Antibiotic choices for common infections

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A safe and effective strategy for antibiotic use involves only prescribing an antibiotic when it is needed and selecting an effective agent at the correct dose with the narrowest spectrum, fewest adverse effects and lowest cost.

Principles of antibiotic prescribing:

1. Only prescribe antibiotics for bacterial infections if:
   - Symptoms are significant or severe
   - There is a high risk of complications
   - The infection is not resolving
2. Use first-line antibiotics first
3. Reserve broad spectrum antibiotics for indicated conditions only

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The following table is intended as a guide for selecting an appropriate antibiotic for infections commonly seen in general practice. Local resistance patterns and individual patient circumstances may alter the choice of antibiotic.

Respiratory

Acute bronchitis	
Management	Most acute bronchitis is of viral origin and therefore antibiotics are not indicated. Purulent sputum alone does not indicate the need for antibiotics. Antibiotics may be appropriate for those with co-morbidity or of advanced age.
Common pathogens	Respiratory viruses Less commonly: *Bordetella pertussis, Mycoplasma pneumoniae*, *Chlamydophila pneumoniae*
Antibiotic therapy	Not usually indicated

Acute exacerbation of chronic bronchitis	
Management	Most exacerbations are likely to be viral and antibiotics are of limited benefit. Patients with severe exacerbations and those with more severe airflow obstruction at baseline are most likely to benefit from antibiotics.
Common pathogens	Respiratory viruses, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis*
Antibiotic therapy	
First choice	Amoxycillin 500 mg 3 times daily for 5 days
Alternatives	Doxycycline 100 mg 2 times daily for 5 days

Pneumonia – adult	
Management	Consider chest x-ray to confirm diagnosis. The decision to treat with oral antibiotics as an outpatient depends on the age of the patient, co-morbidities and clinical signs indicating severity (HR > 100 bpm, RR > 24 bpm, temp. ≥ 38 °C, signs of focal consolidation on examination).
Common pathogens	Respiratory viruses, *S. pneumoniae, H. influenzae, M. pneumoniae*, *C. pneumoniae*, *Legionella pneumophila*, *Staphylococcus aureus*
Antibiotic therapy	
First choice	Amoxycillin 1 g 3 times daily **Plus either (to cover atypical infection):** Roxithromycin 300 mg daily or Doxycycline 200 mg stat then 100 mg daily Duration of treatment is approximately 7 days.
Alternatives	Monotherapy with erythromycin, doxycycline or co-trimoxazole are alternatives for those with a history of penicillin allergy.

N.B. Roxithromycin offers an alternative to erythromycin as they are both macrolide antibiotics.

Pneumonia – child	
Management	In a young child, suspect pneumonia if tachycardia, grunting, indrawing and high fever in absence of wheeze (auscultatory findings uncommon). The decision whether a patient receives inpatient or outpatient therapy depends on clinical severity. Patients who have systemic toxicity or any indication of respiratory failure should be treated in hospital.
Common pathogens	Respiratory viruses, *S. pneumoniae*, *H. influenzae*, *M. pneumoniae*
Antibiotic therapy	
First choice	Amoxycillin 25 mg/kg 3 times daily for 7 days
Alternatives	Erythromycin If no response in 48 hours, review diagnosis and consider referral to hospital.

Pertussis	
Management	Community outbreaks of pertussis occur approximately every four years (see page 42). Notifiable disease. Antibiotics do not effect the course of the disease if they are given more than seven days after the illness has started. However, they may be justified during the first four weeks of the illness to limit transmission to susceptible contacts.
Common pathogens	*B. pertussis*
Antibiotic therapy	
First choice	Erythromycin 10 mg/kg (up to 500 mg) 4 times daily for 14 days

Ear, nose and throat

Otitis externa – acute or "swimmers ear"	
Management	Gentle debridement of the ear canal may be necessary to enhance the effectiveness of topical treatment. Suction cleaning is also a safe and effective method of debridement. Most topical antibacterials are contraindicated in the presence of a perforated drum or grommets.
Common pathogens	*Pseudomonas aeruginosa*, *S. aureus*, polymicrobial infections
Antibiotic therapy	
First choice	Clioquinol + flumethasone (Locorten Vioform) 2 to 3 drops 2 times daily **or** Dexamethasone + framycetin + gramicidin (Sofradex) 2 to 3 drops, 3 to 4 times daily.
Alternatives	Acetic acid 2% (Vosol) or ciprofloxacin + hydrocortisone (Ciproxin HC)

Otitis media – acute	
Management	Immediate antibiotic therapy is usually unnecessary. Consider antibiotics for those in high risk groups such as children with systemic symptoms, children under 6 months or children under 2 years with severe or bilateral disease. Otherwise treat symptomatically (e.g. paracetamol) and arrange follow up or give a prescription to be dispensed if no improvement in next 24 hours.
Common pathogens	Respiratory viruses, *S. pneumoniae* , *H. influenzae*, *M. catarrhalis*
Antibiotic therapy	
First choice	Amoxycillin 40 mg/kg/day in 2 to 3 divided doses (max. 3 g daily) for 5 days (7 to 10 days if < 2 years, underlying medical condition, perforated drum, chronic or recurrent infections)
Alternatives	Erythromycin, cefaclor or co-trimoxazole

Pharyngitis	
Management	Most pharyngitis is of viral origin. Give antibiotics only if: ▪ Features of group A strep infection: temperature >38°C, no cough, tender cervical nodes, tonsillar swelling or exudates, especially if aged 3–14 years. If uncertain swab throat. ▪ Patient aged 3–45 years and at high risk of rheumatic fever: Māori and Pacific peoples, lower socioeconomic areas of North Island, past history of acute rheumatic fever. ▪ Existing rheumatic heart disease (treat at any age).
Common pathogens	Respiratory viruses, *Streptococcus pyogenes*
Antibiotic therapy	
First choice	Phenoxymethylpenicillin 500 mg (child 10 mg/kg) twice daily for 10 days **or** stat IM benzathine 0.6 MU if <27 kg or 1.2 MU if > 27 kg
Alternatives	Erythromycin ethylsuccinate

Acute sinusitis	
Management	Most patients with sinusitis will not have a bacterial infection. The following cluster of symptoms may suggest bacterial sinusitis: ▪ Purulent nasal discharge persisting more than 7 days ▪ Facial pain or maxillary tooth ache ▪ Unilateral sinus tenderness ▪ Fever Although studies suggest there may be limited benefit, an antibiotic can be considered if these symptoms are present.
Common pathogens	Respiratory viruses, *S. pneumoniae*, *H. influenzae*, *M. catarrhalis*, anaerobic bacteria (reflecting extension of dental abscess)

Acute sinusitis (continued)	
Antibiotic therapy	
First choice	Amoxycillin 500 mg (child 15 mg/kg) three times daily for 7 days
Alternatives	Doxycycline, cefaclor or co-trimoxazole If anaerobes suspected, use amoxycillin/clavulanic acid

Eyes

Conjunctivitis	
Management	Allergic, viral or bacterial. Bacterial more likely if eyelids very sticky or unilateral. Viral more likely if starts bilaterally. Most bacterial conjunctivitis (except *Chlamydia trachomatis* or *Neisseria* gonorrhoeae) is self-limiting and two thirds of cases improve in 2 to 5 days. Assess for keratitis (using fluorescein stain) in contact lens wearers before treating as conjunctivitis.
Common pathogens	Viruses, *S. pneumoniae*, *H. influenzae*, *S. aureus* In newborns, consider *C. trachomatis* or *N. gonorrhoeae*, in which case topical therapy is inadequate and referral to a paediatrician is recommended.
Antibiotic therapy	
First choice	Topical chloramphenicol until 48 hours after infection has cleared
Alternatives	Topical fusidic acid or topical framycetin

Skin

Bites and clenched fist* infections	
Management	Clean and debride wound thoroughly and treat with antibiotic. Assess patient's need for tetanus immunisation. Consider referral if bone or joint involvement.
Common pathogens	Polymicrobial infection , *Pasteurella multocida*, *Capnocytophaga conimorsus* (cat and dog bites), *Eikenella corrodens* (fist injury), *S. aureus*, streptococci and anaerobes
Antibiotic therapy	
First choice	Amoxycillin/clavulanic acid 500/125 mg three times daily for 5 to 10 days
Alternatives	Metronidazole plus either doxycycline or co-trimoxazole

* Injury to fist from contact with teeth

Boils	
Management	Most lesions may be treated with incision and drainage alone. Antibiotics may be considered if fever, surrounding cellulitis or co-morbidity e.g. diabetes or if the lesion is in a site associated with complications e.g. face. If recurrent boils (e.g. more than 10 boils over more than 3 months) consider staphylococcal decolonisation with a one week course of intranasal mupirocin or fusidic acid.
Common pathogens	*S. aureus*
Antibiotic therapy	
First choice	Flucloxacillin 500mg 4 times daily for 7 to 10 days
Alternatives	Erythromycin, cefaclor, co-trimoxazole

Cellulitis	
Management	Antibiotic treatment is indicated. Keep affected area elevated and assess response to treatment. May require referral if severe. For periorbital cellulitis, in all but very mild cases consider referral for IV antibiotics.
Common pathogens	*S. pyogenes*, *S. aureus*, Group C or Group G streptococci
Antibiotic therapy	
First choice	Flucloxacillin 500 mg 4 times daily for 7 to 10 days (the addition of penicillin is not required)
Alternatives	Erythromycin, cefaclor, co-trimoxazole

Diabetic foot infections	
Management	Length of treatment depends on clinical response or whether there is possible involvement of the bones of the feet. Referral may be required.
Common pathogens	Polymicrobial infection i.e. a mixture of anaerobes, Gram-positive and Gram-negative aerobes
Antibiotic therapy	
First choice	Amoxycillin/clavulanic acid 500/125 mg three times daily, usually 5 to 10 days
Alternatives	Cefaclor or co-trimoxazole plus metronidazole

Impetigo	
Management	Remove crusted area and apply topical antibiotic treatment. Keep affected areas covered and stay away from school for 24 hours after treatment initiated (see BPJ 19).
Common pathogens	*S. aureus*, *S. pyogenes*
Antibiotic therapy	
First choice	Fusidic acid cream for 7 days
Alternatives	Flucloxacillin (oral) for 7 days for extensive lesions or topical treatment failure

Mastitis	
Management	Treat with antibiotic and continue to breast feed from both breasts. This is an important component of treatment and poses no risk to the infant (see BPJ 18).
Common pathogens	*S. aureus*, anaerobes in non-lactating women or in men
Antibiotic therapy	
First choice	Flucloxacillin 500 mg 4 times daily for 7 days
Alternatives	Cefaclor, erythromycin

Gastrointestinal

Campylobacter	
Management	Most people will recover with symptomatic treatment only. Antibiotics have little impact on the duration and severity of symptoms but eradicate stool carriage. Antibiotic treatment is indicated if symptoms are severe or prolonged. Treatment may also be reasonable in food handlers, childcare workers and those caring for immunocompromised patients. For pregnant women nearing term, Campylobacter gastroenteritis should be treated with erythromycin to prevent exposure of the neonate to Campylobacter during vaginal delivery. Notifiable disease.
Common pathogens	*Campylobacter jejuni*, *Campylobacter coli*
Antibiotic therapy	
First choice	Erythromycin 250 mg – 500 mg (child 10 mg/kg) three times daily for 5 days
Alternatives	Norfloxacin 400 mg twice daily for 5 days is an alternative although resistance is likely if the infection was acquired overseas

Clostridium difficile toxin disease	
Management	Treat with metronidazole and discontinue other antibiotics when possible. Antidiarrhoeals (e.g. loperamide) should be avoided as the toxin may be retained and worsen colitis. Relapse occurs in approximately 20% of people.
Common pathogens	*Clostridium difficile*
Antibiotic therapy	
First choice	Metronidazole 400 mg orally three times daily for 7 to 10 days

Giardiasis	
Management	Avoid lactose-containing foods for one month after therapy. Notifiable disease
Common pathogens	*Giardia lamblia*

Antibiotic therapy	
First choice	Ornidazole 1.5 g orally once daily for 1 or 2 days **or** Metronidazole 2 g (child 30 mg/kg/day) orally once daily for 3 days
Alternatives	For treatment failure: ▪ Exclude re-infection from asymptomatic family contacts e.g. children ▪ Use metronidazole 400 mg (child 10 mg/kg) three times daily for 7 days

Salmonellosis	
Management	Routine treatment with antibiotics is usually unnecessary and may prolong excretion. Treat in severe disease or immunocompromised patients. Notifiable disease.
Common pathogens	*Salmonella enteritidis*, *Salmonella typhimurium*
Antibiotic therapy	
First choice	Norfloxacin 400 mg orally twice daily for 3 to 5 days
Alternatives	Co-trimoxazole (400 + 80 mg tablets) 2 tablets twice daily for 3 to 5 days

Urinary

Cystitis	
Management	Non-pregnant women with uncomplicated cystitis do not require investigation. Males, children and pregnant women require urine culture (see Laboratory Investigation of UTI, June 2006, for more information). Antibiotic therapy is indicated for all people who are symptomatic. Asymptomatic bacteriuria requires antibiotic treatment in pregnant women but not in elderly women or patients with long-term indwelling urinary catheters. Treat for longer in pregnant women (7 days) and in men (10 to 14 days). Pregnant women should have repeat urine culture 1 to 2 weeks after completing therapy to ensure cure.
Common pathogens	*E. coli*, *Staphylococcus saprophyticus*, *Proteus sp.*, *Klebsiella sp.*, *Enterococcus sp.*
Antibiotic therapy	
First choice	Trimethoprim 300 mg once daily for 3 days (usually avoided during the 1st trimester).
Alternatives	Nitrofurantoin 50 mg four times daily for 5 days (usually avoided at term), cefaclor 500 mg three times daily for 3 days or amoxycillin/clavulanic acid 500+125 mg twice daily for 3 days. Norfloxacin is an alternative but should be reserved for isolates resistant to initial empiric choices.

Acute pyelonephritis	
Management	Only treat as an outpatient if mild symptoms e.g. low fever and no nausea or vomiting. If systemically unwell or vomiting refer for IV treatment.
Common pathogens	*E. coli*, *Proteus sp.*, *Klebsiella sp.*, *Enterococcus sp.*
Antibiotic therapy	
First choice	Trimethoprim 300 mg once daily for 10 to 14 days
Alternatives	Co-trimoxazole 400+80 mg 2 tablets twice daily for 10 to 14 days or amoxycillin/clavulanic acid 500+125 mg three times daily for 10 to 14 days or cefaclor 500 mg three times daily for 10 to 14 days.

CNS

Bacterial meningitis	
Management	In most cases, give antibiotic before transport to hospital in suspected cases of meningococcal disease. If practical, collect blood cultures before antibiotic administration. Notifiable disease.
Common pathogens	*Neisseria meningitides*, *S. pneumoniae* Less common: *Listeria monocytogenes*, *H. influenzae*
Antibiotic therapy	
First choice	Benzylpenicillin 1.2 g (child – 50 mg/kg) IV or IM
Alternatives	Amoxycillin 1 to 2 g (child – 50 to 100 mg/kg) IV or IM Ceftriaxone 50 mg/kg up to 2 g IV or IM

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