MANAGEMENT OF INFECTION GUIDANCE FOR PRIMARY CARE FOR CONSULTATION & LOCAL ADAPTATION

Association of Medical Microbiologists

Health Protection Agency

Aims

- ❑ to provide a simple, best guess 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. Prescribe an antibiotic only when there is likely to be a clear clinical benefit.
4. Consider a no, or delayed, antibiotic strategy for acute sore throat, common cold, acute cough and acute sinusitis.
5. Limit prescribing over the telephone to exceptional cases.
6. Use simple generic antibiotics if possible. Avoid broad spectrum antibiotics (eg co-amoxiclav, quinolones and cephalosporins) when narrow spectrum antibiotics remain effective, as they increase risk of *Clostridium difficile*, MRSA and resistant UTIs.
7. Avoid widespread use of topical antibiotics (especially those agents also available as systemic preparations).
8. In pregnancy AVOID tetracyclines, aminoglycosides, quinolones, *high dose* metronidazole. Short-term use of trimethoprim (unless low folate status or taking another folate antagonist such as antiepileptic or proguanil) or nitrofurantoin (at term, theoretical risk of neonatal haemolysis) is unlikely to cause problems to the foetus.
9. We recommend clarithromycin as it has less side-effects than erythromycin, greater compliance as twice rather than four times daily & generic tablets are similar cost. In children erythromycin may be preferable as clarithromycin syrup is twice the cost.
10. Where a 'best guess' therapy has failed or special circumstances exist, microbiological advice can be obtained from ** ☎ **

ILLNESS	COMMENTS	DRUG	DOSE	DURATION OF TX
UPPER RESPIRATORY TRACT INFECTIONS: Consider delayed antibiotic prescriptions.[A-]				
Influenza HPA Influenza	**Annual vaccination is essential for all those at risk of influenza**. For otherwise healthy adults, antivirals are not recommended. Treat 'at risk' patients, only when influenza is circulating in the community or in a care home where influenza is likely, within 48 hours of onset. At risk: 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 oseltamivir 75 mg oral capsule BD (for OD prophylaxis see (NICE Influenza) or zanamivir 10 mg (2 inhalations by diskhaler) BD for 5 days if there is resistance to oseltamivir. Patients under 13 years see HPA influenza link attached.			
Pharyngitis / sore throat / tonsillitis CKS SIGN	**The majority of sore throats are viral; most patients do not benefit from antibiotics.** Consider a delayed antibiotic strategy and explain soreness will take about 8 days to resolve. Patients with 3 of 4 centor criteria (history of fever, purulent tonsils, cervical adenopathy, absence of cough) or history of otitis media may benefit more from antibiotics.[A-] Antibiotics only shorten duration of symptoms by 8 hours.[A+] You need to treat 30 children or 145 adults to prevent one case of otitis media.[A+]			
	Evidence indicates that penicillin for 7 days is more effective than 3 days.[B+] Twice daily higher dose can also be used.[A-] QDS may be more appropriate if severe.[D]	*First line* phenoxymethylpenicillin	500 mg QDS 1G BD	10 days
		clarithromycin *if allergic to penicillin*	250 - 500 mg BD	10 days
Otitis media *(child doses)* CKS	**Many are viral. Illness resolves over 4 days in 80% without antibiotics.[A+]** Use NSAID or paracetamol.[A] Need to treat 20 children >2y and seven 6-24m old to get pain relief in one at 2-7 days.[A+B+] Antibiotics do not reduce pain in first 24 hours, subsequent attacks or deafness.[A+] Children with otorrhoea, or <2years with bilateral acute otitis media, have greater benefit but are still eligible for delayed prescribing. Haemophilus is an extracellular pathogen, thus macrolides, which concentrate intracellularly, are less effective treatment.	amoxicillin *First line*	40 mg/kg/day in 3 divided doses Maximum 1g TDS	5 days*
		if allergic to penicillin erythromycin	<2 yrs 125 mg QDS 2-8 yrs 250 mg QDS Other: 250-500 mg QDS	5 days* 5 days* 5 days*
		Second line co-amoxiclav	1-6 yrs 156 mg TDS 6-12 yrs 312 mg TDS	5 days* 5 days*
		azithromycin *only if allergic to penicillins*	15-25kg 200 mg OD 26-35kg 300 mg OD 36-45kg 400 mg OD	3 days 3 days 3 days
Acute sinusitis CKS	**Many are viral. Symptomatic benefit of antibiotics is small** - 69% resolve in 7-10 days without antibiotics; and 84% resolve with antibiotics.[A+] Reserve for severe[B+] or symptoms >10 days. Cochrane review concludes that amoxicillin and phenoxymethylpenicillin have similar efficacy to the other recommended antibiotics. If failure to respond use another first line antibiotic then second line	amoxicillin [A+] OR doxycycline OR clarithromycin phenoxymethylpenicillin [A+] *Second line:* co-amoxiclav OR ciprofloxacin PLUS metronidazole	500 mg TDS 200 mg stat/100 mg OD 250 mg /500mg BD 250 mg QDS/500mg BD 625 mg TDS 250 – 500 mg BD 400 mg TDS	7 days 7 days 7 days 7 days 7 days 7 days 7 days

* Standing Medical Advisory Committee guidelines suggest 3 days. In otitis media, relapse rate is slightly higher at 10 days with a 3 day course but long-term outcomes are similar.[A+.]

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LOWER RESPIRATORY TRACT INFECTIONS				
Note: *Avoid tetracyclines in pregnancy. Low doses of penicillins are more likely to select out resistance. The quinolones ciprofloxacin and ofloxacin have poor activity against pneumococci. However, they do have use in PROVEN pseudomonal infections. Levofloxacin has some anti-Gram-positive activity but should not be needed as first line treatment.*				
Acute cough, bronchitis CKS	In primary care, antibiotics have marginal benefits in otherwise healthy adults.[A+] Patient leaflets can reduce antibiotic use.[B+]	amoxicillin OR doxycycline	500 mg TDS 200 mg stat/100 mg OD	5 days 5 days
Acute exacerbation of COPD NICE CKS	30% viral, 30-50% bacterial, rest undetermined Use antibiotics if increased dyspnoea and increased purulence of sputum volume.[B+] In penicillin allergy use clarithromycin if doxycycline contraindicated *If clinical failure to first line antibiotics*	amoxicillin OR doxycycline Clarithromycin *Second line* co-amoxiclav	500 mg TDS 200 mg stat/100 mg OD 500 mg BD 625 mg TDS	5 days 5 days 5 days 5 days
Community-acquired pneumonia - treatment in the community BTS BTS pdf	**Start antibiotics immediately.**[B-] If no response in 48 hours consider admission or add clarithromycin first line or a tetracycline[C] to cover Mycoplasma infection (rare in over 65s) In severely ill give parenteral benzylpenicillin before admission[C] and seek risk factors for Legionella and *Staph. aureus* infection.[D]	amoxicillin OR clarithromycin	500 mg - 1g TDS 500 mg BD	Up to 10 days Up to 10 days
		oxytetracycline OR doxycycline	250-500 mg QDS 200 mg stat/100 mg OD	Up to 10 days Up to 10 days
MENINGITIS (NICE fever guidelines)				
Suspected meningococcal disease HPA	**Transfer all patients to hospital immediately.** Administer benzylpenicillin prior to admission, unless history of anaphylaxis,[B-] NOT allergy. Ideally IV but IM if a vein cannot be found.	IV or IM benzylpenicillin	Adults and children 10 yr and over: 1200 mg Children 1 - 9 yr: 600 mg Children <1 yr: 300 mg	
Prevention of secondary case of meningitis: Only prescribe following advice from Public Health Doctor: 9 am – 5 pm: ☎ ********* Out of hours: Contact on-call doctor via …… switchboard ☎ *********				
URINARY TRACT INFECTIONS HPA UTI quick reference guide ESBLs CKS UTI				
Note:. *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.*[B+] *In the presence of a catheter, antibiotics will not eradicate bacteriuria; only treat if systemically unwell or pyelonephritis likely.*				
Uncomplicated UTI ie no fever or flank pain in men & women HPA UTI	Use urine dipstick to exclude UTI -ve nitrite and leucocyte 95% negative predictive value. There is less relapse with trimethoprim than cephalosporins or pivmecillinam.[A-] Community multi-resistant *E. coli* with Extended-spectrum Beta-lactamase enzymes are increasing so perform culture in all treatment failures	trimethoprim[B+] OR nitrofurantoin[A-]	200 mg BD 100 mg m/r BD	Women 3 days[B+] Men 7 days
		Second line: depends on susceptibility of organism isolated eg nitrofurantoin amoxicillin, cefalexin, co-amoxiclav, quinolone, pivmecillinam ESBLs are multi-resistant but often remain sensitive to nitrofurantoin or fosfomycin (fosfomycin is available on a named patient basis)		
UTI in pregnancy	Send MSU for culture. Short-term use of nitrofurantoin in pregnancy is unlikely to cause problems to the foetus.[B+] Avoid trimethoprim if low folate status or taking folate antagonist (eg antepileptic or proguanil).	nitrofurantoin OR trimethoprim *Second line* cefalexin OR amoxicillin	100 mg m/r BD 200 mg BD 500 mg BD 250 mg TDS	7 days 7 days 7 days 7 days
Children	Refer children <3 months to specialist. Send MSU in all for culture & susceptibility. If ≤ 3 years, use positive nitrite to start antibiotics. Only refer children < 6 months, or with atypical UTI, for imaging'. Upper UTI	trimethoprim OR nitrofurantoin OR cefalexin If susceptible, amoxicillin Co-amoxiclav	See BNF for dosage	Lower UTI 3 days Upper UTI 7-10 days
Acute pyelonephritis	Send MSU for culture. RCT shows 7 days ciprofloxacin is as good as 14 days co-trimoxazole.[A-] If no response within 24 hours admit.	ciprofloxacin[A-] OR co-amoxiclav If susceptible, trimethoprim	500 mg BD 500/125 mg TDS 200 mg BD	7 days[A-] 14 days 14 days
Recurrent UTI women ≥ 3/yr	Post coital or nightly prophylaxis is equally effective. As low compliance, consider standby antibiotic.	Prophylactic nitrofurantoin OR trimethoprim	 50 mg 100 mg	 Stat post coital, OR OD at night

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GASTRO-INTESTINAL TRACT INFECTIONS				
Eradication of *Helicobacter pylori* NICE HPA HP quick reference guide Managing symptomatic relapse	Eradication is beneficial in DU, GU and low grade MALTOMA, but NOT in GORD.[A] In NUD, 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, using breath or stool test. NUD: Do not retest, treat as functional dyspepsia. In treatment failure consider endoscopy for culture & susceptibility.[C] Use 14d BD PPI PLUS 2 antibiotics, PLUS tripotassium dicitrato bismuthate	*First line*[A+] cheapest option lansoprazole PLUS clarithromycin AND metronidazole (MZ) OR amoxicillin (AM) *Second line* PPI PLUS bismuthate (DE-NOL tabs) PLUS 2 antibiotics: amoxicillin clarithromycin[A+] metronidazole tetracycline hydrochloride	30 mg BD 250 mg BD with MZ 500mg BD with AM 400 mg BD 1g BD BD 240 mg BD 1 g BD 500 mg BD 400 mg BD 500 mg QDS	**All for 7 days[A]** **14 days in relapse or maltoma**
Infectious diarrhoea	**Antibiotic therapy not indicated unless patient systemically unwell or post-antibiotic, suggesting *Clostridium difficile*.** CKS HPA HP quick reference guide			
Clostridium difficile	Stop unnecessary antibiotics and/or PPIs to re-establish normal flora. 70% respond to metronidazole in 5 days; 94% in 14 days. Severe if T >38.5; WCC >15, rising creatinine or signs/symptoms of severe colitis.	*1st/2nd episodes* metronidazole *3rd episode/severe* vancomycin	400 or 500 mg oral TDS 125mg oral QDS	10-14 days 10 -14 days
Traveller's diarrhoea	**Limit prescription of antibacterial to be carried abroad** and taken if illness develops (ciprofloxacin 750 mg single dose) to people travelling to remote areas and for people in whom an episode of infective diarrhoea could be dangerous. In areas of high ciprofloxacin resistance (Asia) can advise prophylactic bismuth subsalicylate (Pepto Bismol) 2 tablets QDS.			
Threadworms CKS	Treat household contacts. Advise morning shower/baths and hand hygiene. Use piperazine in children under 6 months.	mebendazole in all >6 mths or piperazine/senna sachet	100 mg 3-12 mths 2.5ml spoon	stat stat, repeat after 2 weeks
GENITAL TRACT INFECTIONS – UK NATIONAL GUIDELINES HPA vaginal discharge quick reference guide BASHH				
Note: *Refer patients with risk factors for STIs (<25y, no condom use, recent (<12mth) or frequent change of sexual partner, previous STI, symptomatic partner) to GUM clinic or general practices with level 2 or 3 expertise in GUM.*				
Vaginal candidiasis	All topical and oral azoles give 80-95% cure.[A-] In pregnancy avoid oral azole[B]	clotrimazole 10% OR clotrimazole OR fluconazole	5 g vaginal cream 500 mg pessary 150 mg orally	stat stat stat
Bacterial vaginosis	A 7 day course of oral metronidazole is slightly more effective than 2 g stat.[A+] Avoid 2g dose in pregnancy & breast feeding. Topical treatment gives similar cure rates[A+] but is more expensive.	metronidazole[A+] OR metronidazole 0.75% vag gel[A+] OR clindamycin 2% cream[A+]	400 mg BD 5 g applicatorful at night 5 g applicatorful at night	7 days 5 nights 7 nights
Chlamydia trachomatis HPA chlamydia quick reference guide	Treat contacts and refer to GUM clinic. In Pregnancy or breastfeeding: azithromycin can be used but is 'off label'. It is recommended by WHO and USA CDC and is more effective than erythromycin and amoxicillin. If erythromycin or amoxicillin is used, retest after 5 weeks, as less effective.	doxycycline[A+] OR azithromycin[A+] erythromycin [A-] amoxicillin[A+]	100 mg BD 1 g stat 500 mg BD or 500 mg QDS 500 mg TDS	7 days 1 hr before or 2 hrs after food 14 days 7 days 7 days
Trichomoniasis	Refer to GUM. Treat partners simultaneously In pregnancy or breastfeeding: avoid 2g single dose metronidazole. Topical clotrimazole gives symptomatic relief (not cure).	metronidazole[A-] clotrimazole	400 mg BD or 2 g in single dose 100 mg pessary	5 days 6 days
Pelvic Inflammatory Disease (PID)	Essential to test for *N. gonorrhoea* (as increasing antibiotic resistance) and chlamydia. Microbiological and clinical cure are greater with ofloxacin than with doxycycline.[A+] Refer patient and contacts to GUM clinic.	metronidazole + ofloxacin[B] *or* metronidazole + doxycycline[B]	400 mg BD 400 mg BD 400 mg BD 100 mg BD	14 days 14 days 14 days 14 days
Acute prostatitis	4 weeks treatment may prevent chronicity. Quinolones are more effective, as they have greater penetration into prostate.	ciprofloxacin or ofloxacin[C] or trimethoprim[C]	500 mg BD 200 mg BD 200 mg BD	28 days 28 days 28 days

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SKIN/SOFT TISSUE INFECTIONS – for MRSA screening or treatment see HPA MRSA quick reference guide				
Panton-Valentine Leukocidin (PVL) is a toxin produced by 2% of *Staphylococcus aureus* and is associated with persistent recurrent pustules and carbuncles or cellulitis. Send swabs for culture in these clinical scenarios. On rare occasions it causes more severe invasive infections, even in otherwise fit people. Risk factors include: nursing homes, contact sports, sharing equipment, poor hygiene and eczema.				
Impetigo CKS	Systematic review indicates topical and oral treatment produces similar results[A+] As resistance is increasing reserve topical antibiotics for very localised lesions[C or D] Reserve Mupirocin for MRSA.	flucloxacillin } First or clarithromycin } line *fusidic acid* *mupirocin*	Oral 500 mg QDS Oral 250-500 mg BD *Topically TDS* *Topically TDS*	7 days 7 days *5 days* *5 days*
Eczema CKS	Using antibiotics, or adding them to steroids, in eczema encourages resistance and does not improve healing unless there are visible signs of infection. In infected eczema, use treatment as in impetigo.			
Cellulitis	If patient afebrile and healthy other than cellulitis flucloxacillin may be used as single drug treatment. If water exposure, discuss with microbiologist. If febrile and ill, admit for IV treatment In facial cellulitis use co-amoxiclav[C]	flucloxacillin *If penicillin allergic:* clarithromycin alone OR clindamycin co-amoxiclav	500 mg QDS 500 mg BD 450mg QDS 500/125 mg TDS	7 – 14 days 7 – 14 days 7 – 14 days 7 - 14 days
Leg ulcers CKS	Bacteria will always be present. **Antibiotics do not improve healing.**[A+] Culture swabs and antibiotics are only indicated if there is evidence of clinical cellulitis; increased pain; enlarging ulcer or pyrexia.			
	Review antibiotics after culture results. Refer for specialist opinion if severe infection.	flucloxacillin	500 mg QDS	7 days
Animal bite CKS Human bite	Surgical toilet most important. Assess tetanus and rabies risk. Antibiotic prophylaxis advised for – puncture wound; bite involving hand, foot, face, joint, tendon, ligament; immunocompromised, diabetics, elderly, asplenic Antibiotic prophylaxis advised. Assess HIV/hepatitis B & C risk	*First line animal & human prophylaxis and treatment* co-amoxiclav[B-] *If penicillin allergic:* metronidazole PLUS doxycycline or oxytetracycline (animal) or clarithromycin (human) and review at 24 & 48 hrs	 375-625 mg TDS 200-400 mg TDS 100 mg BD 250-500 mg QDS 250-500 mg BD	 7 days 7 days 7 days 7 days
Conjunctivitis CKS	**Most bacterial infections are self-limiting** (64% resolve on placebo[A+]). They are usually unilateral with yellow-white mucopurulent discharge. Fusidic acid has less Gram-negative activity	chloramphenicol 0.5% drops PLUS 1% ointment fusidic acid	2 hrly reducing to QDS at night 1% gel BD	 All for 48 hours after resolution
Scabies CKS	Treat whole body including scalp, face, neck, ears, under nails. Treat all household contacts.	permethrin[A+] *If allergy:* Malathion	5% cream 0.5% aqueous liquid	2 applications one week apart 2 applications one week apart
Dermatophyte infection of the proximal fingernail or toenail For children seek advice	Take nail clippings: Start therapy only if infection is confirmed by laboratory. Idiosyncratic liver reactions occur rarely with terbinafine. It is more effective than the azoles. Itraconazole is also active against yeasts. In non-dermatophyte moulds use itraconazole.[C]	5% amorolfine nail lacquer[B-] (for superficial) terbinafine[A-] itraconazole	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 monthly 2 courses 7 days monthly 3 courses
Dermatophyte infection of the skin CKS	Take skin scrapings for culture if not localised. Treatment: 1 week terbinafine as effective as 4 weeks azole.[A-] If intractable consider oral itraconazole. Discuss scalp infections with specialist.	Topical 1% terbinafine [A+] Topical undecenoic acid or 1% azole[A+]	OD - BD 1-2x/daily	1 week[A+] 4 – 6 weeks[A+]
Varicella zoster/ Chicken pox CKS & Herpes zoster/ shingles CKS	If pregnant/immunocompromised seek advice **Chicken pox**: In immunocompetent value of antivirals minimal unless severe pain, or adult, or on steroids, or secondary household case **AND** treatment started <24h of onset of rash.[A-] **Shingles**: Always treat if active ophthalmic, and Ramsey Hunt or eczema. **Non-ophthalmic shingles**: Treat >50 yrs[A+] if <72h of onset of rash, as post-herpetic neuralgia rare in <50 yrs but occurs in 20% >50 yrs[A+].	aciclovir *Second line if a compliance problem, as ten times cost* valaciclovir or famciclovir	800 mg 5x/day 1 g TDS 250 mg TDS Child doses – see BNF	7 days 7 days 7 days

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The following references were used when developing these guidelines:

This guidance was initially developed in 1999 by practitioners in South Devon, as part of the S&W Devon Joint Formulary Initiative, and Cheltenham & Tewkesbury Prescribing Group and modified by the PHLS South West Antibiotic Guidelines Project Team, PHLS Primary Care Co-ordinators and members of the Clinical Prescribing Sub-group of the Standing Medical Advisory Committee on Antibiotic Resistance. It was further modified following comments from Internet users. The guidance has been updated annually as significant research papers, systematic reviews and guidance have been published. The Health Protection Agency works closely with the authors of the Clinical Knowledge Summaries.

Grading of guidance recommendations

The strength of each recommendation is qualified by a letter in parenthesis.

Study design	Recommendation grade
Good recent systematic review of studies	A+
One or more rigorous studies, not combined	A-
One or more prospective studies	B+
One or more retrospective studies	B-
Formal combination of expert opinion	C
Informal opinion, other information	D

Clinical Knowledge Summaries web http://www.prodigy.nhs.uk. BNF (No 55), SMAC report - The path of least resistance (1998), SDHCT Medical Directorate guidelines + GU medicine guidelines, Plymouth Management of Infection Guidelines project LRTI and URTI.

UPPER RESPIRATORY TRACT INFECTIONS

Influenza

National Institute for Health and Clinical Excellence. Amantadine, oseltamivir and zanamivir for the treatment of influenza (review of NICE technology appraisal guidance 58) http://www.nice.org.uk/nicemedia/pdf/TA168quickrefguide.pdf Accessed 25.03.09

Oseltamivir resistance in European influenza viruses. Health Protection Agency 2008. http://www.hpa.org.uk/webw/HPAweb&HPAwebPrinterFriendly/HPAweb_C/1204186172107?p=1204186170287 Accessed 12.12.08

Turner D, Wailoo A, Nicholson K , Cooper N, Sutton A, Abrams K. Systematic review and economic decision modelling for the prevention and treatment of influenza A and B. Health Technology Assessment 2003;**7(35)**:iii-iv, xi-xiii, 1-170.

Pharyngitis/sore throat/tonsillitis

Centor RM, Whitherspoon JM Dalton HP, Brody CE, Link K. The diagnosis of strep throat in adults in the emergency room. *Med Decision Making* 1981;**1:**239-46. *Scoring system for sore throats.*

Del Mar C & Glasziou P. Antibiotics for the symptoms and complications of sore throat. In: The Cochrane Library, Issue 2. 1998 Oxford: Update Software. Search date 1998; primary sources Index Medicus 1945-65. Medline 1966 to 1997; Cochrane Library 1997 Issue 4; hand search of reference lists of relevant articles.

Del Mar CB, Glasziou PP, Spinks AB. Antibiotics for sore throat. Cochrane Database Systematic Review 2006 (4):CD000023. Chichester, UK: John Wiley & Sons, Ltd http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000023/pdf_fs.html (Accessed 5th June 2008)

Del Mar C. Sore throats and antibiotics: Applying evidence on small effects is hard; variations are probably inevitable. *Brit Med J* 2000;**320:**130-1. *Editorial covering treatment.*

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Del Mar C & Glasziou P. Sore Throat. In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:516-17

Lan AJ, Colford JM, Colford JMJ. The impact of dosing frequency on the efficacy of 10 day penicillin or amoxicillin therapy for streptococcal tonsillopharyngitis: A meta-analysis. *Pediatr* 2000;**105(2):**E19. *Meta-analysis showed BD and QDS dose equivalent.*

Little P, Williamson I, Warner G, Gould C, Gantley M, Kinmonth AL. Open randomised trial of prescribing strategies in managing sore throat. *BMJ* 1997;314:722-7. *RCT showing that antibiotics only marginally effect resolution of symptoms but enhance belief in antibiotics and intention to consult in the future compared to no antibiotic or delayed antibiotic.*

McIsaac WJ, Goel V, Slaughter PM, Parsons GW, Woolnough KV, Weir PT, Ennet JR. Reconsidering sore throats. Part 2: Alternative approach and practical office tool. *Can Fam Physician* 1997;**43**:495-500. *Review of scoring system that supports Centor.*

Clinical Knowledge Summary @ http://cks.library.nhs.uk/sore_throat_acute (Accessed 8th January 2009)

Zwart Sjoerd, Sachs APE, Ruijs G, Gubbels JW, Hoes AW, de Melker RA. Penicillin for acute sore throat: randomised double blind trial of seven days versus three days treatment or placebo in adults. *Brit Med J* 2000;**320:**150-4. *RCT showing 7 days penicillin V at 500 mg was better than 3 days in terms of time of symptom resolution, bacterial resolution and relapse. Also confirms validity of Centor criteria.*

Scottish Intercollegiate Guidelines Network. Management of sore throat and indications for tonsillectomy. 1999. http://www.sign.ac.uk/guidelines/fulltext/34/index.html (Accessed 5th June 2008)

Otitis media

Dagan R, Klugman KP, Craig WA. Baquero F. Evidence to support the rationale that bacterial eradication in respiratory tract infection is an important aim of antimicrobial therapy. *J Antimicrob Chemother* 2001;**47:**129-140. *(Discusses penetration of antibiotics in OM)*

Damoiseaux RAMJ, Van Balen FAM, Hoes AW, de Melker RA. Antibiotic treatment of acute otitis media in children under two years of age: evidence based? *Brit J Gen Pract* 1998;**48:**1861-4.

Damoiseaux RAMJ, Van Balen FAM, Hoes AW, Verhiej TJM, de Melker RA. Primary care-based randomised, double blind trial of amoxicillin versus placebo for acute otitis media in children aged under 2 years. *Brit Med J* 2000;**320:**350-4.

Del Mar C, Glasziou P, Hayem M. Are antibiotics indicated as initial treatment for children with acute otitis media? A meta-analysis. *Brit Med J* 1997;**314:**1526-9. Search date 1966 to August 1994; primary sources Medline, current contents.

Froom J, Culpepper L, Jacobs M, de Melker RA, Green LA, Van Buchem L, Grob P, Heeren T. Antimicrobials for acute otitis media? A review from the International Primary Care Network. *Brit M J* 1997;**315:**98-102.

Glasziou IP, Del Mar CB, Sanders SC, Hayem M. Antibiotics for acute otitis media in children (Cochrane Review). In: The Cochrane Library 2006. Issue 4. Chichester, UK: John Wiley & Sons, Ltd *8 studies (4 primary care)* http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000219/pdf_fs.html (Accessed 31st January 2008)

Kozyrskj AL, Hildes Ristein E, Longstaffe SEA, Wincott JL, Sitar DS, Klassen TP *et al*. Treatment of acute otitis media with a shortened course of antibiotics: a meta-analysis. *JAMA* 1998;**279:**1736-42.

Little P, Gould C, Williamson I, Moore M, Warner G, Dunleavey J. Pragmatic randomised controlled trial of two prescribing strategies for childhood acute otitis media. *BMJ* 2001;**322:**336-42.

Little P. Gould C, Moore M, Warner G, Dunleavey J. Williamson I. Predictors of poor outcome and benefits from antibiotics in children with acute otitis media: pragmatic randomised trial. *BMJ* 2002;**325:**22-26.

O'Neill P & Roberts T. Acute otitis media in children. In: Clinical Evidence. London. BMJ Publishing Group 2006 Jun;(**15**):500-10

Rovers MM, Glasziou P, Appelman CL, Burke P, McCormick DP, Damoiseaux RA, Gaboury I, Little P, Hoes AW. Antibiotics for acute otitis media: a meta-analysis with individual patient data. *Lancet* 2006;368:1429-35. *Shows that patients with otorrhoea, or children <2 years with bilateral acute otitis media benefited more from antibiotics (NNT 3 and 4 respectively).*

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Acute sinusitis

de Ferranti SD, Lonnidis JPA, Lau J, Anniger WV, Barza M. Are amoxicillin and folate inhibitors as effective as other antibiotics for acute sinusitis? A meta-analysis. *Brit Med J* 1998;**317:**632-7. Search date May 1998; primary sources Medline 1966 – May 1998; manual search of Excerpta Medica: recent abstracts for Interscience Conference on Antimicrobial Agents & Chemotherapy 1993-1997 and references of all trails review articles and special issues for additional studies.

Kim AS. Sinusitis (acute). In: Clinical Evidence Concise. London BMJ Publishing Group 2006;**15**:215-17

Diagnosis and treatment of acute bacterial rhinosinusitis. Summary, Evidence Report/Technology Assessment: Number 9 March 1999. Agency for Health Care Policy & Research, Rockville MD. http://www.ahcpr.gov/clinic/sinussum.htm

Hansen JG, Schmidt H, Grinsted P. Randomised, double blind, placebo controlled trial of Penicillin V in the treatment of acute maxillary sinusitis in adults in general practice. *Scan J Prim Health Care* 2000;**18:**44-47.

International Rhinosinusitis Advisory Board. Infectious rhinosinusitis in adults. Classification, aetiology and management. Ear Nose & Throat Journal 1997;**76 (12 Suppl):**1-22.

Clinical Knowledge Summary @ http://www.cks.library.nhs.uk/search?&page=1&q=sinusitis&site=0 (Accessed 5th June 2008)

Williams Jr JW, Aguilar C, Cornell J, Chiquette E. Dolor RJ, Makela M, Holleman DR, Simel DL. Antibiotics for acute maxillary sinusitis (Cochrane Methodology Review). In: The Cochrane Library, Issue 4, 2003. Chichester, UK: John Wiley & Sons, Ltd. http://www.antibioticresistance.org.uk/ARFAQs.nsf/0/44BFE0C0107D0CC380256F350045B0F4?OpenDocument (Accessed 31st January 2008) *3 RCTs; 375 adults.*

LOWER RESPIRATORY TRACT INFECTIONS

Woodhead M, Blasi F, Ewig S, Huchon G, Leven M, Ortqvist A, Schabert T, Torres A, can der Jeijden G, Werheij TJM. Guidelines for the management of adult lower respiratory tract infection. *Eur Respir J* 2005;26:1138-80. *Appendices 1 and 3 give detailed methods and definitions, with rationale for antibiotic dosage recommendations.* http://www.erj.ersjournals.com/contents-by-date.0.shtml (Accessed 31st January 2008)

Llor C, Sierra N, Hernández S, Moragas Ana, Hernández M, Bayona C, Miravitlles M. the higher the number of daily doses of antibiotic treatment in lower respiratory tract infection the worse the compliance. *J Antimicrob Chemother* 2009.63:396-99. *Supports use of nitrofurantoin MR BD rather than QDS.*

Acute bronchitis

Fahey T, Smucny J, Becker L, Glazier R. Antibiotics for acute bronchitis. In: The Cochrane Library, 2006, Issue 4. Chichester, UK: John Wiley & Sons, Ltd http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000245/pdf_fs.html (Accessed 7th May 2008). *Systematic review of nine studies (4 in primary care). Studies in primary care showed antibiotics reduced symptoms of cough and feeling ill by less than one day in an illness lasting several weeks in total.*

Fahey T, Stocks N, Thomas T. Quantitative systematic review of randomised controlled trials comparing antibiotic with placebo for acute cough in adults. *Brit Med J* 1998;**316:**906-10.

Wark P. Bronchitis (acute). In: Clinical Evidence. London. BMJ Publishing Group. 2006;**15:**1996-2005

Macfarlane J, Holmes W, Gard P, Thornhill D. Macfarlane R. Reducing antibiotic use for acute bronchitis in primary care: blinded, randomised controlled trail of patient information leaflet. *BMJ* 2002;**324:**91-4.

Treatment of cough available in Clinical Knowledge Summaries website:
http://www.cks.library.nhs.uk/search?&page=1&q=sore%20throat%20acute&site=0 (Accessed 8th January 2009)

COPD

Anthonisen MD, Manfreda J, Warren CPW, Hershfield ES, Harding GKM, Nelson NA. Antibiotic therapy in exacerbations of chronic obstructive pulmonary disease. *Ann Int Med* 1987;**106:**196-204.

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information.***

Calverley PMA, Walker P. Chronic obstructive pulmonary disease. *Lancet* 2003;**362**:1053-61. *Excellent review on pathophysiology and management of COPD. Little detailed information on antibiotic treatment.*

Chronic obstructive pulmonary disease. Management of COPD in adults in primary and secondary care. NICE Clinical Guideline 12 February 2004. http://www.nice.org.uk/CG012NICEguideline (Accessed 9th January 2009)

Community-acquired pneumonia

BTS guidelines for the management of community-acquired pneumonia in adults. *Thorax* 2001;**56(Suppl 4):**IV1-64.

Hopstaken RM, Muris JWM, Knottnerus JA, Kester ADM, Rinkens PELM, Dinant GJ. Contributions of symptoms, signs, enthrocyte sedimentation rate and C-reactive protein to a diagnosis of pneumonia in acute lower respiratory tract infection. *Brit J Gen Pract* 2003;**53**:358-364.

Loeb M. Community-acquired pneumonia. In: Clinical Evidence. London BMJ Publishing Group. 2006;**15**:2015-24.

MENINGITIS

Cartwright KAV, Strang J Gossain S, Begg N. Early treatment of meningococcal disease. *Brit Med J* 1992;**305:**774.

Correia J & Hart CA. Meningococcal disease. In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:303-305.

Pre-admission benzylpenicillin for suspected meningococcal disease: other antibiotics not needed in the GP bag. *CDR Weekly* 15 February 2001.

Health Protection Agency Meningococcus Forum with Public Health Medicine Environmental Group, the Scottish Centre for Infection and Environmental Health, CDSC Wales, CDSC Northern Ireland, the Association of Medical Microbiologists, and the Community Infection Control Nurses Network. Guidelines for public health management of meningococcal disease in the UK. Updated August 2006 http://www.hpa.org.uk/infections/topics_az/meningo/meningococcalguidelines.pdf (Accessed 9th January 2009)

URINARY TRACT INFECTIONS

Elderly

Abrutyn E, Mossey J, Berlin JA, Boscia J, Levison M, Pitsakis P, Kaye D. Does asymptomatic bacteriuria predict mortality and does antimicrobial treatment reduce mortality in elderly ambulatory women? *Ann Int Med* 1994:827-33.

Nicholl LE. Urinary tract infection. In: Infection Management for Geriatrics in Long-term Care Facilities. Eds Yoshikawa TT, Ouslander JG. Marcel Dekker. New York. 2002:173-95.

Uncomplicated UTI

Barclay L. New guidelines for management of urinary tract infection in nonpregnant women. Medscape Medical News. http://www.medscape.com/viewarticle/571545?src=rss (Accessed 8th January 2009)

Charlton CAC, Crowther A, Davies JG, Dynes J, Howard MWA, Mann PG, Rye S. Three day and ten day chemotherapy for urinary tract infections in general practice. *Brit Med J* 1976;**1:**124-6.

Christiaens TCM, Meyere M De, Vershcraegen G. Peersman W, Heytens S. Maeseneer JM De. Randomised controlled trial of nitrofurantoin versus placebo in the treatment of uncomplicated urinary tract infection in adult women. *Brit J Gen Pract* 2002;**52:**729-34. *An RCT comparing nitrofurantoin 100mg qds for 3 days versus placebo.*

Davey PG, Steinke D. MacDonald TM, Phillips G, Sullivien F. Not so simple cystitis: How should prescribers be supported to make informed decisions about the increasing prevalence of infections caused by drug resistant bacteria? *Brit J Gen Pract* 2000;**50**:143-46.

Dobbs FF & Fleming DM. A simple scoring system for evaluating symptoms, history and urine dipstick testing in the diagnosis of urinary tract infections. *J Roy Col Gen Pract* 1987;**37:**100-4.

Ellis R & Moseley DJ. A comparison of amoxicillin, co-trimoxazole, nitrofurantoin, macrocrystals and trimethoprim in the treatment of lower urinary tract infections. Management of UTIs. Ed. LH Harrison. 1990. Royal Society of Medicine Services International Congress & Symposium Series No. 154, publishers RSM Services Ltd. pp 45-52.

Gossius G Vorland L. The treatment of acute dysuria-frequency syndrome in adult women: double blind randomized comparison of three day versus ten day trimethoprim therapy. *Curr Ther Res* 1985;**37(1):**34-42.

Guay DR. An update on the role of nitrofurans in the management of urinary tract infections. *Drugs* 2000;**61:**353-64.

Hiscoke C, Yoxall H, Greig D, Lightfoot NF. Validation of a method for the rapid diagnosis of urinary tract infection suitable for use in general practice. *Brit J Gen Pract* 1990;**40:**403-5.

Hummers-Pradier E. Kocken MM. Urinary tract infections in adult general practice patients. *Brit J Gen Pract* 2002;**52:**752-61.

Kalowski S, Radford N, Kincaid-Smith P. Crystalline and macrocrystalline nitrofurantoin in the treatment of urinary tract infection. *NEJM* 1974;290:385-7. *Double blinded RCT showing that the macrocrystalline form of nitrofurantoin attained half as many side-effects, especially nausea.*

Livermore D, & Woodford N. Laboratory detection of bacteria with extended-spectrum beta-lactamases. *CDR Weekly* 2004;**14** No. 27.

McCarty JM, Richard G, Huck W, Tucker RM, Toxiello RL, Shan M, Heyd A, Echols RM. A randomised trial of short-course ciprofloxacin, ofloxacin or trimethoprim/sulfamethoxazole for the treatment of acute urinary tract infection in women. *Am J Med* 1999;**106:**292-9.

MeReC Bulletin. Modified-release preparations. 2000;11(4). *Review describing benefits of modified release preparations and improved compliance with twice daily dosing.*

MeReC Bulletin. UTI. August 1995.

Milo G, Katchman EA, Paul M, Christiaens T, Baerheim A, Leibovici L. Duration of antibacterial treatment for uncomplicated urinary tract infection in women. Cochrane Database Review. *The Cochrane Library* 2006, Issue 2. http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004682/pdf_fs.html Accessed 12th January 2009. *Review showing there is no difference in outcome between 3 day, 5 day or 10 day antibiotic treatment course for uncomplicated UTI.*

Spencer RC, Moseley DJ, Greensmith MJ. Nitrofurantoin modified release versus trimethoprim or co-trimoxazole in the treatment of uncomplicated urinary tract infection in general practice. *J Antimicrob Chemother* 1994;**33(Suppl A):**121-9. *RCT showing nitrofurantoin MR had equivalent clinical cure rates to co-trimoxazole and trimethoprim.*

UTI in pregnancy

Information from the National Teratology Information Service 2008 (Tel: 0191 232 1525, www.toxbase.org) states:

Trimethoprim: Trimethoprim is a folate antagonist and there is a theoretical risk of folate deficiency limiting the amount of folic acid to the fetus. However, in women with normal folate status, who are well nourished, therapeutic use of trimethoprim for a short period is unlikely to induce folate deficiency.
In some women low folate levels in the first trimester have been associated with an increased risk of malformations. There is an increased risk of neural tube defects and other malformations in the offspring of women who have a low folate status (i.e. established folic acid deficiency or low dietary folic acid intake) or are already taking known folate antagonists (e.g. antiepileptic drugs or proguanil). Trimethoprim should be avoided in these women.

Nitrofurantoin: Significant placental transfer of nitrofurantoin does not occur. Therefore, maternal and fetal serum concentrations are low with high concentrations appearing only in the urinary tract. Nitrofurantoin has not been associated with an increased risk of congenital malformations or any specific type of malformation.
Serious adverse reactions eg peripheral neuropathy, severe hepatic damage and pulmonary fibrosis are extremely rare.
Nitrofurantoin can cause haemolysis in patients with G6PD deficiency. Foetal erythrocytes have little reduced glutathione and there is a theoretical possibility that haemolysis may occur. However, haemolytic disease of the new-born has not been reported following *in utero* exposure to nitrofurantoin.

Children

Larcombe J. Urinary tract infections in children. In: Clinical Evidence Concise. London. BMJ Publishing Group 2007 December pp 125-8.

National collaborating centre for women's and children's health. Clinical guideline. Urinary tract infection in children. Diagnosis, treatment and long-term management. http://www.nice.org.uk/nicemedia/pdf/CG54fullguideline.pdf Accessed 8th January 2009) *Comprehensive guidance with summaries and flow charts.*

Acute pyelonephritis

Talan DA, Stamm WE, Hooton TM, Moran GJ, Burke T, Iravani A, Reuning-Scherer J and Church DA. Comparison of ciprofloxacin (7 days) and trimethoprim-sulfamethoxazole (14 days) for acute uncomplicated pyelonephritis in women. A randomized trial. *JAMA* 2000;**283:**1583-90. *Evidence for 7 days ciprofloxacin and 14 days trimethoprim-sulfamethoxazole if susceptible.*

Warren JW, Abrutyn E. Hebel JR *et al* Guidelines for antimicrobial treatment of uncomplicated bacterial cystitis and acute pyelonephritis in women. *Clin Infect Dis* 1999;**29:**745-58.

Recurrent UTI in non-pregnant women

Albert X, Huertas I, Pereiró I, Sanfélix J, Gosalbes V, Perrota C. Antibiotics for preventing recurrent urinary tract infection in non-pregnant women. *Cochrane Database of Systematic Reviews* 2004, Issue 3, Art No. CD001209. DOI: 10.1002/14651858.CD001209.pub2. *This is an excellent review of prophylaxis. It shows that it is very effective (NNT2). However 30% do not comply. Benefit lost as soon as prophylaxis stops and prophylaxis after intercourse is as effective as daily prophylaxis.*

GASTRO-INTESTINAL TRACT INFECTIONS

Eradication of *Helicobacter pylori*

Bazzdi F. Pozzato P. Rokkas T. *Helicobacter pylori*: the challenge in therapy. *Helicobacter* 2002;**7 (Suppl 1):**43-49.

de Boer WA, Tytgat GNJ. Treatment of *Helicobacter pylori* infection. *Brit Med J* 2000;**320:**31-4.

Delaney B, Moayyedi P, Forman D. *Helicobacter pylori* infection. In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:184-188

NICE dyspepsia guidance. August 2004. Evidence indicates once daily PPI plus metronidazole 400mg BD + clarithromycin 250mg BD is as effective as using BD PPI or 500mg clarithromycin. This regimen is cheaper than using BD PPI or higher dose clarithromycin. http://www.nice.org.uk/nicemedia/pdf/CG017fullguideline.pdf (Accessed 8th January 2009)

Clinical Knowledge Summaries: dyspepsia guidelines
http://cks.library.nhs.uk/search?&page=1&q=dyspepsia&site=1 (Accessed 9th January 2009)

Clostridium difficile

Belmares J, Gerding DN, Parada JP, Miskevics S, Weaver F, Johnson S. Outcome of metronidazole therapy for *Clostridium difficile* disease and correlation with a scoring system. *J Infect* 2007;55:495-501. *Of 83% of patients who don't respond to 5 days metronidazole, 30% do respond by 14 days.*

Gastroenteritis

de Bruyn G. Diarrhoea in adults (acute). In: Clinical Evidence. London. BMJ Publishing Group 2006;**15**:1031-48. *Summarises evidence for a single dose or 3 days of ciprofloxacin in treatment of traveller's diarrhoea.*

Farthing M, Feldman R, Finch R, Fox R, Leen C, Mandal B, Moss P, Nathwani D, Nye F, Percival A, Read R, Ritchie L, Todd WT, Wood M. *J of Infect* 1996;**33:**143-52. The management of infective gastroenteritis in adults. A consensus statement by an expert panel convened by the British Society for the Study of Infection.

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information.***

Clinical Knowledge Summaries: Gastroenteritis http://cks.library.nhs.uk/search?&page=1&q=gastroenteritis&site=1 (Accessed 9th January 2009)

Goodman LJ, Trenholme GM, Kaplan RL *el al*. Empiric antimicrobial therapy of domestically acquired acute diarrhoea in urban adults. *Arch Intern Med* 1990;**150:**541-6.

Traveller's diarrhoea

What to do about Traveller's diarrhoea. Drugs & Therapeutic Bulletin 2002;**40:**36-38.

Spira AM. Travel Medicine 1: Preparing the traveller. *Lancet* 2003;**361**:1368-81. *Summarises treatment of traveller's diarrhoea in a simple table.*

Centres for Disease Control and Prevention – Travellers' Health: Yellow Book. http://wwwn.cdc.gov/travel/yellowBookCh4-Diarrhea.aspx . (Accessed 8th January 2009). *Gives details of bismuth subsalicylate.*

Dupont HL. Systematic review: prevention of travellers' diarrhoea. *Aliment Pharmacol Ther* 2008;**27**:741-51.

GENITAL TRACT INFECTIONS

Brocklehurst P, Rooney G. Interventions for treating genital chlamydia trachomatis infection in pregnancy. Cochrane Database Systematic Review 2000;(2):CD000054.
http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD000054/frame.html (Accessed 8th January 2009)

Joesoef MR & Schmid G. Bacterial vaginosis. In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:533-35.

Low N. Chlamydia (uncomplicated, genital) In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:536-38

Mitchell H. Vaginal discharge – causes, diagnosis and treatment. *BMJ* 2004;**328**:1306-08. *Short review*

Ross JDC. Outpatient antibiotics for pelvic inflammatory disease. *BMJ* 2001;**322:**251-2.

Sabbaj J, Hoagland VL, Cook T. Norfloxacin versus co-trimoxazole in the treatment of recurring urinary tract infections in men. *Scand J Infect Dis* 1986;**Suppl 48:**48-53.

Sexually Transmitted Infections 1999;75:Suppl 1. UK National Guidelines on Sexually Transmitted Infections and Closely Related Conditions. These guidelines are fully comprehensive and extensively referenced.

Walker CK, Workowski KA, Washington AE, Soper DE, Sweet RL. Anaerobes in pelvic inflammatory disease: implications for the Centers for Disease Control and preventions guidelines for treatment of sexually transmitted diseases. *Clin Infect Dis* 1999;**28:**529-36.

SKIN/SOFT TISSUE INFECTIONS

Impetigo

George A, Rubin G. A systematic review and meta-analysis of treatments for impetigo. *Brit J Gen Pract* 2003;**53**:480-87. *(No difference between topical mupirocin and fusidic acid, no significant difference between topical and oral).*

Livermore D. James D, Duckworth G, Stephens P. Fusidic acid use and resistance. *Lancet* 2002;**360:**806.

MeReC Bulletin. Acne. November 1994.

Mupirocin and fusidic acid resistance increasing in *Staphylococcus aureus*. *N Zealand Public Health Report* 1999;**6:**53.

Shanson DC. Clinical relevance of resistance to fusidic acid in *Staphylococcus aureus*. *J Antimicrob Chemother* 1990;**25(Suppl B):**15-21.

Sladden MJ, Johnston GA. Common skin infections in children. *BMJ* 2004;**329**:95-99.

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information.***

Waite DG, Collins PO, Rowsell B. Topical antibiotics in the treatment of superficial skin infections in general practice – a comparison of mupirocin with sodium fusidate. *J Infect* 1989;**18:**221-9.

Wilkinson JD. Fusidic acid in dermatology. *Brit J Dermatol* 1998;**139:**37-40.

Eczema

Smethurst D & Macfarlane S. Atopic eczema. In: Clinical Evidence. London. BMJ Publishing Group. Available on web only by subscription http://www.clinicalevidence.com/ceweb/conditions/cvd/1716/1716_background.jsp (Accessed 8th January 2009)

Hoare C, Li Wan PA, Williams H (2000). Systematic review of treatments for atopic eczema. *Health Technology Assessment* 2000;**4(37):**1-191.

Clinical Knowledge Summaries: atopic eczema. http://cks.library.nhs.uk/search?&page=1&q=atopic%20eczema&site=1 (Accessed 8th January 2009)

Cellulitis

Dilemmas when managing cellulitis. *Drugs & Therapeutic Bulletin* 2003;**41**:43-46. *(Review of the management of cellulitis)*

Eron LJ, Lipsky BA, Low DE, Nathwani D, TiceAD, Volturo GA. Managing skin and soft tissue infections: expert panel recommendations on key decision points. *J Antimicrob Chemother* 2003;**52 (Suppl S1):**i3-17.

Diabetic leg ulcer

Jeffcoate WJ, Harding KG. Review: Diabetic foot ulcers. *Lancet* 2003;**361**:1545-51.

Animal/human bites

Anderson CR. Animal bites. Guidelines to current management. *Postgraduate Medicine* 1992;**92:**134-49.

Goldstein EJC. Bites. In: Mandell GL, Bennett JE, Dolin R Eds. Principles and Practice of Infectious Diseases. Churchill Livingstone. 2000;**2**:3202-05.

Jones DA & Standbridge TN. A clinical trial using co-trimoxazole in an attempt to reduce wound infection rates in dog bite wounds. *Postgraduate Medical J* 1985;**61:**593-4.

Medeiros I, Saconat H. Antibiotic prophylaxis for mammalian bites (Cochrane Review). In: *The Cochrane Library*, 2006 Issue 4. Chichester. John Wiley & Sons Ltd. http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001738/pdf_fs.html (Accessed 8th January 2009)

Clinical Knowledge Summaries: bites.
http://cks.library.nhs.uk/search?&page=1&q=bites&site=1 (Accessed 8th January 2009)

Snook R. Dog bites man. *Brit Med J* 1982:284-93.

Wiggins ME, Akelman E, Weiss A-PC. The management of dog bites and dog bite infections to the hand. *Orthopaedics* 1994;**17:**617-23.

Conjunctivitis

Epling J & Smucny J Bacterial conjunctivitis. In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:234-5

Rose PW, Harnden A, Brueggemann A, Perera R, Skeikh A, Crook D, Mant D. Chloramphenicol treatment for acute infective conjunctivitis in children in primary care: a randomised double-blind placebo-controlled trial. *Lancet* 2005;**366**:37-43.

Scabies

The management of scabies. *Drug & Therapeutics Bulletin* 2002;**40:**43-46.

Note: ***Doses are oral and for adults unless otherwise stated. Please refer to BNF for further information.***

Dermatophytes

Crawford F. Athlete's foot. In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:558

Crawford F & Ferrari J. Fungal toenail infections. In Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:561-63

Evans EGV & Sigurgeirsson B for the LION Study Group. Double blind randomised study of continuous terbinafine compared with intermittent itraconazole in treatment of toenail onychomycosis. *Brit Med J* 1999;**318:**1031-5.

Finlay AY. Skin and nail fungi – almost beaten. Don't get confused by the 'evidence'. *Brit Med J* 1999;**319:**71-2.

Fuller LC, Child FJ, Midgley G, Higgins EM. Diagnosis and management of scalp ringworm. *BMJ* 2004;**326**:539-41.

Getting rid of athlete's foot. *Drug & Therapeutics Bulletin* 2002;**40:**53-54.

Hart R, Bell-Syer SEM, Crawford F, Torgerson DJ, Young P, Russell I. Systematic review of topical treatments for fungal infections of the skin and nails of the feet. *Brit Med J* 1999;**319:**79-82.

MeReC Bulletin. Fungal nail infections. 1997;**8:**45-8.

Roberts DT. Systemic antifungals as a cause of liver damage. *Prescribers Journal* 1998;**38:**190-4.

Chickenpox/shingles

Balfour HH Jr, Rotbart HA, Feldman S, Dunkle LM. Feder HM Jr, Proker CG *et al*. Acyclovir treatment of varicella in otherwise healthy adolescents. *J Paediatr* 1992;**120:**627-33.

Dunkle LM, Arvin AM, Whitley RJ, Rotbart HA, Feder HM, Feldman S *et al*. A controlled trial of acyclovir for chickenpox in normal children. *N Engl J Med* 1991;**325:**1539-44.

Hope-Simpson RE. Postherpetic neuralgia. *Brit J Gen Pract* 1975;25:571-75. *Study showing that incidence of post-herpetic neuralgia in a general practice population increases with age and is much more common in over 60 year olds.*

Johnson RW.Herpes zoster – predicting and minimizing the impact of post-herpatic neuralgia. *J Antimicrob Chemother* 2001;**47:**Topic T11-8.

McKendrick MW & Balfour HH Jr. Acyclovir for childhood chickenpox. Controversies in management. *Brit Med J* 1995;**310:**108-110.

Clinical Knowledge Summaries: Shingles & postherpetic neuralgia. April 2002. At http://cks.library.nhs.uk/qrg/shingles_postherpetic_neuralgia.pdf (Accessed 8th January 2009)

Ross AH. Modification of chickenpox in family contacts by administering gamma globulin. *N Engl J Med* 1962;**267:**369-76.

Swingler G. Chicken Pox. In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:267-79.

Wareham D. Postherpetic neuralgia. In: Clinical Evidence Concise. London. BMJ Publishing Group. 2006;**15**:306-8

Wood MJ, Kay R, Dworkin RH, Soong S-J, Whitley RJ. Oral acyclovir therapy accelerates pain resolution in patients with herpes zoster: A meta-analysis of placebo-controlled trials. *Clin Inf Dis* 1996;**22**:341-7. *Meta-analysis showing that oral acyclovir reduced post herpetic neuralgia pain. In patients over 50 years pain resolution occurred on average twice as fast.*