 16 hours [A+] If Centor score 3 or 4: (Lymphadenopathy; No Cough; Fever; Tonsillar Exudate) [A-] consider 2 or 3-day delayed or immediate antibiotics [A+] Antibiotics to prevent Quinsy NNT >4000 [B-] Antibiotics to prevent Otitis media NNT 200 [A+]	phenoxymethylpenicillin[B-] *Penicillin Allergy:* erythromycin *(tablets should be used in preference to capsules due to cost)* clarithromycin *(only for those who cannot tolerate erythromycin, due to cost)*	500 mg QDS 1g BD (QDS when severe) 250-500mg QDS250-500mg BD	10 days 5 days 5 days
Acute Otitis Media (child doses) PRODIGY	**Optimise analgesia and target antibiotics** [B-] OM resolves in 60% in 24 h without antibiotics, which only reduce pain at 2 days (NNT15) **and do not prevent deafness** [A+] Consider 2 or 3-day delayed [A+] or immediate antibiotics for pain relief if: **<2 years** AND bilateral AOM (NNT4) or bulging membrane & ≥ 4 marked symptoms+ **All ages** with otorrhoea NNT3 [A+] Abx to prevent mastoiditis NNT >4000 [B-]	amoxicillin *Penicillin Allergy:* erythromycin *(tablets should be used in preference to capsules due to cost)* clarithromycin *(only for those who cannot tolerate erythromycin, due to cost)*	Child doses 40mg/kg/day in 3 doses (max. 1.5g daily) < 2yrs 125mg QDS 2-8yrs 250mg QDS 8-18yrs 250-500mg QDS 7.5mg BD (Neonates) 1 months to 12 years Body weight 8-10kg 62.5mg BD 12-19kg 125mg BD 20-29mg 187.5mg BD 30-40mg 250mg BD 12 years or above 250-500mg BD	5 days 5 days 5 days

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

Acute Otitis Externa PRODIGY Patient Decision Aid	First use aural toilet (if available) & analgesia Cure rates similar at 7 days for topical acetic acid or antibiotic +/- steroid [A+] If cellulitis or disease extending outside ear canal, start oral antibiotics and refer [A+] Fungal infection identified by microbiology.	*First Line:* acetic acid 2% *Second Line:* neomycin sulphate with corticosteroid Otosporin ear drops acetic acid 2% clotrimazole 1% clioquinol 1% / flumetasone 0.02% ear drops	1 spray TDS 3 drops TDS Adults and children over 3 years old 3 drops TDS into affected ear(s) 1 spray TDS 2-3 drops BD/TDS 2-3 drops BD	7 days 7 - 14 days 7 days 7 days Continuing for at least 14 days after disappearance of infection 7-10 days
Acute Rhinosinusitis[C] PRODIGY	**Avoid antibiotics** as 80% resolve in 14 days without, and they only offer marginal benefit after 7 days NNT15 [A+] **Use adequate analgesia** [B+] Consider 7-day delayed or immediate antibiotic when purulent nasal discharge NNT8 [A+] In persistent infection use an agent with anti-anaerobic activity e.g. co-amoxiclav [B+]	amoxicillin *or* doxycycline *or* phenoxymethylpenicillin *for persistent symptoms:* co-amoxiclav	500mg TDS 1g if severe 200mg stat/100mg OD 500mg QDS 625mg TDS	7 days 7 days 7 days 7 days

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

ILLNESS	COMMENTS	DRUG	DOSE	DURATION OF TX
LOWER RESPIRATORY TRACT INFECTIONS Patient Decision Aids designed to describe the risks and benefits of antibiotic treatment for common RTIs have been produced by the National Prescribing Centre.				
Note: *Low doses of penicillins are more likely to select out resistance. Do **not** use quinolone (ciprofloxacin, ofloxacin) first line due to poor pneumococcal activity. Reserve all quinolones (including levofloxacin) for PROVEN resistant organisms.*				
Acute cough, bronchitis PRODIGY NICE 69	Antibiotic little benefit if no co-morbidity [A+] Symptom resolution can take 3 weeks. Consider 7-14 day delayed antibiotic with symptomatic advice/leaflet [A-]	amoxicillin *or* doxycycline	500 mg TDS 200 mg stat/100 mg OD	5 days 5 days
Acute exacerbation of COPD NICE 12 Gold	Treat exacerbations promptly with antibiotics if purulent sputum **and** increased shortness of breath **and/or** increased sputum volume [B+]. Risk factors for antibiotic resistant organisms include co-morbid disease, severe COPD, frequent exacerbations, antibiotics in last 3 month	amoxicillin *or* doxycycline *or* erythromycin *(tablets should be used in preference to capsules due to cost)* *or* clarithromycin *(only for those who cannot tolerate erythromycin, due to cost)* If resistance risk factors: co-amoxiclav	500 mg TDS 200 mg stat/100 mg OD 500mg QDS 500 mg BD 625 mg TDS	5 days 5 days 5 days 5 days 5 days
Community-acquired pneumonia - treatment in the community BTS 2009 Guideline	Use CRB65 score to help guide and review: Each scores 1: **C**onfusion (AMT<8); **R**espiratory rate >30/min; Age >**65**; **B**P systolic <90 or diastolic ≤ 60; Score 0: suitable for home treatment; Score 1-2: hospital assessment or admission **Score 3-4: urgent hospital admission** Give immediate IM benzylpenicillin or amoxicillin 1g po if delayed admission/life threatening Mycoplasma infection is rare in over 65s	IF CRB65=0: amoxicillin *or* erythromycin *(tablets should be used in preference to capsules due to cost)* *or* clarithromycin *(only for those who cannot tolerate erythromycin, due to cost)* *or* doxycycline If CRB65=1 & AT HOME amoxicillin *and* clarithromycin *or* doxycycline alone	500 mg TDS 500mg QDS 500 mg BD 200 mg stat/100 mg OD 500 mg TDS 500 mg BD 200 mg stat/100 mg OD	7 days 7 days 7 days 7 days 7-10 days 7-10 days
MENINGITIS (NICE fever guidelines)				
Suspected meningococcal disease HPA	**Transfer all patients to hospital immediately.** IF time before admission, give IV benzylpenicillin or cefotaxime [B+], unless hypersensitive i.e. history of difficulty breathing, collapse, loss of consciousness, or rash [B-]	IV or IM benzylpenicillin *or* IV or IM cefotaxime	Age 10+ years: 1200 mg Children 1 - 9 yr:600 mg Children <1 yr: 300 mg Age 12+ years: 1gram Child < 12 yrs: 50mg/kg	(give IM if vein cannot be found)
Prevention of secondary case of meningitis: Only prescribe following advice from North East Health Protection Unit : 0844 225 3550				
URINARY TRACT INFECTIONS				
People > 65 years: do not treat asymptomatic bacteriuria; it is common but is not associated with increased morbidity [B+] **Catheter in situ: antibiotics will not eradicate asymptomatic bacteriuria;** only treat if systemically unwell or pyelonephritis likely [B+] Do not use prophylactic antibiotics for catheter changes unless history of catheter-change-associated UTI [B] Nitrofurantoin is ineffective in patients with GFR<60. Nitrofurantion 50mg capsules should be used in preference to the tablets due to cost.			
UTI in men & women (no fever or flank pain) HPA QRG SIGN PRODIGY, PRODIGY Patient Decision Aid	**Women** with severe/≥ 3 symptoms: treat [AC] **Women** with mild/ ≤ 2 symptoms: use dipstick to guide treatment. Nitrite & blood/leucocytes has 92% positive predictive value ; -ve nitrite, leucocytes, and blood has a 76% NPV [A-] **Men**: send pre-treatment MSU [C] OR if symptoms mild/non-specific, use –ve nitrite and leucocytes to exclude UTI [C]	trimethoprim [B+] *or* nitrofurantoin [B+ C B+] *Second line*: perform culture in all treatment failures and wait for sensitivities unless patient is clinically unwell [B] Amoxicillin resistance is common; only use if susceptible [B+] Community multi-resistant Extended-spectrum Beta-lactamase *E. coli* are increasing: consider nitrofurantoin (or pivmecillinam 400mg stat then 200mg tds for 3 days in women or fosfomycin 3g stat in women [B,A] plus 2nd 3g dose in men 3 days, on advice of a microbiologist)	200mg BD 100mg m/r BD [C]	Women all ages 3 days [A+] Men 7 days [C]

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

UTI in pregnancy HPA QRG PRODIGY	Send MSU for culture & sensitivity and start empirical antibiotics A short-term use of nitrofurantoin in pregnancy is unlikely to cause problems to the foetus [C] but avoid nitrofurantoin at term in UTI in pregnancy. Avoid trimethoprim if low folate status or on folate antagonist (e.g. antiepileptic or proguanil)	*First line*: nitrofurantoin if susceptible, amoxicillin *Second line:* trimethoprim Third line: cefalexin [C, B-]	100 mg m/r BD 500 mg TDS 200 mg BD (off-label) Give folic acid if first trimester 500 mg BD	 All for 7 days [C]
UTI in children HPA QRG PRODIGY NICE	Child <3 months: refer urgently for assessment[C] Child ≥ 3 months: use positive nitrite to start antibiotics1[A+] Send pre-treatment MSU for all. Imaging: only refer if child <6 months, recurrent or atypical UTI[C]	*Lower UTI*: trimethoprim[A] *or* nitrofurantoin [A-] *or* cefalexin[C] if susceptible, amoxicillin [A] *Upper UTI:* co-amoxiclav [A] Second line: cefixime [A]	 See BNF for dosage	Lower UTI 3 days [A+] Upper UTI 7-10 days [A+]
Acute pyelonephritis PRODIGY	If admission not needed, send MSU for culture & sensitivities and start antibiotics [C] If no response within 24 hours, admit [C]	ciprofloxacin [A-] *or* co-amoxiclav [C]	500 mg BD 625 mg TDS	7 days [A]- 14 days [C]
Recurrent UTI in women ≥ 3 UTIs/year	Post-coital prophylaxis [1, 2B+] or standby antibiotic [3B+] Nightly: reduces UTIs but adverse effects [1A+]	nitrofurantoin *or* trimethoprim	50–100 mg 100 mg	Post coital stat (off-label) [B+,C] Prophylaxis OD at night [A+]
Catheter Associated UTI	Urinary catheter becomes colonised with coliforms 24-48 hours after insertion, culture and treatment indicated only if the patient is systemically unwell or pyelonephritis likely. Do not use urine dipstick to exclude UTI - send CSU for culture if necessary. If recurrence of UTI change the catheter and consider a silver coated catheter.	Treat as according to laboratory results or microbiology advice		

ORAL INFECTIONS: Emphasise the need to seek dental treatment from a dentist as soon as possible

Oral Infections: Acute periapical abscess Periodontal abscess Cellulitis Acutely created oral-antral communication (and acute sinusitis) Severe pericoronitis Localised osteitis Acute necrotising ulcerative Gingivitis	Most oral infections are readily resolved by the early establishment of drainage and removal of the cause (typically an infected necrotic pulp), hence the need to refer to a dental practitioner for this treatment. **Antibiotics are generally NOT indicated for otherwise healthy individuals when there are no signs of spreading infection. Please rule out other causes including viral infections.** The 'blind' prescribing of an antibacterial for unexplained pyrexia, cervical lymphadenopathy, or facial swelling can lead to difficulty in establishing the diagnosis. In severe oral infections, a sample should always be taken for bacteriology. If the oral infection fails to respond to antibacterial treatment within 48 hours the antibacterial should be changed, preferably on the basis of bacteriological investigation. Failure to respond may also suggest an incorrect diagnosis, lack of essential additional measures (such as drainage), poor host resistance, or poor patient compliance. Only prescribe an antibiotic for: People who are systemically unwell or if there are signs of severe infection e.g. fever, lymphadenopathy, cellulitis, diffuse swelling, trismus High risk individuals to reduce the risk of complications e.g. people who are immunocompromised or diabetic or have valvular heart disease Do not routinely provide repeat prescriptions. Instead advise the person to see a dental practitioner urgently

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

Destructive forms of chronic periodontal disease.	Seek further advice or admit a person to hospital if they have a dental abscess and: • Are unwell with a high temperature and cardio-respiratory compromised • Early signs of dysphagia or a significant "floor of the mouth" swelling • Are in severe pain and have exceeded maximum tolerated doses of pain killers • Have a spreading facial swelling • Have a history of being immunocompromised- haematological malignancies, AIDS with low CD4+counts, bone marrow or other organ transplants, splenectomy, genetic disorders e.g. severe combined immunodeficiency • Infections involving fascial spaces e.g. Ludwigs angina, Bacterial sialadenitis Ostemyelitis Actinomycosis	*first choice:* amoxicillin *or* phenoxymethylpenicillin *(Faculty of General Dental Practitioners alternative first choice)* *or* metronidazole (*BNF recommends as alternative first choice)* *or* if diagnosis of acute necrotizing ulcerative gingivitis or pericoronitis *or* if patient has had recent course of penicillin If predominately anaerobic or microbiologically proven a combination of amoxicillin or penicillin with metronidazole is recommended	Adults: 500mg TDS Children:<12 months 62.5mg TDS 1-5 years old:125mg TDS 6-12 years: 250mg TDS Adults:500mg QDS Children:<12 months 62.5mg QDS 1-6 years: 125mg QDS 6-12 years: 250mg QDS Adults: 200mg TDS Children: 1-3 years:50mg TDS 3-7 years: 100mg BD7-10 years: 100mg TDS	Up to 5 days Up to 5 days Up to 5 days Up to 5 days Up to 5 days Up to 5 days Up to 5 days Up to 5 days 3 days 3 days 3 days 3 days
		if allergic to penicillin: metronidazole *or* erythromycin *(tablets should be used in preference to capsules due to cost)*	As above Adults:500mg QDS Children: 1month-2years: 125mg QDS 2-8 years: 250mg QDS	3 days Up to 5 days Up to 5 days Up to 5 days

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

ILLNESS	COMMENTS	DRUG	DOSE	DURATION OF TX
GASTRO-INTESTINAL TRACT INFECTIONS				
Eradication of Helicobacter pylori NICE HPA quick reference guide Managing symptomatic relapse	Eradication is beneficial in DU, GU and low grade MALTOMA, but NOT in GORD. [A] In Non-ulcer dyspepsia, 8% of patients benefit. Triple treatment attains >85% eradication. [A+] Do not use clarithromycin or metronidazole if used in the past year for any infection. [C] DU/GU: Retest for helicobacter if symptomatic. Non-ulcer dyspepsia: Do not retest, treat as functional dyspepsia. In treatment failure check compliance. In treatment failure consider endoscopy for culture and sensitivity.[C] Use quadruple therapy (a PPI BD, PLUS tripotassium dicatrobismuthate 240mg BD, PLUS two antibiotics not used before).	*first line* [A+] lansoprazole *or* omeprazole *plus* clarithromycin *and* amoxicillin *alternative regime* (especially if penicillin allergy) lansoprazole *or* omeprazole *plus* clarithromycin *and* metronidazole *second line:* Other combinations of omeprazole *or* lansoprazole tripotassium dicatro bismuthate (De Noltab) Tabs) *plus* 2 antibiotics from: amoxicillin clarithromycin metronidazole oxytetracycline may be used if particular antibiotics are contraindicated or if resistance is likely. --see BNF	 30 mg BD 20 mg BD 500 mg BD 1g BD 30 mg BD 20 mg BD 250 mg BD 400 mg BD 30 mg BD 20 mg BD 240 mg BD 1g BD 250 mg BD 400 mg BD 500 mg QDS	 All for 7 days [A] 14 days in relapse or maltoma
Infectious diarrhoea PRODIGY	Refer previously healthy children with acute painful or bloody diarrhoea to exclude E. coli 0157 infection.[C] **Antibiotic therapy not indicated unless systemically unwell**. [C]. If systemically unwell and campylobacter suspected (e.g. undercooked meat and abdominal pain), consider clarithromycin 250–500 mg BD for 5–7 days if treated early.[C]			
Clostridium difficile DH & HPA	Stop unnecessary antibiotics and/or PPIs [B+] 70% respond to metronidazole in 5days; 92% in 14days[3] Treat ribotype 027 with vancomycin Admit if severe: T >38.5; WCC >15, rising creatinine or signs/symptoms of severe colitis1[C]	*1st/2nd episodes* metronidazole [A-] *3rd episode/severe* oral vancomycin [A-]	 400mg TDS 125mg QDS	 10-14 days [C] 10 -14 days [C]
Traveller's diarrhoea PRODIGY	**Only consider standby antibiotics for** remote areas or people at high-risk of severe illness with traveller's diarrhoea [C] If standby treatment appropriate give: ciprofloxacin 500 mg twice a day for 3 days (private Rx). [C,B+] If quinolone resistance high (e.g. south Asia): consider bismuth subsalicylate (Pepto Bismol) 2 tablets QDS as prophylaxis [B+] or for 2 days treatment [B+]			
Acute diverticulitis PRODIGY	People with mild, uncomplicated diverticulitis can be managed at home with paracetamol, clear fluids, and antibiotics. For details of when to admit please see CKS.	co-amoxiclav *If penicillin allergic:* ciprofloxacin *plus* metronidazole	625 mg TDS 500 mg BD 400 mg TDS	7 days 7 days
Threadworms PRODIGY	Treat all household contacts at same time *plus* advise hygiene measures for 2 weeks (hand hygiene, pants at night, morning shower) *plus* wash sleepwear, bed linen, dust and vacuum on day one [C]	>6 months: mebendazole (off-label if <2yrs) 3-6 months: piperazine+senna < 3months: 6 wks hygiene	100mg [C] 2.5ml [C]	Stat stat, repeat after 2 weeks
GENITAL TRACT INFECTIONS				
STI screening	People with risk factors should be screened for chlamydia, gonorrhoea, HIV, syphilis. Refer individual and partners to GUM service. Risk factors: < 25y, no condom use, recent (<12mth)/frequent change of partner, symptomatic partner			
Chlamydia trachomatis	Opportunistically screen all aged 15-25yrs Treat partners and refer to GUM service [B+] Pregnancy [C] or breastfeeding: azithromycin	azithromycin *or* doxycycline Pregnant or	1 g 100 mg BD	stat 7 days

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

SIGN, BASHH HPA, PRODIGY	is the most effective option [A+; B-] Due to lower cure rate in pregnancy, test for cure 6 weeks after treatment [C]	breastfeeding: azithromycin *or* erythromycin *or* amoxicillin	 1g (off-label use) 500 mg QDS 500 mg TDS	 stat 7 days 7 days
Vaginal candidiasis BASHH HPA, PRODIGY	All topical and oral azoles give 75% cure [A+] In pregnancy: avoid oral azole [B-] and use intravaginal treatment for 7 days [A+, B-]	clotrimazole *or* oral fluconazole clotrimazole *or* miconazole 2% cream	500 mg pessary *or* 10%cream 150 mg orally 100 mg pessary at night 5 g intravaginally BD	stat stat 6 nights 7 days
Bacterial vaginosis BASHH HPA, PRODIGY	Oral metronidazole is as effective as topical treatment [A+] but is cheaper. Less relapse with 7 day than 2g stat at 4 wks [A+] Pregnant [A+]/breastfeeding: avoid 2g stat [A+,B-] Treating partners does not reduce relapse [B+]	metronidazole *or* metronidazole 0.75% vaginal gel *or* clindamycin 2% cream	400 mg BD or 2 g 5 g applicatorful at night 5 g applicatorful at night	7 days stat 5 nights 7 nights
Trichomoniasis BASHH HPA, PRODIGY	Treat partners and refer to GUM service [B+] In pregnancy or breastfeeding: avoid 2g single dose metronidazole [B-]. Consider clotrimazole for symptom relief (not cure) if metronidazole declined [B+]	metronidazole clotrimazole	400 mg BD or 2 g 100 mg pessary at night	5-7 days stat 6 nights
Pelvic Inflammatory Disease RCOG BASHH, PRODIGY	Refer woman & contacts to GUM service [B+] Always culture for gonorrhoea & chlamydia [B+] 28% of gonorrhoea isolates now resistant to quinolones [B+] If gonorrhoea likely (partner has it, severe symptoms, sex abroad) use ceftriaxone regimen or refer to GUM.	metronidazole *plus* ofloxacin If high risk of GC ceftriaxone *plus* metronidazole *plus* doxycycline	400 mg BD 400 mg BD 500 mg IM 400 mg BD 100 mg BD	14 days 14 days Stat 14 days 14 days
Genital Herpes Simplex (first clinical episode) PRODIGY	Refer same day to GUM. If not feasible, refer to GUM later and treat. See PRODIGY for details. Aciclovir is first line choice. Valalciclovir is available as a second line treatment for those patients unable to comply with aciclovir treatment regime, it is much more expensive.	*First line* aciclovir *Second line* valalciclovir	 200 mg 5 times daily 500 mg BD	 5 days 5 days
Epididymo-orchitis PRODIGY	**Have a very low threshold for suspecting and admitting to exclude testicular torsion**, particularly in adolescents and men younger than 30 years. Consider likely causes based on the person's age. If mumps orchitis is suspected see PRODIGY topic on mumps. If symptoms are severe or the man or boy is very unwell consider admitting to hospital particularly if he has diabetes or is immunocompromised. Ideally refer for same day or next day assessment by a sexual health specialist (if mumps orchitis is not diagnosed). If urgent referral to a sexual health specialist not possible: Obtain a mid-stream urine for dipstick, microscopy and culture Test for sexually transmitted infections Treat without waiting for test results. For full details see PRODIGY	If urgent referral to a sexual health professional not possible : If epididymo-orchitis is thought to be due to a sexually transmitted organism : *If chlamydia thought to be possible:* doxycycline *If gonorrhoea is thought to be possible (because there is an outbreak or there is purulent discharge)* *If enteric organisms are thought possible:* ciprofloxacin *Alternative :* (If quinolones contra-indicated) co-amoxiclav	 100 mg BD Seek advice from a sexual health specialist 500 mg BD 625 mg TDS	 10-14 days 10-14 days 10-14 days

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

Acute prostatitis BASHH, PRODIGY	Send MSU for culture and start antibiotics [C]. 4-wk course may prevent chronic prostatitis [C] Quinolones achieve higher prostate levels Refer to specialist	ciprofloxacin [C] *or* ofloxacin [C] *2nd line:* trimethoprim [C]	500 mg BD 200 mg BD 200 mg BD	28 days [C] 28 days [C] 28 days [C]
ILLNESS	**COMMENTS**	**DRUG**	**DOSE**	**DURATION OF TX**
SKIN INFECTIONS				
Impetigo PRODIGY	For extensive, severe, or bullous impetigo, use oral antibiotics [1C] Reserve topical antibiotics for very localised lesions to reduce the risk of resistance [1,5C, 4B+] Reserve mupirocin for MRSA [1C]	oral flucloxacillin *If penicillin allergic:* erythromycin *(tablets should be used in preference to capsules due to cost)* *or* clarithromycin *(only for those who cannot tolerate erythromycin, due to cost)* topical fusidic acid MRSA only mupirocin	500 mg QDS 500 mg QDS 500mg BD TDS TDS	7 days 7 days 5 days 5 days 5 days
Eczema PRODIGY	If no visible signs of infection, use of antibiotics (alone or with steroids) encourages resistance and does not improve healing [1B] In eczema with visible signs of infection, use treatment as in impetigo [2C]			
Cellulitis PRODIGY	If patient afebrile and healthy other than cellulitis, use oral flucloxacillin alone [1,2C] If river or sea water exposure, discuss with microbiologist. If febrile and ill, admit for IV treatment [1C] Stop clindamycin if diarrhoea occurs.	flucloxacillin *If penicillin allergic:* erythromycin *(tablets should be used in preference to capsules due to cost)* *or* clarithromycin *(only for those who cannot tolerate erythromycin, due to cost)* *or* clindamycin facial: co-amoxiclav	500 mg QDS 500mg QDS 500 mg BD 300–450 mg QDS 500/125 mg TDS	All for 7 days. If slow response continue for a further 7 days
Leg ulcers HPA QRG PRODIGY	Ulcers always colonised. Antibiotics do not improve healing unless active infection[1A+] If active infection, send pre-treatment swab [3C] Review antibiotics after culture results.	Active infection if cellulitis/increased pain/pyrexia/purulent exudate/odour *If active infection:* flucloxacillin *If penicillin allergic:* erythromycin *(tablets should be used in preference to capsules due to cost)* or clarithromycin *(only for those who cannot tolerate erythromycin, due to cost)*	 500 mg QDS 500 mg QDS 500 mg BD	 As for cellulitis
MRSA (please note: the use of flucloxacillin, cephalosporins, quinolones and macrolides e.g. erythromycin can increase the risk of infection in patients who are already colonised with MRSA)				
MRSA Treatment of skin and soft tissue infection in adult patients	Chronic ulcer such as pressure sores may be colonised with MRSA which does not require systemic treatment unless signs of infection. Similarly, MRSA often colonises throat, so sputum growing MRSA may reflect colonisation rather than infection. Seek advice for deep and severe MRSA infection.	Doxycycline + as advised my microbiologist	200 mg stat then 100 mg daily (can be increased to 200 mg daily in severe infections)	7 – 14 days

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

MRSA Decolonisation regimes in adult patients	Eradication is not always successful. The aim is not necessarily to eradicate but to reduce the load so that the risk of infection is reduced. Eradication should be attempted in special circumstances e.g. before elective surgery. Discuss with microbiologist if in doubt. Alternative skin cleansing agents are used in Hospital and Mental Health Trusts but are not readily available in primary care. Chlorhexidine mouthwash and triclosan toothpaste is only indicated and prescribed if the patient is actively screened and treatment of the throat offered. Use of throat spray only if proven throat carriage.	chlorhexidine 4% surgical scrub (e.g. Hibiscrub) *Alternatives* octenisan body wash *or* triclosan 1% (Skinsan) *plus* mupirocin 2% nasal ointment *or* Naseptin cream (chlorhexidine 0.1% plus 0.5% neomycin) – use in pregnancy *Only if indicated:* chlorhexidine 0.2% throat spray (Corsodyl) *or* chlorhexidine 0.2% mouthwash *plus* triclosan containing toothpaste (Colgate Total)	Wash body daily as a soap substitute in the bath or shower and hair on alternate days i.e. on the 2nd and 4th days Applied to the inside of both nostrils TDS Applied to the inside of both nostrils QDS 12 sprays BD after brushing teeth 10 ml BD after brushing teeth (After brushing teeth rinse mouth with water before using spray or mouth wash)	5 days 5 days 10 days 5 days 5 days 5 days
PVL *S. aureus* HPA QRG	Panton-Valentine Leukocidin (PVL) is a toxin produced by 2% of *S. aureus*. Can rarely cause severe invasive infections in healthy people. Send swabs if recurrent boils/abscesses. At risk: close contact in communities or sport; poor hygiene 1C			
Bites Human: Cat or dog: PRODIGY	Thorough irrigation is important 1C Assess risk of tetanus, HIV, hepatitis B&C1C Antibiotic prophylaxis is advised 3B- Assess risk of tetanus and rabies 2C Give prophylaxis if 3 cat bite/puncture wound; bite to hand, foot, face, joint, tendon, ligament; immunocompromised/diabetic/asplenic/ cirrhotic	Prophylaxis or treatment: co-amoxiclav *If penicillin allergic:* metronidazole *plus* doxycycline (cat/dog/man) or metronidazole *plus* erythromycin (human bite) AND review at 24&48hrs *(tablets should be used in preference to capsules due to cost)* clarithromycin *(only for those who cannot tolerate erythromycin, due to cost)*	625 mg TDS 400 mg TDS 100 mg BD 400 mg TDS 500 mg QDS 250-500 mg BD	All for 7 days
Scabies PRODIGY	Treat all home & sexual contacts within 24h 1C Treat whole body from ear/chin downwards and under nails. If under 2yrs/elderly, also face/scalp 2	permethrin *If allergy:* malathion	5% cream 0.5% aqueous liquid	2 applications 1 week apart
Fungal infection – skin PRODIGY body & groin PRODIGY foot PRODIGY scalp	Terbinafine is fungicidal , so treatment time shorter than with fungistatic imidazoles If candida possible, use imidazole 1 If intractable: send skin scrapings 2C If infection confirmed, use oral terbinafine/itraconazole 3B+ Scalp: discuss with specialist	Topical terbinafine or topical imidazole or (athlete's foot only): topical undecanoates (Mycota®)	BD BD BD	1-2 weeks for 1-2 wks after healing (i.e. 4-6wks)

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

Fungal infection – fingernail or toenail PRODIGY	Take nail clippings: start therapy if infection is confirmed by laboratory [1C] or there is a high level of clinical suspicion that there is an infection' Terbinafine is more effective than azoles [6A+] Liver reactions rare with oral antifungals [2A+] If candida or non-dermatophyte infection confirmed, use oral itraconazole [3B+ 4C] For children, seek specialist advice [3C]	*Superficial only* amorolfine 5% nail lacquer [5B-] *First line:* terbinafine [6A+] *Second line:* itraconazole [6A+]	1-2x/weekly fingers toes 250 mg OD fingers toes 200 mg BD fingers toes	6 months 12 months 6 – 12 weeks 3 – 6 months 7 days per month for 2 months 7 days per month for 3 months
Acne (Mild) PRODIGY	Benzoyl peroxide especially if papules and pustules. Prescribe topical antibiotics or azelic acid 15% gel if both topical retinoids and benzoyl peroxide are poorly tolerated. Combined treatment is rarely necessary. Consider prescribing a standard combined oral contraceptive in women who require contraception particularly if the acne is having a negative psychological impact.	tretinoin 0.01% gel *or* benzyl peroxide	1-2 times daily 1-2 times daily	Review after 6 weeks. See CKS for full details
Acne (Moderate) PRODIGY	Combined treatment should be considered in all people with moderate acne. Consider prescribing an oral antibiotic (oxytetracycline, doxycycline, lymecycline, or erythromycin) if topical treatment cannot be tolerated, if there is moderate acne on the back or shoulders (where it may be particularly extensive or difficult to reach), or if there is a significant risk of scarring or substantial pigment change. Consider prescribing a standard combined oral contraceptive in women who require contraception particularly if the acne is having a negative psychological impact.	*First line* benzoyl peroxide *plus* topical antibiotic *or* tretinoin 0.01% gel *plus* benzoyl peroxide (may be poorly tolerated) *Second line* oxytretracycline *or* doxycycline *or* lymecycline Alternative e.g. if tetracyclines are contraindicated or poorly tolerated) erythromycin	See BNF and above 500mg BD 100mg OD 408mg OD 500mg BD	Review after 6 weeks. See PRODIGY for full details Review after 6 weeks. See PRODIGY for full details
Acne (Severe) PRODIGY	Refer all patients with severe acne for specialist assessment and treatment. Consider prescribing a combined oral contraceptive in women who require contraception. Standard combined oral contraceptives or co-cyprindiol are options.	While waiting for referral consider: oral antibiotic *plus* benzoyl peroxide *or* tretinoin 0.01% gel *or* azelic acid15 % gel (if others poorly tolerated)	See BNF and above	See PRODIGY for full details
Varicella zoster/ chicken pox PRODIGY & Herpes zoster/ shingles PRODIGY	Pregnant/immunocompromised/neonate: seek urgent specialist advice [1B+] **Chicken pox:** If started <24hr of rash & >14y or severe pain or dense/oral rash or 2° household case or steroids or smoker consider aciclovir [2-4] **Shingles:** treat if >50 yrs [5A+] and within 72 hrs of rash [6B+] (PHN rare if <50yrs [7B-]); or if active ophthalmic [8B+] or Ramsey Hunt [9C] or eczema.	*If indicated:* aciclovir *Second line for shingles (if compliance a problem, as ten times cost)* valaciclovir	800 mg five times a day 1 g TDS	7 days 7 days
Cold sores	Cold sores resolve after 7–10d without treatment. Topical antivirals applied prodromally reduce duration by 12-24hrs [1,2,3B+,4]			

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

EYE INFECTIONS				
Conjunctivitis PRODIGY	Treat if severe, as most viral or self-limiting. Bacterial conjunctivitis is usually unilateral and also self-limiting;[2C] it is characterised by red eye with mucopurulent, not watery, discharge; 65% resolve on placebo by day five [1A+] Fusidic acid has less Gram-negative activity [3]	*If severe:* chloramphenicol 0.5% drops and 1% ointment *Second line:* fusidic acid 1% gel gentamicin 0.3% drops	0.5% drops 2 hourly for 2 days then QDS (whilst awake) *plus* 1% ointment at bedtime *or* 1% ointment QDS BD 2 hourly for 2 days then 4 hourly (whilst awake) and at bedtime	All for 48 hours after resolution (Usually for a total of 7days)

Changes to guidelines since the previous version (Version 2, April 2010)

Section	Addition	Removed
Principles of Treatment	6. Proton Pump Inhibitors (PPIs) are thought to increase the risk of *C.difficile*, especially when co-prescribed with antibiotics. To limit the occurrence of *C.difficile* it is sensible to limit the prescribing of PPIs to those patients where the benefit of potent acid suppression outweighs these potential risks. Please see the 'North of Tyne Area Prescribing Committee Proton Pump Inhibitors (PPIs) Prescribing Guidance'. If the patient has had previous *C.difficile* and requires antimicrobials, please contact microbiology.	
	12. For further information on individual drugs please refer to the BNF/SPC (please note that the doses in the following guideline may differ from those stated in the BNF/SPC).	
	13. Be aware that oral suspensions and liquids can be significantly more expensive than solid dosage forms and, therefore, should only be used where clinically appropriate.	
Influenza	• At risk: pregnant (including two weeks post partum) • **5 days** stated for oseltamivir • Note added to see HPA Influenza link for patients under 13 years	• when notified by DoH circular • or in a care home where influenza is likely • (including patients on DMARDs)
Acute Sore Throat	• Advice re: Centor score to consider **2 or 3 day delayed** or immediate antibiotics • Antibiotics to prevent Quinsy NNT >4000 • Antibiotics to prevent Otitis media NNT 200 • Clarithromycin added as option for those who cannot tolerate erythromycin • Erythromycin amended to state **250-500mg QDS** (from 500mg QDS) • Erythromycin amended to state **5 days** (from 7 days)	
Acute Otitis Media	• Changed to say **Acute Otitis Media** (from Otitis Media) • Clarithromycin added as option for those who cannot tolerate erythromycin • Amoxicillin dose amended to include 'max.3g daily'	• Amoxicillin removed as second line option • Azithromycin removed as second line option if allergic to penicillin
Acute Otitis Externa	• Section added	
Acute Rhinosinusitis	• Amended to say **'Avoid antibiotics'** (from 'Consider a delayed antibiotic prescription') • **'Use adequate analgesia'** • **Phenoxymethylpenicillin** added as an option • **Amoxicillin** – dose amended to add '1g if severe'	• Second line options removed
Acute exacerbation of COPD	• Clarithromycin added as option for those who cannot tolerate erythromycin	
Community-acquired pneumonia	• Change to recommendations depending on CRB65 scoring • Clarithromycin added as option for those who cannot tolerate erythromycin	
Suspected meningococcal disease	• Added: **' If time before admission** give IV benzylpenicillin **or cefotaxime**'	• Recommendation to give chloramphenicol if true anaphylaxis to penicillin
UTI - Fore note	• Added: 'People > 65 years: do not treat as asymptomatic bacteriuria' • Nitrofurantoin is ineffective in patients with GFR<60. • Nitrofurantion 50mg capsules should be used in preference to the tablets due to cost.	

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.

NORTH OF TYNE AREA PRESCRIBING COMMITTEE

PRIMARY CARE GUIDELINES FOR THE MANAGEMENT OF INFECTION

Section	Addition	Removed
UTI in men and women	• Dose for nitrofurantoin in women changed to '100mg m/r BD' (from 50 – 100mg QDS)	
UTI in pregnancy	• Added: 'avoid trimethroprim if low folate status or on folate antagonist (e.g. antiepileptic or proguanil) • Change to treatment recommendations	
UTI in children	• Amended – now specifies whether Lower or Upper UTI with respective dosing regimes • Cefalexin added as alternative first choice	
Recurrent UTI in women ≥ UTIs/year	• Dose for nitrofurantoin changed to '50-100mg' (from 50mg QDS)	
Catheter associated UTI	• Added: 'If recurrence of UTI change the catheter and consider a silver coated catheter.'	
Gastroenteritis	• Introductory section removed	
Eradication of *Heliobacter pylori*	• Triptotassium dicatrobismuthate dose changed to '240mg BD' (from 120mg QDS)	
Clostridium difficile	• Now states '*1st/2nd episodes*' and '*3rd episode/severe*' (previously stated 1st and 2nd line) • Duration changed to 10-14 days (from 10 days)	
Travellers' diarrhoea	• Change in advice	
Threadworms	• Also notes that use of mebendazole is off-label if <2 years	
Giardiasis	• Section removed	
Amoebic dysentery	• Section removed	
Oral infections	• Section added	
Chlamydia trachomatis	• Added: 'Opportunistically screen all aged 15-25 years	
Vaginal candidiasis	• Added: 'and use intravaginal treatment for 7 days' • Miconazole 2% cream added as a treatment option	
Bacterial vaginosis	• Metronidazole dose amended to state '400mg **or 2g'**	
Trichomoniasis	• Metronidazole duration amended to state '5-7 days' (from 5 days)	
Pelvic Inflammatory Disease	• Added: 'If high risk of GC, ceftriaxone *plus* metronidazole *plus* doxycycline'	
Epididymo-orchitis	• Ciprofloxacin duration changed to '10-14 days' (from 10 days) • Co-amoxiclav duration changed to '10-14 days' (from 10 days)	
Acute prostatitis	• Added: ofloxacin as a treatment option	
Impetigo	• Clarithromycin added as option for those who cannot tolerate erythromycin • Duration for topical fusidic acid changed to '5 days' (from 7 days); also Dose changed to TDS (from Topically QDS)	
Eczema	• Added: 'In eczema with visible signs of infection, use treatment as in impetigo'.	
Cellulitis	• Added: 'If river or sea water exposure, discuss with microbiologist.' • Added: 'Stop clindamycin if diarrhoea occurs.' • Clarithromycin added as option for those who cannot tolerate erythromycin • Clindamycin added as an alternative treatment • Co-amoxiclav recommended if facial • Duration for treatment options changed to 'All for 7 days. If slow response continue for a further 7 days.'	
Leg ulcers	• Added: treatment options • Clarithromycin added as option for those who cannot tolerate erythromycin	
PVL *S. aureus*	• Section added	
Bites	• Co-amoxiclav dose changed to '625mg TDS' (from 375 – 625mg TDS) • Added: 'cirrhotic' to those symptoms for which prophylaxis is required • Clarithromycin added as option for those who cannot tolerate erythromycin	
Scabies	• Added '& all sexual contacts' • Added: 'If under 2 yrs/elderly, also faces/scalp • Added: '*If allergy* malathion'	
Fungal infection - skin (changed from Dermatophyte infection of the skin)	• Added: 'or topical imidazole or (athlete's foot only): topical undecanoates (Mycota®) • Topical terbinafine – dose amended to state BD (changed from OD-BD)	• 1% clotrimazole
Fungal infection – fingernail or toenail (changed from Dermatophyte infection of the proximal fingernail or toenail)		
Acne (Moderate)	• Oral antibiotics specified by name	
Varicella zoster/chicken pox	• Amended 'Pregnant/immunocompromised/neonate: seek urgent specialist advice' (from 'If pregnant seek advice re treatment and prophylaxis') • Amendment to treatment of shingles to always include 'Ramsey Hunt' and 'eczema'	
Conjunctivitis	• Added: Gentamicin 0.3% eye drops, as a second line option	

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information***. A+ = systematic review, A- = rigorous RCT, B+ = RCT or cohort study, B- = case-control study, C = formal combination of expert opinion.