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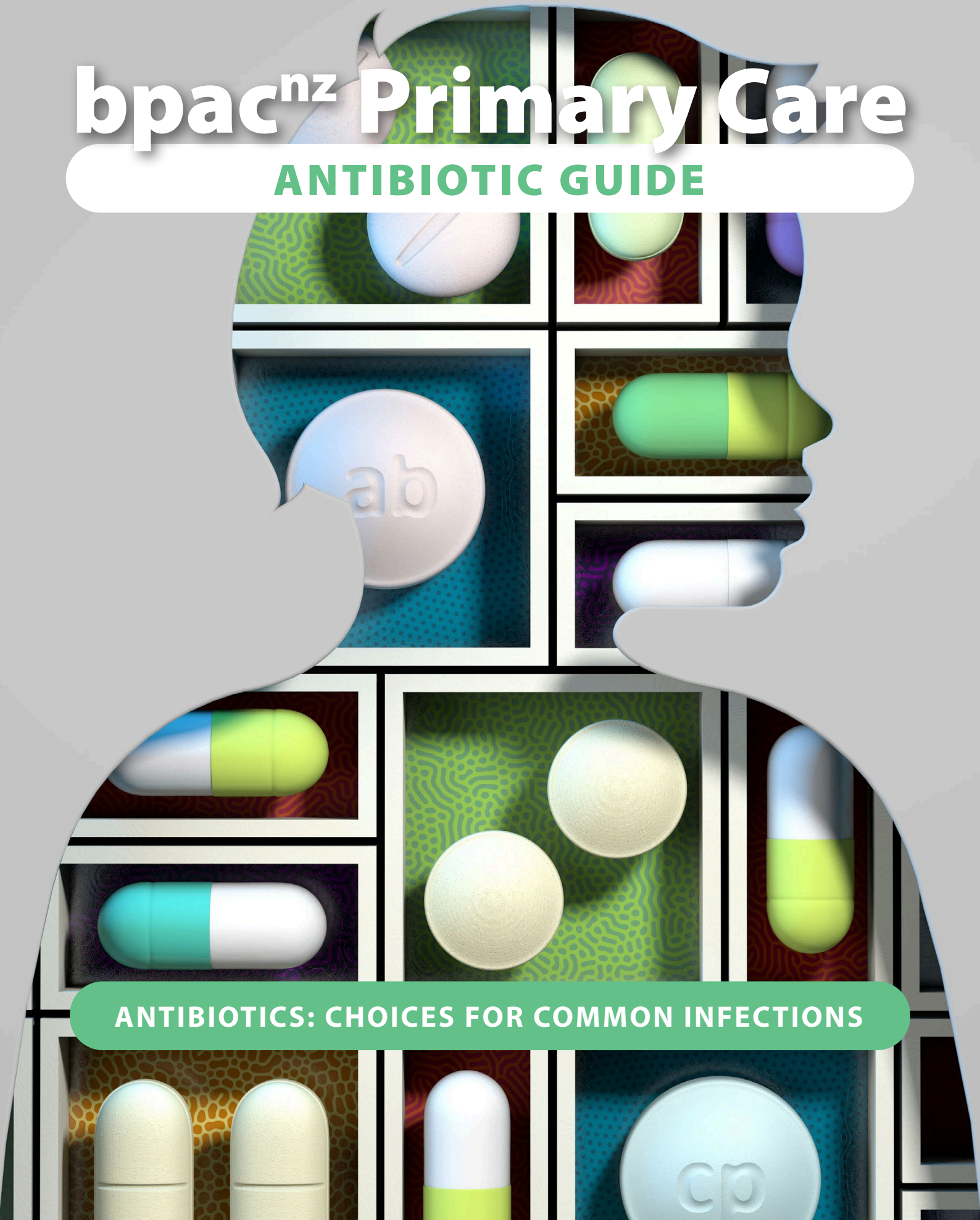
ANTIBIOTIC GUIDE



ANTIBIOTICS: CHOICES FOR COMMON INFECTIONS

bpac^{nz} Primary Care Antibiotic Guide

Antibiotics: choices for common infections

The following information is a guide. It is intended to aid selection of an appropriate antibiotic for typical patients with infections commonly seen in general practice. Individual patient circumstances and local resistance patterns may alter treatment choices.

Antibiotic use in New Zealand is higher per head of population than in many similar developed countries. Increased antibiotic use (and misuse) leads to the development of resistance by eliminating antibiotic-susceptible bacteria and leaving antibiotic-resistant bacteria to multiply. Antimicrobial stewardship aims to limit the use of antibiotics to situations where they deliver the greatest clinical benefit. Along with infection control, this is the key strategy to counter the emerging threat of antimicrobial resistance.

General principles of antimicrobial stewardship:

1. In most cases, only prescribe antibiotics for bacterial infections if:
   - Symptoms are significant or severe
   - There is a high risk of complications
   - The infection is not resolving or is unlikely to resolve
2. Select the first-line indicated antibiotic at the recommended dose and duration
3. Reserve broad spectrum antibiotics for indicated conditions only
4. Educate patients about responsible use of antibiotics, including when an antibiotic is not indicated, and the importance of adhering to the advised regimen (dose and duration); discuss ways that palatability issues or minor adverse effects can be minimised and tips for remembering to take doses on time

For further reading, see: **Antibiotics: the future is short**

Notes for using this guide

Disclaimer: The following information is a "living document"; information is updated as new evidence or recommendations emerge. It is intended to aid selection of an appropriate antibiotic for typical patients with infections commonly seen in primary care. Local resistance patterns may mean that there will be regional variation in first-line choices.

Information on national antimicrobial resistance patterns is available from the **Institute of Environmental Science and Research Ltd (ESR), Public Health Surveillance**

Regional resistance patterns may vary; check with your local laboratory

To check the funding status of a medicine and any supply issues, refer to the **New Zealand Formulary** or **the Pharmaceutical Schedule**

This guideline distinguishes child and adult dosing where appropriate. 'Child' for the purpose of this guideline refers to those aged > 1 month and < 12 years, unless otherwise specified. For dosing relating to neonates aged < 1 month, refer to the **New Zealand Formulary for Children**

Further information relating to isolation periods and reporting of patients with Notifiable Diseases (and their contacts) can be found in the **Communicable Diseases Control Manual** or alternatively discuss with Public Health

Infectious diseases medicine is a dynamic and evolving discipline; this guide is a "living document" and any major changes in antibiotic choice, dose or management will be updated online as required. If you would like to suggest any changes to the guide or the addition of topics, **email: editor@bpac.org.nz**

The information in this publication is specifically designed to address conditions and requirements in New Zealand and no other country. bpac^{nz} assumes no responsibility for action or inaction by any other party based on the information found in this publication and readers are urged to seek appropriate professional advice before taking any steps in reliance on this information.

The following main resources were used in the development of this guide:

1. bpac^{nz}. Online resources. Available from: **bpac.org.nz**
2. Dermnet NZ. Available from: **dermnetnz.org**
3. National Heart Foundation of New Zealand. Group A Streptococcal Sore Throat Management Guideline 2019 Update. Available from: **www.heartfoundation.org.nz/professionals/health-professionals**
4. New Zealand Formulary and New Zealand Formulary for Children. Available from: **nzf.org.nz**
5. New Zealand Sexual Health Society (NZSHS). STI management guidelines for use in primary care. Available from: **sti.guidelines.org.nz**
6. Starship Children's Health. Clinical guidelines. Available from: **www.adhb.govt.nz/starshipclinicalguidelines**
7. Te Whatu Ora Te Toka Tumai Auckland. Antimicrobial Stewardship. Adult empirical antimicrobial treatment guideline. Available from: **www.adhb.health.nz/health-professionals/resources/ams**

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For an electronic version of this guide see:
www.bpac.org.nz/antibiotics

Respiratory

Bronchiectasis Added January, 2024

Management

Antibiotic treatment is indicated for a wet cough lasting longer than four weeks and during an acute bronchiectasis exacerbation when three or more of the following symptoms are present over a 48-hour period:

- Breathlessness
- Fatigue
- Haemoptysis
- Increased cough frequency or severity
- Increased sputum volume or purulence

A wet cough lasting longer than four weeks is a risk factor for bronchiectasis. A lower threshold for prescribing antibiotics is appropriate in children at higher risk of bronchiectasis and experiencing a chronic wet cough (where other underlying causes have been excluded).

An acute exacerbation of bronchiectasis is the increased frequency or severity of wet cough over three or more days in a person with diagnosed bronchiectasis. It can have an underlying viral or bacterial cause; even if a viral aetiology is suspected, antibiotics are useful to reduce the microbial load.

Guidelines recommend sending a sputum sample* for culture and susceptibility testing and to initiate empiric antibiotics while awaiting results; adjust antibiotic choice accordingly. Consider discussion with a respiratory physician or paediatrician if symptoms do not improve.

If *Pseudomonas aeruginosa* or *Staphylococcus aureus* are present in a child's sputum culture, refer for paediatric assessment as this may require hospital level care or indicate undiagnosed cystic fibrosis.

* Sputum samples are difficult to obtain in children aged < 7 years. If obtaining a current sample is not possible, either base antibiotic choice on previous samples or treat empirically.

For further information, see: "Preventing and managing bronchiectasis in high-risk paediatric populations"

Common pathogens

Haemophilus influenzae, Streptococcus pneumoniae, Moraxella catarrhalis, Staphylococcus aureus

Less commonly *Pseudomonas aeruginosa*

Antibiotic treatment

Acute exacerbations or chronic wet cough with risk factors

Treatment options

Chronic wet cough (longer than four weeks duration)

Empiric treatment while awaiting culture results (or sample not taken):

Amoxicillin

Child: 15 – 30 mg/kg/dose (maximum 1 g/dose), three times daily, for 14 days

Adult: 500 mg – 1 g, three times daily, for 14 days

OR

Trimethoprim + sulfamethoxazole

Child > 8 weeks: 24 mg/kg/dose (maximum 960 mg/dose), twice daily, for 14 days

Adult: 960 mg, twice daily, for 14 days

If sputum culture results confirm *H. influenzae* is present and known to be susceptible, complete the empiric treatment course (either of the above regimens).

Consider another 14-day course of antibiotics if clinical improvement is inadequate, i.e. patient does not return to baseline.

Bronchiectasis exacerbation (in patients with confirmed bronchiectasis diagnosis)

Empiric treatment while awaiting culture results (or sample not taken):

Amoxicillin + clavulanic acid

Child: 15 – 30 mg/kg/dose (maximum 625 mg/dose), three times daily, for 14 days

Adult: 625 mg, three times daily, for 14 days

Other options (depending on the results of susceptibility testing) include: **cefalexin**, **cefaclor**, **erythromycin** (if penicillin allergy) or **ciprofloxacin** (if *P. aeruginosa* is present)

Chronic obstructive pulmonary disease (COPD) – acute exacerbations Updated October, 2023

Management	Antibiotic treatment is usually only necessary for patients with moderate to severe symptoms and signs of infection. Approximately half of COPD exacerbations are triggered by viruses rather than bacteria. Antibiotic treatment is more likely to be helpful in patients with clinical signs of chest infection (e.g. purulent sputum, fever, CRP > 40 mg/L, worsening shortness of breath or increased volume of sputum) and those with more severe airflow obstruction at baseline.
Common pathogens	Respiratory viruses, *Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis* N.B. *Pseudomonas aeruginosa* and *Staphylococcus aureus* are uncommon but occur more frequently in severe COPD.
Antibiotic treatment	**Acute exacerbation of COPD with moderate to severe signs of infection**
First choice	**Amoxicillin** **Adult:** 500 mg, three times daily, for five days* * NZ COPD Guidelines recommend antibiotics are prescribed for five to seven days
Alternatives	**Doxycycline** **Adult:** 200 mg, on day one (loading dose), followed by 100 mg, once daily, on days two to five* ***OR*** **Amoxicillin + clavulanic acid** if patient is not responding to initial treatment or bacterial resistance is suspected **Adult:** 625 mg, three times daily, for five to seven days* * NZ COPD Guidelines recommend antibiotics are prescribed for five to seven days

Pertussis (Whooping cough) Updated January, 2024

Management	Antibiotic treatment is recommended to reduce transmission if initiated within three weeks of onset of cough; after this time most people are no longer infectious. Antibiotic treatment is also recommended if the duration of the cough is unknown, and for pregnant females with pertussis. Prophylactic antibiotics are recommended for high-risk contacts: children aged < 1 year and their caregivers, pregnant females and people at risk of complications, e.g. those with severe asthma or who are immunocompromised. Antibiotic treatment is unlikely to alter the clinical course of the illness, unless given within the first few days of contracting the infection. However, as initial symptoms are often indistinguishable from a minor respiratory infection, antibiotics are not usually considered early on unless there is reason to suspect pertussis infection, e.g. family contacts. Patients should be advised to avoid contact with others, especially infants and children, until at least five days of antibiotic treatment has been taken (or two days for azithromycin). Children with pertussis can deteriorate rapidly and may require hospitalisation. Pertussis is a Notifiable Disease.
Common pathogens	*Bordetella pertussis*
Antibiotic treatment	**Pertussis symptoms < 3 weeks or high risk contact**
First choice	**Azithromycin** **Child:** 10 mg/kg/dose (maximum 500 mg/dose), once daily, on day one, followed by 5 mg/kg/dose (maximum 250 mg/dose), once daily, on days two to five **Adult:** 500 mg, once daily, on day one, followed by 250 mg, once daily, on days two to five
Alternatives	**Erythromycin** **Child:** 10 – 12.5 mg/kg/dose, four times daily, for 14 days (usual maximum 1.6 g/**day**; maximum 4 g/**day** in severe infection) **Adult:** 400 mg, four times daily, or 800 mg, twice daily, for 14 days (maximum 4 g/**day** in severe infection) ***OR*** **Trimethoprim + sulfamethoxazole** **Child > 8 weeks**: 24 mg/kg/dose (maximum 960 mg/dose), twice daily, for 14 days **Adult:** 960 mg, twice daily, for 14 days

Pneumonia (community-acquired) – adult

Updated May, 2024

Management

Antibiotic treatment is appropriate for all adults with suspected pneumonia. Advise patients to drink adequate fluids and to take paracetamol or ibuprofen as required. e.g. for chest pain, sore throat.

Consider hospital referral for patients with the following (especially in combination):

- Age ≥ 65 years
- Altered mental state (confusion)
- Relevant co-morbidities, e.g. heart failure, renal or hepatic impairment, frailty
- Suspected complications, e.g. septicaemia, abscess
- Respiratory rate ≥ 30 breaths/min
- Pulse rate > 125 beats/min
- O_2 saturation ≤ 92%
- BP systolic < 90 mmHg or diastolic ≤ 60 mmHg
- Dehydration
- Lack of reliable support at home

Reassess antibiotic choice and review illness severity if no improvement is seen or the patient's condition worsens within 48 – 72 hours of starting antibiotic treatment; ongoing community management may no longer be suitable. Consider referral for a chest X-ray in patients who have not responded adequately after a course of antibiotics and there were chest signs on examination (if not already referred for X-ray at the time of diagnosis due to signs of complications).

Common pathogens

Streptococcus pneumoniae, Haemophilus influenzae, Mycoplasma pneumoniae, Chlamydophila pneumoniae, Legionella longbeachae, L. pneumophila, Staphylococcus aureus, respiratory viruses.

Antibiotic treatment

Suspected or confirmed mild to moderate community-acquired pneumonia

First choice

Amoxicillin
Adult: 1 g, three times daily, for five days

N.B. A higher amoxicillin dose is now recommended to overcome increasing resistance, however, based on clinical judgement there may be some patients for whom 500 mg, three times daily, is an appropriate dose.

If the patient has more severe symptoms (but is still suitable for community management), or has not improved after 48 hours, consider **combination treatment** with amoxicillin (dosing as above) PLUS a macrolide, e.g.:

Azithromycin
Adult: 500 mg, once daily, for three days

OR

Roxithromycin
Adult: 300 mg, once daily, for five days

N.B. Certain causes of pneumonia require a longer antibiotic treatment duration or an alternative antibiotic; if the patient is not responding to empiric treatment, discuss a pathogen-specific regimen with an infectious disease physician or clinical microbiologist.

Alternatives

Doxycycline (if severe penicillin allergy, e.g. anaphylaxis)
Adult: 200 mg, twice daily, on day one, followed by 100 mg, twice daily, on days two to five

OR

Cefalexin (if mild penicillin allergy, e.g. rash)
Adult: 1 g, three times daily, for five days

Pneumonia (community-acquired) – child Updated May, 2024

Management

Antibiotic treatment is appropriate for all children with suspected pneumonia. Advise patients to maintain adequate hydration and to take paracetamol or ibuprofen as required (use ibuprofen with caution in children who are dehydrated).

Hospital referral is warranted for a child with any of the following:

- Age < 3 months
- Significant dehydration
- O_2 saturation < 93%
- Significant co-morbidity
- Respiratory distress that significantly interferes with feeding
- "Toxic" appearance
- Suspected severe pneumonia, e.g. severe tachycardia
- Suspected complications, e.g. effusion, abscess
- Social concerns, e.g. lack of transport if the child deteriorates, communication barriers
- Deterioration despite appropriate oral antibiotics

Reassess and review severity of illness in children who do not respond adequately within 48 – 72 hours, or who clinically deteriorate; ongoing community management may no longer be suitable. Consider referral for a chest X-ray or discussion with a paediatric infectious diseases physician or paediatrician in children who have not responded adequately after a course of antibiotics.

Common pathogens

Respiratory viruses (particularly respiratory syncytial virus), *Streptococcus pneumoniae, Mycoplasma pneumoniae, Chlamydophila pneumoniae, Haemophilus influenzae, Staphylococcus aureus*

Antibiotic treatment

Suspected or confirmed mild to moderate community-acquired pneumonia

First choice

Amoxicillin

Child > 3 months: 30 mg/kg/dose (maximum 1 g/dose), three times daily, for three to five days

If there is poor response after 48 hours, consider "watchful waiting" as it is likely that the child has viral pneumonia, or in an older child, take a sputum sample for microbiological testing. **Combination treatmen**t with amoxicillin (dosing as above) PLUS a macrolide antibiotic (see dosing below) may be considered in children aged over five years.

Alternatives

If penicillin allergy:

Erythromycin

Child: 10 – 12.5 mg/kg/**dose**, four times daily, for seven days (usual maximum 1.6 g/**day**; up to 4 g/**day** in severe infection)

OR

Azithromycin

Child: 10 mg/kg, once daily, on day one, followed by 5 mg/kg, once daily on days two to five

N.B. Doxycycline is also a suitable alternative antibiotic to amoxicillin in children aged over 12 years, however, there is no liquid formulation available for children unable to swallow tablets.

Ear, nose and throat

Otitis externa – infectious cause

Updated January, 2024

Management

Topical antibiotic treatment should only be considered if conservative management is impractical or unsuccessful.

Bacterial (or fungal) infection is the most common cause of otitis externa, however, non-infectious dermatological aetiology is also possible. First-line management is gentle cleansing of the external ear canal, e.g. with microsuction. Consider treatment with topical acetic acid 2% solution in mild cases (depending on local availability and cost). If symptoms are severe or do not improve with conservative interventions, a topical anti-infective may be appropriate.

Oral antibiotics should be reserved for severe or persistent otitis externa, or when there are systemic symptoms.

N.B. Oral antibiotics may also be considered for people with diabetes or those who are immunocompromised and are at risk of necrotising or malignant otitis externa.

Common pathogens

Staphylococcus aureus, Streptococcus pyogenes, Pseudomonas aeruginosa or fungal infections, e.g. *Aspergillus* or *Candida* spp.

Antibiotic treatment

Otitis externa in patients with likely infectious cause who do not show improvement with conservative management

Treatment options

Flumethasone + clioquinol (Locorten Vioform)

Child > 2 years and adult: 2 – 3 drops, twice daily, for five to seven days

OR

Dexamethasone + framycetin + gramicidin (Sofradex)

Child and adult: 2 – 3 drops, three to four times daily, for five to seven days

OR

Triamcinolone + neomycin + gramicidin + nystatin (Kenacomb) if fungal infection is suspected

Child and adult: 2 – 3 drops, two to four times daily, for five to seven days

OR

Ciprofloxacin + hydrocortisone (Ciproxin HC) if Pseudomonas suspected

Child and adult: 3 drops, twice daily, for five to seven days

OR

Framycetin (Soframycin) if a steroid is not required as part of the preparation

Child and adult: 2 – 3 drops, three to four times daily, for five to seven days

N.B. Avoid using drops for longer than seven days as this may result in secondary fungal infection which can be difficult to treat.

Otitis media – acute

Updated April, 2023

Management

Antibiotic treatment is usually unnecessary as most infections are self-limiting.

Consider antibiotics for children at high risk, e.g. with systemic symptoms, aged < 6 months, aged < 2 years with severe or bilateral infection, with perforation and/or otorrhoea or if there has been no improvement within 48 hours. Also consider antibiotics in children with recurrent infections, i.e. three or more episodes of otitis media within six months or four or more episodes within 12 months.

Otherwise treat symptomatically, e.g. paracetamol, and arrange follow up or give a "back pocket" antibiotic prescription to be dispensed if no improvement in next 48 hours.

Otitis media with effusion – antibiotics provide little or no long-term benefit in children without acute symptoms; watchful waiting is recommended. Consider referral to otorhinolaryngology (ENT if there is recurrent acute otitis media or if bilateral middle ear effusions persist for longer than three months.

For further information, see: **Otitis media: a common childhood illness**

Common pathogens

Respiratory viruses, *Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis*

Antibiotic treatment

Otitis media in child with risk factors or recurrent infection

First choice

Amoxicillin
Child: 15 mg/kg/dose (maximum 1 g/dose), three times daily, for five days

For severe or persistent infection use 30 mg/kg/dose (maximum 1 g/dose in children aged over one month), three times daily, for seven days*

* **Amoxicillin + clavulanic acid** can be considered if infection has not responded to high dose amoxicillin

Alternatives

Erythromycin
Child: 10 – 12.5 mg/kg/dose, four times daily, for five to seven days (maximum 1.6 g/**day**; maximum of 4 g/**day** in severe infections)

OR

Trimethoprim + sulfamethoxazole
Child > 8 weeks: 24 mg/kg/dose (maximum 960 mg/dose), twice daily, for five to seven days

Otitis media – chronic suppurative otitis media (CSOM) Added April, 2023

Management

Topical antibiotic treatment is recommended in all patients with chronic suppurative otitis media (CSOM).

CSOM is chronic inflammation of the middle ear and mastoid cavity characterised by otorrhoea persisting for at least two to six weeks through a perforated tympanic membrane or grommet – and otitis externa has been excluded.

Treatment ideally involves aural microsuction, followed by topical ear drops (containing a combination of anti-infective and anti-inflammatory agents), however, this may be limited by cost and access and often treatment begins with ear drops.

If combination drops do not improve CSOM, consider swabbing to direct further treatment or referral to otorhinolaryngology (ENT).

For further information, see: **Otitis media: a common childhood illness**

Common pathogens

Respiratory viruses, *Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis*

Other potential causes include *Staphylococcus aureus*, *Pseudomonas aeruginosa* and fungal infection

Antibiotic treatment

Suspected or confirmed CSOM

Treatment options

When choosing an appropriate ear drop, consider which is the most appropriate for the likely type of infection, the most suitable formulation and what is funded and available:

Ciprofloxacin + hydrocortisone (Ciproxin HC)*
Child and adult: 3 drops, twice daily, for five to seven days

Fluroquinolone ear drops are generally recommended first-line in many guidelines on the balance of benefit and safety, but these are not currently funded and resistance needs to be considered. Discuss the possibility of self-funding.

* Ciprofloxacin eye drops 0.3% (five drops administered into the ear, twice daily for nine days) are funded for the second-line treatment of CSOM (unapproved indication). These drops do not contain an anti-inflammatory component that is usually recommended to treat CSOM and so may be less effective than combination drops.

Dexamethasone + framycetin + gramicidin (Sofradex)
Child and adult: 2 – 3 drops, three to four times daily, for five to seven days

In practice, Sofradex is often used first-line (unless there is suspicion of *Pseudomonas* or a framycetin/gramicidin-resistant organism) as it is a thin fluid, generally well-tolerated and currently partly funded

Flumethasone + clioquinol (Locorten Vioform)
Child > 2 years and adult: 2 – 3 drops, twice daily, for five to seven days

This ear drop is most appropriate for fungal/yeast infections in addition to aural microsuction.

Triamcinolone + neomycin + gramicidin + nystatin (Kenacomb)
Child and adult: 2 – 3 drops, two to four times daily, for five to seven days

Kenacomb is an alternative to Locorten-Vioform, although these drops can be difficult to instil (thick yellow liquid) and their appearance can confound whether an infection is settling or not.

N.B. Avoid using drops for longer than seven days as there is increasing risk of ototoxicity, and a secondary infection, e.g. fungal, can develop

Sinusitis – acute

Updated October, 2023

Management	Antibiotic treatment is not required in most cases. More than 90% of patients with sinusitis will not have a bacterial infection. Even in the small minority that do, symptoms are self-limiting, and antibiotics only offer a marginal benefit. Antibiotics may be considered for patients with symptoms that persist for more than ten days, onset of severe symptoms or fever (> 39°C) and purulent nasal discharge or facial pain lasting for at least three consecutive days, or onset of worsening symptoms after initial improvement.
Common pathogens	Respiratory viruses, *Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis*, anaerobic bacteria
Antibiotic treatment	**Persistent or severe sinusitis**
First choice	**Amoxicillin** **Child:** 15 – 30 mg/kg/dose (maximum 500 mg/dose, if aged < 5 years; maximum 1 g/dose, if aged ≥ 5 years), three times daily, for seven days **Adult:** 500 mg – 1 g, three times daily, for seven days
Alternatives	**Doxycycline** **Child > 12 years and adult:** 200 mg, once daily, on day one, followed by 100 mg, once daily, on days two to seven If symptoms persist despite a treatment course of amoxicillin: **Amoxicillin + clavulanic acid** **Child:** 15 – 30 mg/kg/dose (maximum 625 mg/dose), three times daily, for seven days **Adult:** 625 mg, three times daily, for seven days

Sore throat – including pharyngitis and tonsillitis Updated May, 2023

Management

Antibiotic treatment of a sore throat is recommended for patients at high risk of rheumatic fever with group A Streptococcus (GAS) infection. Antibiotic treatment is unnecessary in almost all other cases, as a sore throat (which includes pharyngitis and tonsillitis) is often viral in origin, and whether caused by a virus or by GAS, is usually self-limiting. Antibiotics may be considered if the patient is at risk of complications.

People at high risk of rheumatic fever are those who have:

- A personal, family or household history of rheumatic fever

OR

- Two or more of the following criteria:
  - Māori or Pacific ethnicity
  - Aged 3–35 years
  - Living in crowded circumstances or in lower socioeconomic areas

People at high risk of rheumatic fever should have a throat swab taken when empiric antibiotic treatment is initiated (if follow-up is possible). Patients who test negative for GAS can discontinue antibiotic use.

Antibiotic treatment of a sore throat may be considered in patients if peritonsillar cellulitis or abscess (quinsy) develops, but it is usually appropriate to refer these patients to hospital. Patients who develop scarlet fever require antibiotic treatment.

Rheumatic fever is a Notifiable Disease.

N.B. We acknowledge that differing treatment advice exists for rheumatic fever prevention within New Zealand. These recommendations reflect current national guidelines, and this topic will be updated as required.

Refer to the **New Zealand Heart Foundation Algorithm** for the management of patients with sore throat for further guidance

Common pathogens

Respiratory viruses, Group A streptococcus (*Streptococcus pyogenes*) and other streptococcus spp.

Antibiotic treatment

Suspected or confirmed GAS in patients at high risk for rheumatic fever

First choice

Phenoxymethylpenicillin (Penicillin V)
Child < 20 kg: 250 mg, two or three times daily, for ten days
Child ≥ 20 kg and adult: 500 mg, two or three times daily, for ten days

OR

Amoxicillin
Child: 50 mg/kg/dose (maximum 1 g/dose),* once daily, for ten days; or 25 mg/kg/dose (maximum 500 mg/dose), twice daily, for ten days
Adult: 1 g, once daily, for ten days; or 500 mg, twice daily, for ten days

* Children under 30 kg who cannot tolerate 1000 mg amoxicillin as a single daily dose can be prescribed 750 mg amoxicillin, once daily, for 10 days as GAS is highly susceptible to penicillin

OR

Benzathine penicillin†
Child < 30 kg: 450 mg, single IM dose
Child ≥ 30 kg and adult: 900 mg, single IM dose

† Benzathine penicillin can be given with 0.25 mL low dose lignocaine 2%, to reduce pain associated with the injection

Alternatives

Erythromycin
Child: 40 mg/kg/**day**, in two to three divided doses, for ten days (maximum 1.6 g/**day**)
Adult: 800 mg, twice daily, for ten days

OR

Roxithromycin
Adult: 300 mg, once daily, for ten days; or 150 mg, twice daily, for ten days

Eyes

Blepharitis (bacterial) Added January, 2024

Management

Topical antibiotic treatment can be considered for patients with severe symptoms

Treatment focuses on improving the meibomian gland secretions but is never curative and it should be explained to patients that management needs to be ongoing (relapses and exacerbations should be expected). Initial management of symptoms involves lid hygiene. The use of cosmetics around the eye should be avoided, especially eye liner. Artificial tear drops may assist in relieving symptoms.

If the symptoms are particularly severe, topical antibiotics can be considered. In some cases, oral tetracyclines, e.g. low dose doxycycline, may be considered if topical antibiotics have not resulted in an adequate response. Oral antibiotics are usually prescribed initially for six weeks but may need to be continued for up to three months and repeated intermittently.

Eyelid hygiene should be maintained throughout treatment. Contact lenses should not be worn during topical antibiotic treatment.

For further information, see **Causes, complications and treatment of a red eye**

Common pathogens

Staphylococci spp.

Antibiotic treatment

Severe bacterial blepharitis

First choice

Chloramphenicol 1% eye ointment
Adult: apply 1.5 cm of ointment inside lower eyelid, four times daily, for seven days*

OR

Chloramphenicol 0.5% eye drops
Adult: 1 – 2 drops, four times daily, for seven days*

* Longer duration of treatment may be required in chronic cases

Alternatives

Fusidic acid eye gel 1%
Adult: 1 drop, twice daily, for seven days

If inadequate response with topical antibiotics:
Doxycycline
Adult: 100 mg, once daily, for six weeks*

* Guidelines recommend 50 mg, once daily, but the currently funded brand is only available in 100 mg film-coated tablets that should not be halved. Alternate day dosing could be considered. In chronic cases, longer duration of treatment may be required, i.e. up to three months.

Conjunctivitis

Updated October, 2023

Management

Antibiotic treatment is only required for patients with severe symptoms indicative of bacterial infection.

Conjunctivitis can be viral, bacterial or allergic. Bacterial conjunctivitis is usually associated with purulent discharge. Symptoms are self-limiting and most people improve without treatment, in two to five days. Conjunctivitis due to adenovirus and enterovirus is also self-limiting. Patients with suspected herpes simplex conjunctivitis require evaluation by an ophthalmologist.

In newborn infants, consider *Chlamydia trachomatis* or N*eisseria gonorrhoeae*, in which case, do not use topical treatment. Collect appropriate eye swabs and refer to a paediatrician or ophthalmologist.

Patients with conjunctivitis can be advised to clean away secretions from the eyelids and eyelashes using cotton wool soaked in water. Advise hand washing after touching the eyes and avoid sharing pillows, facecloths and towels. Do not wear contact lenses. Artificial tear drops can be used to relieve discomfort.

For further information, see **Causes, complications and treatment of a red eye**

Common pathogens

Streptococcus pneumoniae, *Haemophilus influenzae*, *Staphylococcus aureus*, viruses including herpes simplex

Less commonly: *Chlamydia trachomatis* or *Neisseria gonorrhoeae*

Antibiotic treatment — **Severe bacterial conjunctivitis**

First choice

Chloramphenicol 0.5% eye drops

Child < 2 years: 1 drop, four times daily, until 48 hours after symptoms have resolved or five days (whichever is shorter)

Child > 2 years and adult: 1 – 2 drops, every two to six hours,* until 48 hours after symptoms have resolved or five days (whichever is shorter)

OR

Chloramphenicol 1% eye ointment

Child and adult: apply 1.5 cm of ointment inside lower eyelid, every 3 hours,* until 48 hours after symptoms have resolved or five days (whichever is shorter)

* Higher frequency of administration initially, and then reduced after two to three days

Alternatives

Fusidic acid eye gel 1%

Child and adult: 1 drop, twice daily, until 48 hours after symptoms have cleared

OR

Ciprofloxacin 0.3% eye drops*

Adult: 1 drop, every two hours on days one and two, then every 4 hours on days three to seven, use during waking hours

* Funded by endorsement for severe bacterial conjunctivitis unresponsive to chloramphenicol

Foreign bodies and corneal abrasions

New October, 2023

Management	Antibiotic treatment is recommended to prevent secondary infection in patients with corneal abrasions or following the removal of a foreign body. Topical antibiotics are prescribed to prevent secondary infection during healing. Contact lenses should not be worn during topical antibiotic treatment. Corneal abrasions generally heal within 24 – 72 hours. Ideally, the patient should be reassessed in 24 – 48 hours. Refer for an ophthalmological assessment (or consider optometrist triage) if the abrasion is not resolving within 72 hours, or if visual acuity deteriorates or pain increases. Any patient with a penetrating eye injury (or suspected) should be referred immediately for ophthalmological assessment. For further information, see **Causes, complications and treatment of a red eye**
Common pathogens	*Staphylococcus* spp., *Pseudomonas aeruginosa*
Antibiotic treatment	**To prevent secondary infection following corneal abrasion or ocular foreign body removal**
First choice	**Chloramphenicol 0.5% eye drops** **Child < 2 years:** 1 drop, four times daily, for three days **Child > 2 years and adult:** 1 – 2 drops, four times daily, for three days ***OR*** **Chloramphenicol 1% eye ointment** **Child and adult:** apply 1.5 cm of ointment inside lower eyelid, four times daily, for three days
Alternatives	**Fusidic acid eye gel 1%** **Child and adult:** 1 drop, twice daily, for three days

Dental Infections

Dental abscess Updated October, 2023

Management

Antibiotic treatment is recommended for people with severe infection, diffuse, tense swelling around the affected tooth or systemic symptoms.

Acute dental pain can be managed with paracetamol, ibuprofen or a combination of the two. Codeine may be added if the pain is uncontrolled. To prevent aggravation of symptoms, patients can be advised to eat cool, soft foods, to chew on the unaffected side of the mouth and to avoid flossing near the abscess.

Acute localised infections of the gums are generally treated by removing food particles and advising use of chlorhexidine mouthwash. Marked swelling can be managed by lancing and draining the abscess. Advise the patient to follow this with a warm, salty mouthwash, three times daily, for five days, to promote continued drainage as incisions will often heal causing the abscess to refill with pus. Adjunctive treatment with antibiotics should be considered if the infection is severe, i.e. symptoms and signs of systemic illness, or if the patient is severely immunocompromised. Antibiotics are rarely indicated for toothache without signs of abscess.

Patients who have been treated in primary care for dental abscess should be referred for dental treatment as it is likely that the abscess will reoccur; tooth extraction or root canal may be required. Contact local health authority for information on available funding and services if there are barriers to private dental care.

Common pathogens

Polymicrobial with various anaerobes including viridans streptococci, the *Streptococcus anginosus* group, *Prevotella* and *Fusobacterium* spp.

Antibiotic treatment

Severe infection e.g. cellulitis, systemic symptoms or diffuse, tense and painful swelling

First choice

Amoxicillin

Child: 15 – 30 mg/kg/dose (maximum 1 g/dose), three times daily, for three days*

Adult: 1 g, single oral dose, followed by 500 mg, three times daily, for three days*

* Assess after three days to determine if further antibiotic treatment is required

OR

Metronidazole

Child: 7.5 mg/kg/dose (maximum 400 mg/dose), three times daily, for five days

Adult: 400 mg, three times daily, for five days

N.B. Amoxicillin and metronidazole can be prescribed in combination for patients with particularly severe infections.

Alternatives

Erythromycin

Child: 20 mg/kg/dose (maximum 800 mg/dose), twice daily, for five days; or 10 mg/kg/dose (maximum 400 mg/dose), four times daily, for five days

Adult: 800 mg, twice daily, for five days; or 400 mg, four times daily, for five days

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Prophylaxis of infective endocarditis prior to invasive dental procedures Updated October, 2023

Management	Antibiotic treatment is indicated for people at high risk of developing infective endocarditis who are undergoing dental procedures involving manipulation of either gingival tissue or the tooth root region, or perforation of the oral mucosa, or tonsillectomy/adenoidectomy. People with any of the following are at high risk of developing infective endocarditis: ■ A prosthetic heart valve, either biological or mechanical ■ Rheumatic valvular heart disease ■ Previous endocarditis ■ Unrepaired cyanotic congenital heart disease or a repair procedure within the last six months ■ Cardiac shunts or conduits for palliation People at high-risk of endocarditis do **not** require prophylactic antibiotics if they are undergoing any of the following: ■ Routine dental anaesthetic injections through non-infected tissue ■ Dental X-rays ■ Placement of removable prosthodontic or orthodontic appliances ■ Adjustment of orthodontic appliances ■ Placement of orthodontic brackets ■ Losing deciduous teeth ■ Treatment of bleeding caused by trauma to the lips or oral mucosa People at high risk of developing infective endocarditis who are undergoing general anaesthesia will generally be managed in a secondary care setting. For further information, see: **The role of prophylactic antibiotics for preventing infective endocarditis in people undergoing dental or other minor procedures**
Common pathogens	Viridans streptococci
Antibiotic treatment	**Prophylactic treatment**
First choice	**Amoxicillin** **Child:** 50 mg/kg (maximum 2 g), single dose, oral, IV or IM **Adult:** 2 g, single dose, oral, IV or IM Oral antibiotics should be taken one hour prior to the procedure; intramuscular injections should be given 30 minutes prior to and intravenous injections can be given immediately before the procedure N.B. Prophylaxis can be given up to two hours after procedure has occurred if not already administered
Alternatives	If penicillin allergy or use of a penicillin or cephalosporin in the previous month: **Clarithromycin*** **Child:** 15 mg/kg (maximum 500 mg), single oral dose **Adult:** 500 mg, single oral dose Oral antibiotics should be taken one hour prior to the procedure * Unapproved indication ***OR*** **Clindamycin** **Child:** 15 mg/kg (maximum 600 mg), single dose, oral, IV infusion or IM **Adult:** 600 mg, single dose, oral, IV infusion or IM Timing of oral and intramuscular dosing as above; intravenous infusion should be given over 20 minutes immediately before the procedure

CNS

Suspected meningococcal disease

Updated January, 2024

Management	Antibiotic treatment should be given to all patients with suspected meningococcal disease (e.g. meningitis, meningococcal septicaemia) while awaiting transport to hospital (if this does not delay transfer). Immediately refer all people with suspected meningococcal disease to hospital. Record observations, including neurological assessment, at least every 15 minutes while awaiting transfer. The first stage of meningococcal disease is associated with non-specific influenza-like symptoms and signs. Specific symptoms and signs of bacterial meningitis include: ■ Photophobia ■ Severe headache ■ Neck stiffness ■ Focal neurologic deficit Meningococcal septicaemia may be indicated by features such as non-blanching rash, unusual or mottled skin colour and rapidly deteriorating condition. Most patients will not display specific signs within the first four to six hours of illness (up to eight hours for adolescents) and infants may not display typical signs at all. Meningococcal disease is a Notifiable Disease (including suspected cases).
Common pathogens	*Neisseria meningitidis, Streptococcus pneumoniae* Viral: *Enteroviruses,* herpes simplex virus, varicella zoster virus and other viruses Rare: *Listeria monocytogenes, Haemophilus influenzae* Infants: Group B *Streptococcus, Listeria monocytogenes, Escherichia coli*
Antibiotic treatment	**Suspected meningococcal disease in primary care (while awaiting hospital transfer)**
First choice	**Ceftriaxone** **Child < 30 kg:** 100 mg/kg, (maximum 4 g/dose) stat dose IV (or IM*) **Child > 30 kg and adult:** 2 g, stat dose IV (or IM*) IV administration is preferred to IM (where available and not leading to delays) N.B. Patients allergic to penicillin who **do not** have a documented history of anaphylaxis with penicillin can be given ceftriaxone. * Divide between more than one site if dose is > 1 g
Alternatives	**Benzylpenicillin** (penicillin G) **Child:** 50 mg/kg (maximum 2 g/dose), stat dose IV (or IM) **Adult:** 2.4 g, stat dose IV (or IM) N.B. Almost any parenterally administered antibiotic in an appropriate dose will inhibit the growth of meningococci, so if ceftriaxone or benzylpenicillin are not available, give any other cephalosporin or penicillin antibiotic.

Skin

Bites – human and animal

Updated December, 2023

Management

Antibiotic treatment is recommended for all patients with infected bites or as prophylactic treatment, depending on the nature of the bite.

Prophylactic antibiotic treatment is recommended for: human or dog bites (unless superficial and cleaned within 12 hours of injury); cat or other animal bites; severe or deep bites; bites on the hand, foot, face, genitalia, tendon or ligament; in immunocompromised people; and people presenting with an untreated bite, more than eight hours later.

Clean and debride the wound and assess the need for tetanus immunisation.

Hospital referral is recommended if there is suspected bone or joint involvement.

Common pathogens

Polymicrobial infection, *Pasteurella multocida*, *Capnocytophaga canimorsus* (cat and dog bites), *Eikenella corrodens* (fist injury), *Staphylococcus aureus*, streptococci and anaerobes

Antibiotic treatment

Infected bite or prophylaxis if risk factors

First choice

Amoxicillin + clavulanic acid

Child: 15 – 30 mg/kg/dose (maximum 625 mg/dose), three times daily, for seven days

Adult: 625 mg, three times daily, for seven days

N.B. Three to five days is an appropriate duration for prophylaxis.

Alternatives

Metronidazole

Child: 7.5 mg/kg/dose (maximum 400 mg/dose), three times daily, for seven days

Adult: 400 mg, three times daily, **or** 600 mg, twice daily, for seven days

PLUS

Doxycycline

Child ≥ 12 years and adult: 200 mg, on day one, followed by 100 mg, once daily (or twice daily if more severe infection), on days two to seven

OR instead of doxycycline in children

Trimethoprim + sulfamethoxazole

Child > 8 weeks: 24 mg/kg/dose (maximum 960 mg/dose), twice daily, for seven days

Boils (furuncles) and carbuncles

Updated November, 2023

Management

Antibiotic treatment is not usually required. Most lesions should be treated with incision and drainage alone. A topical antiseptic may be useful.

Antibiotics may be considered if there is fever, spreading cellulitis or co-morbidity, e.g. diabetes, or if the lesion is on a site associated with complications, e.g. the face.

Common pathogens

Staphylococcus aureus

Consider MRSA if there is a lack of response to flucloxacillin, another penicillin or cephalosporin.

Antibiotic treatment

Boils (with complications)

First choice

If antibiotic treatment is indicated – treat as per **Cellulitis**

Cellulitis Updated November, 2024

Management

Antibiotic treatment is required for all patients with cellulitis.

Oral antibiotic treatment is appropriate for those with mild to moderate cellulitis. The addition of probenecid can be considered in some situations, e.g. immunocompromised patients. Intravenous treatment is usually required for patients with severe cellulitis or those not responding to oral treatment. In some regions this may be administered in the community. Hospital referral is usually appropriate for patients with systemic symptoms and most infants.

For periorbital or facial cellulitis, in all but very mild cases refer to hospital for consideration of IV antibiotics.

For further information, see: **Cellulitis: skin deep and spreading across New Zealand**

Common pathogens

Streptococcus pyogenes, Staphylococcus aureus, group C or group G streptococci

Antibiotic treatment

Mild to moderate cellulitis

First choice

Flucloxacillin*

Child: 12.5 – 25 mg/kg/dose (usually up to 500 mg/dose; maximum 1 g/dose), four times daily, for five days

Adult: 500 mg – 1 g†, three to four times daily, for five days

* Can be taken with food to minimise gastrointestinal adverse effects associated with high doses or to make the suspension more palatable for children

† Dose will depend on patient and clinical circumstances; 500 mg/dose is appropriate for older people, those with low body weight or less severe infection, while 1 g/dose should be used for those with more severe infections, large body size or if immunocompromised

Alternatives

Cefalexin

Child: 12.5 – 25 mg/kg/dose (maximum 1 g/dose), two to three times daily, for five days, depending on severity

Adult: 500 mg, four times daily, for five days

OR

Erythromycin†

Child: 10 – 12.5 mg/kg/dose, four times daily, for five days (usual maximum 1.6 g/**day**; maximum 4 g/**day** in severe infection)

Adult: 800 mg, twice daily; or 400 mg, four times daily, for five days (maximum 3.2 g/**day** in severe infections)

OR

Trimethoprim + sulfamethoxazole†

Child > 8 weeks: 24 mg/kg/dose (maximum 960 mg/dose), twice daily, for five days

Adult: 960 mg, twice daily, for five days

† Preferred if MRSA is present, guided by susceptibilities

Diabetic foot infections

Updated December, 2023

Management	Antibiotic treatment is required if there are signs of infection in the wound. It is recommended to take a wound swab for microbiological analysis. The threshold for suspecting infection and swabbing a wound should be lower in people with diabetes and other conditions where perfusion and immune response are diminished, as classical clinical signs of infection are not always present. Referral for further assessment should be considered if infection is suspected to involve the bones of the feet, if there is no sign of improvement after 48 hours of treatment or if other complications develop, e.g. sepsis. Longer antibiotic treatment duration may be appropriate for patients who experience only mild symptom improvement after the initial course, however, if the infection has not completely resolved after four weeks of antibiotic treatment, referral is required. Antibiotic treatment is not recommended for prevention of diabetic foot infections.
Common pathogens	Early infection is usually due to *Staphylococcus aureus* and/or streptococci. Later infection may be polymicrobial with a mixture of gram-positive cocci, gram-negative bacilli and anaerobes.
Antibiotic treatment	**Infected foot wound in adults with diabetes**
First choice	**Amoxicillin + clavulanic acid** **Adult:** 625 mg, three times daily, for five days
Alternatives	**Cefalexin** 1 g, three times daily ***PLUS*** **Metronidazole** 400 mg, two to three times daily, for five days

Impetigo Updated November, 2023

Management	Antibiotic treatment is not usually required. Initial management involves the simple measures of "clean, cut (nails) and cover". Use moist soaks to gently remove crusts from lesions, keep affected areas covered and exclude the child from school or preschool until 24 hours after treatment has been initiated. Assess and treat other infected household members. Topical treatment is only appropriate for areas of localised impetigo (usually no more than three lesions). Current expert opinion favours the use of antiseptic cream, such as hydrogen peroxide or povidone-iodine 10%, as first choice topical treatment, due to high rates of fusidic acid resistance in Staphylococcus aureus in New Zealand. There is a limited role for topical antibiotic treatment; only for localised infection when topical antiseptics have been unsuccessful. Oral antibiotic treatment is recommended when topical treatment is ineffective or for patients with: ■ Extensive infection (i.e. more than three lesions/clusters) ■ Bullous impetigo ■ Systemic symptoms Recurrent impetigo may be the result of chronic nasal carriage of *S. aureus* (patient or household contact), or re-infection from fomite colonisation, e.g. clothing, linen, and may require decolonisation. For further information, see: **Management of impetigo**
Common pathogens	*Streptococcus pyogenes, Staphylococcus aureus*
Antibiotic treatment	**Impetigo (antiseptic + antibiotic treatment)**
First choice	If localised infection: **Hydrogen peroxide 1% cream** Apply 2 – 3 times daily, for five days ***OR*** **Povidone-iodine 10% ointment** Apply 2 – 3 times daily, for five days If extensive/multiple lesions: treat with oral antibiotics as per **Cellulitis**
Alternatives	Use topical fusidic acid as second line treatment after topical antiseptics and only if the infection is localised: **Fusidic acid 2% cream or ointment** Apply twice daily, for five days If topical treatment unsuccessful: treat with oral antibiotics as per **Cellulitis**

Mastitis

Updated December, 2023

Management	Antibiotic treatment is required for patients with systemic symptoms. Conservative management to alleviate symptoms (e.g. gentle massage, warm compress) and ongoing breast emptying may be all that is required to treat mild mastitis. Breastfeeding (or expressing) from both breasts should be continued; this is an important component of treatment and poses no risk to the infant. If there is no improvement within 12 – 24 hours or symptoms are severe or worsening, antibiotics should be started. Antibiotics should also be given in non-lactating females or males with mastitis.
Common pathogens	*Staphylococcus aureus* in lactating females, *S. aureus* and anaerobes in non-lactating females or in males
Antibiotic treatment	**Mastitis with systemic symptoms**
First choice	**Flucloxacillin** **Adult:** 500 mg, four times daily, for five to seven days Males or non-lactating females: **Amoxicillin + clavulanic acid** **Adult:** 625 mg, three times daily, for seven days
Alternatives	**Cefalexin** **Adult:** 500 mg (maximum 1 g/dose in severe infection), four times daily, for five to seven days

Gastrointestinal

Campylobacteriosis

Updated November, 2023

Management	Antibiotic treatment is recommended for people with campylobacteriosis (also known as campylobacter enterocolitis) and severe (e.g. high fever, bloody diarrhoea) or prolonged (more than seven days) symptoms. Antibiotic treatment may also be considered for people at high risk of complications or who are at higher risk of transmitting infection to vulnerable people (although this is rare). This includes pregnant females, people who are immunocompromised and their carers, food handlers and childcare workers. Most people will recover with symptomatic treatment only, including rehydration. Antibiotics reduce the average duration of symptoms by less than two days but eradicate stool carriage. People can remain infectious for up to several weeks after onset of symptoms. However, with or without antibiotic treatment, spread from person to person is very rare. Campylobacteriosis is a Notifiable Disease.
Common pathogens	*Campylobacter jejuni*
Antibiotic treatment	**Severe or prolonged campylobacteriosis or high risk people**
First choice	**Erythromycin** **Child:** 10 – 12.5 mg/kg/dose, four times daily, for five days (maximum 1.6 g/**day**; maximum 4 g/**day** in severe infection) **Adult:** 400 mg, four times daily, or 800 mg, twice daily, for five days
Alternatives	**Ciprofloxacin** **Adult:** 500 mg, twice daily, for five days

Clostridium difficile colitis

Updated October, 2023

Management	Antibiotic treatment is recommended for adults who have tested positive for *C. difficile* toxin and have diarrhoea or other symptoms consistent with colitis. *C. difficile* colitis occurs due to overgrowth of toxin-producing *C. difficile* in the colon. A common cause is the use of broad-spectrum antibiotic treatment. Discontinuing such antibiotic treatment, when possible, may lead to clinical resolution of symptoms. Antidiarrhoeals, e.g. loperamide, should be avoided as the toxin may be retained and worsen colitis. Consider referral to hospital if there is evidence of worsening colitis. Relapse may occur after treatment. In children, detection of *C. difficile* commonly represents colonisation rather than pathological infection, so testing is discouraged, and antibiotic treatment is not generally required in the community setting.
Common pathogens	*Clostridium difficile*
Antibiotic treatment	**Confirmed and symptomatic *C. difficile* infection**
First choice	**Metronidazole** **Adult:** 400 mg, three times daily, for ten days If symptoms do not resolve, repeat ten-day course of metronidazole
Alternatives	If patient has not responded to two courses of metronidazole; discuss with an infectious diseases physician or clinical microbiologist. Oral **vancomycin** (using the injection product) may be required.

Cryptosporidiosis

New October, 2023

Management	Antibiotic treatment is not recommended, as *Cryptosporidium* species are protozoan parasites, i.e. not bacteria, and cryptosporidiosis is self-limiting in most immunocompetent patients. Symptoms are expected to improve within 2 – 14 days. Supportive care with adequate hydration and electrolytes is recommended. Antiprotozoal treatment* can be considered in patients who are systemically unwell with severe or prolonged diarrhoea. Discuss patients with confirmed infections who are immunocompromised or who have co-morbidities with an infectious diseases physician or clinical microbiologist. Cryptosporidiosis is a Notifiable Disease. * **Nitazoxanide** and **paromomycin** (both Section 29, unapproved)
Common pathogens	*Cryptosporidium hominis, Cryptosporidium parvum*
Antibiotic treatment	**Not indicated; antiprotozoal treatment can be considered if systemically unwell with severe or prolonged diarrhoea**

Diverticulitis Updated April, 2023

Management

Antibiotic treatment is no longer routinely recommended for most patients with acute uncomplicated diverticulitis but may be considered for some patients who are at higher risk of complications (e.g. due to co-morbidities, systemically unwell), but who do not currently meet criteria for secondary care referral.

Antibiotic treatment is not necessary for patients with less severe symptoms and conservative treatment initiated in the community is more appropriate. Advise patients to maintain their normal diet, if tolerated. Some patients may prefer a clear liquid diet for two to three days to ease symptoms. Paracetamol can be prescribed for analgesia; NSAIDs or weak opioids can be considered if there are no contraindications.

Patients should be ideally followed up in 48 hours, or earlier depending on their clinical condition.

Consider initiating antibiotic treatment at follow-up assessment 48 hours after initial presentation for patients with worsening or persistent symptoms

Hospital referral is recommended for:

- Patients with symptoms suggestive of complicated diverticulitis or systemic infection, e.g. peritonitis or sepsis
- Immunocompromised patients
- Patients with significant or uncontrolled co-morbidities, e.g. diabetes, end-stage liver or renal disease or other risk factors, e.g. pregnancy, older age or frailty
- Patients who have difficulty controlling pain or tolerating oral liquids
- Patients with no support at home (or who are unable to independently seek medical attention if symptoms do not improve)

For further information, see; **Diverticulitis: pockets of knowledge**

Common pathogens

Bacteroides fragilis, Escherichia coli, Clostridium and *Fusobacterium* spp.

N.B. Uncomplicated diverticulitis may primarily have an inflammatory cause

Antibiotic treatment

Uncomplicated diverticulitis in patients with higher risk of complications or who do not show improvement with 48 hours of conservative management in the community

First choice

Metronidazole
Adult: 400 mg, three times daily, for five or seven days*

PLUS EITHER:

Trimethoprim + sulfamethoxazole
Adult: 960 mg, twice daily, for five days

OR

Amoxicillin
Adult: 500 mg, three times daily, for seven days

OR

Cefalexin
Adult: 500 mg, two to three times daily (maximum 1 – 1.5 g, three to four times daily), for five days

* Give seven days course of metronidazole if prescribed with amoxicillin

Alternatives

Amoxicillin + clavulanic acid
Adult: 625 mg, three times daily, for five days

Giardiasis Updated October, 2023

Management	Antibiotic treatment is recommended for people who have tested positive for giardia, and for symptomatic contacts. Secondary lactose intolerance often occurs after giardiasis; patients with ongoing symptoms after treatment can consider temporarily avoiding lactose-containing foods (e.g. for one to two months). People can remain infectious for up to several months after onset of symptoms. Giardiasis is a Notifiable Disease.
Common pathogens	*Giardia lamblia*
Antibiotic treatment	**Confirmed giardiasis or symptomatic contacts**
First choice	**Ornidazole** **Child < 35 kg:** 125 mg/**3 kg**/dose,* once daily, for one to two days **Child > 35 kg and adult:** 1.5 g, once daily in the evening, for one to two days * Dose is per **3 kg** bodyweight; ornidazole is only available in tablet form ***OR*** **Metronidazole** **Child 1 – 12 months:** 40 mg/kg/**day**, given as three divided doses, for three days **Child 1 – 3 years:** 500 mg, once daily, for three days **Child 3 – 7 years:** 600 – 800 mg, once daily, for three days **Child 7 – 10 years:** 1 g, once daily, for three days **Child > 10 years:** 2 g, once daily, for three days; or 400 mg, three times daily, for five days; or 500 mg, twice daily, for 7 – 10 days **Adult:** 2 g, once daily, for three days
Alternatives	For treatment failure with ornidazole: Exclude re-infection from asymptomatic family contacts, e.g. children **Metronidazole** **Child:** 10 mg/kg/dose (maximum 400 mg/dose), three times daily, for seven days **Adult:** 400 mg, three times daily, for seven days If recurrent treatment failures, discuss with an infectious diseases specialist; an antiprotozoal treatment, e.g. **nitazoxanide** (Section 29, unapproved), may be considered

Helicobacter pylori eradication

Updated August, 2024

Management

Antibiotic treatment is recommended for people with dyspepsia-like symptoms, who have tested positive for *Helicobacter pylori* infection and have not responded to acid suppression with a proton pump inhibitor (initial management).

The decision to test for *H. pylori* (with faecal antigen testing) in symptomatic people depends on a risk assessment based on multiple factors, including the patient's ethnicity, country of birth, regional infection risk and severity of symptoms (see resource below for more details). Routine testing of all symptomatic people or prescribing eradication treatment empirically is not recommended.

Following antibiotic treatment, confirmation of eradication is not usually required, but may be appropriate when considering second-line treatment in patients who have remained symptomatic following an initial triple treatment regimen, or to confirm treatment success in patients with peptic ulcer complications or other significant gastric conditions.

If first-line antibiotic treatment is unsuccessful, consider the risks and benefits of escalating treatment. A different regimen can be considered, if testing confirms that *H. pylori* is still present three months or more since initial treatment. Alternatively, referral for endoscopy may be considered.

For further information, see; ***H. pylori:* who to test and how to treat**

Common pathogens

Helicobacter pylori

Antibiotic treatment

Confirmed *H. pylori* infection

First choice

Triple treatment regimen:

Omeprazole*
Adult: 20 mg, twice daily, for 14 days

PLUS

Clarithromycin
Adult: 500 mg, twice daily, for 14 days

PLUS EITHER:

Amoxicillin
Adult: 1 g, twice daily, for 14 days

OR

Metronidazole
Adult: 400 mg, twice daily, for 14 days

N.B. If previous exposure to any macrolide antibiotic, prescribe omeprazole + amoxicillin + metronidazole (dosing as above); or if previous exposure to metronidazole, prescribe omeprazole + amoxicillin + clarithromycin (dosing as above).

* Regimens using alternative PPIs are also available, refer to NZF for details

Alternatives

If testing confirms that *H. pylori* is still present three months or more since initial treatment and the benefit of further antibiotic treatment outweighs the risks

Quadruple treatment regimen:
Omeprazole
Adult: 20 mg, twice daily, for 14 days

PLUS

Tripotassium dicitratobismuthate (bismuth) [Section 29, unapproved medicine]
Adult: 120 mg, four times daily, for 14 days

PLUS

Tetracycline hydrochloride (Section 29, unapproved medicine)*
Adult: 500 mg, four times daily, for 14 days

PLUS

Metronidazole
Adult: 400 mg, three times daily, for 14 days

* Funded with Special Authority approval

Salmonellosis Updated November, 2023

Management	Antibiotic treatment is usually unnecessary for people with salmonellosis (also known as salmonella enterocolitis) and may prolong excretion. Antibiotic treatment is, however, recommended for adults with severe disease, those who are immunocompromised or who have cardiac valve disease or endovascular abnormalities, including prosthetic vascular grafts. Discuss appropriate treatment for infants with a paediatrician; those aged < 3 months will require investigation and antibiotic management, (e.g. amoxicillin or trimethoprim and sulfamethoxazole for seven days); those aged ≥ 3 months usually do not require antibiotic treatment, unless there are complications. Adults typically remain infectious for several days to weeks after onset of symptoms; children may remain infectious for up to one year. However, with or without antibiotic treatment, spread to others is very rare. Salmonellosis is a Notifiable Disease.
Common pathogens	*Salmonella enteritidis, Salmonella typhimurium*
Antibiotic treatment	**Severe salmonellosis or people with risk factors**
First choice	**Ciprofloxacin** **Adult:** 500 mg, twice daily, for three days
Alternatives	**Trimethoprim + sulfamethoxazole** **Adult:** 960 mg, twice daily, for three days

Yersiniosis New October, 2023

Management	Antibiotic treatment is recommended for children and adults with severe symptoms or who are immunosuppressed. Discuss appropriate treatment for infants and children with a paediatrician. There is no evidence to support antibiotic treatment in infants who are otherwise healthy, however, those who are severely unwell or immunocompromised, or neonates, require hospital referral for treatment. Most people will recover with symptomatic treatment only, including rehydration. People can remain infectious for several weeks to months after onset of symptoms. Yersiniosis is a Notifiable Disease.
Common pathogens	*Yersinia pseudotuberculosis, Yersinia enterocolitica*
Antibiotic treatment	**Severe symptoms or people who are immunocompromised**
First choice	**Doxycycline** **Adult:** 200 mg, on day one, then 100 mg, once daily, on days two to five
Alternatives	**Trimethoprim + sulfamethoxazole** **Adult:** 960 mg, twice daily, for three to five days ***OR*** **Ciprofloxacin** **Adult:** 500 mg, twice daily, for three to five days

Genitourinary

Chlamydia Updated April, 2023

Management	Antibiotic treatment is indicated for patients with confirmed chlamydia and their sexual contacts within the last three months or if there is a high suspicion of chlamydia (based on symptoms and/or signs). Complicated genital infections and symptomatic anorectal infections should be discussed with a sexual health physician. In suspected cases, empiric treatment should be commenced while awaiting laboratory results. Advise patients to avoid unprotected sexual intercourse for seven days after treatment initiation, and for at least seven days after any sexual contacts have been treated, to avoid re-infection. A test of cure should be done five weeks after initiation of treatment in pregnant females, if a non-standard treatment has been used, e.g. amoxicillin, if symptoms do not resolve or if the patient had extragenital symptoms (e.g. rectal or oral). Repeat STI testing in three months. For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **https://sti.guidelines.org.nz/infections/chlamydia/**
Common pathogens	*Chlamydia trachomatis*
Antibiotic treatment	**Confirmed or suspected chlamydia**
First choice	**Doxycycline** (if uncomplicated genital or oral infection or asymptomatic anorectal infection) **Adult:** 100 mg, twice daily, for seven days* N.B. Do not use in pregnancy; use only in breastfeeding if there are no suitable alternatives. * For symptomatic anorectal infections see: **Proctitis – STI cause** If co-infection with gonorrhoea is suspected: **Doxycycline** 100 mg, twice daily, for seven days ***PLUS*** **Ceftriaxone** 1 g, single IM dose, (funded by endorsement on PSO or prescription, make up with 3.5 mL of 1% lignocaine)
Alternatives	**Azithromycin** (if adherence is a concern) **Adult:** 1 g, single oral dose† † If anorectal infection, give **azithromycin** 1 g, as a stat oral dose on day one and repeat on day eight ***OR*** **Amoxicillin** (can be used as an alternative to doxycycline for pregnant females or if azithromycin is contraindicated) **Adult:** 500 mg, three times daily, for seven days

Epididymo-orchitis Updated April, 2023

Management	Antibiotic treatment is required for all patients with suspected epididymo-orchitis and their sexual contacts within the last three months (if appropriate). A range of infections can cause epididymo-orchitis. STI pathogens are the most likely cause in males aged < 35 years, with more than one sexual partner in the past 12 months and with urethral discharge. Urinary or enteric pathogens account for other cases, usually in older males. Test for chlamydia, gonorrhoea and urinary tract infections as indicated by history; empirical treatment should be given while awaiting results. If symptoms are initially severe or symptoms and signs do not resolve (or worsen) after 24 to 72 hours, refer to hospital. Advise patients to avoid unprotected sexual intercourse for two weeks after treatment initiation, and for at least seven days after any sexual contacts have been treated, to avoid re-infection. For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **sti.guidelines.org.nz/syndromes/epididymo-orchitis/**
Common pathogens	Majority of cases in sexually active males are due to *Chlamydia trachomatis* or *Neisseria gonorrhoeae* Also *Escherichia coli*, *Bacteroides* spp., *Gardnerella vaginalis*, *Mycoplasma hominis*, *Ureaplasma urealyticum*, *Trichomonas vaginalis*, *Streptococcus agalactiae* and others
Antibiotic treatment	**Suspected epididymo-orchitis**
First choice	If STI pathogens suspected: **Ceftriaxone** **Adult:** 500 mg, single IM dose (funded by endorsement on PSO or prescription, make up with 2 mL of lignocaine 1%) ***PLUS*** **Doxycycline** **Adult:** 100 mg, twice daily, for 14 days If UTI pathogens suspected: **Amoxicillin + clavulanic acid** **Adult:** 625 mg, three times daily, for ten days If required, treatment should be modified according to MSU results
Alternatives	If UTI pathogens suspected: **Trimethoprim + sulfamethoxazole** **Adult:** 960 mg, twice daily, for ten days ***OR*** **Ciprofloxacin** **Adult:** 500 mg, twice daily, for ten days

Gonorrhoea Updated April, 2023

Management	Antibiotic treatment is indicated for people with confirmed gonorrhoea and their sexual contacts within the last three months or if there is a high suspicion of gonorrhoea (based on symptoms and/or signs). In suspected cases, empiric treatment should be commenced while awaiting laboratory results. Advise patients to avoid unprotected sexual intercourse for seven days after treatment initiation, and for at least seven days after any sexual contacts have been treated, to avoid re-infection. A test of cure should be done five weeks after initiation of treatment in pregnant females, or if a non-standard treatment has been used or if symptoms do not resolve. Repeat STI testing in three months. For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **https://sti.guidelines.org.nz/infections/gonorrhoea/**
Common pathogens	*Neisseria gonorrhoeae*
Antibiotic treatment	**Confirmed or suspected gonorrhoea**
First choice	**Ceftriaxone** **Adult:** 500 mg, single IM dose (funded by endorsement on PSO or prescription, make up with 2 mL of 1%) ***PLUS:*** **Azithromycin** **Adult:** 1 g, single oral dose (including in females who are pregnant or breastfeeding) ***If co-infection with chlamydia is suspected:*** **Ceftriaxone** **Adult:** 1 g, single IM dose (funded by endorsement on PSO or prescription, make up with 3.5 mL of 1% lignocaine) ***PLUS:*** **Doxycycline** **Adult:** 100 mg, twice daily, for seven days* * For symptomatic anorectal infections see: **Proctitis – STI cause**
Alternatives	Strongly recommended to discuss with a sexual health physician, however, if isolate is proven to be ciprofloxacin susceptible and an alternative is required: **Ciprofloxacin** 500 mg, single oral dose + **azithromycin** 1 g, single oral dose

Mycoplasma genitalium infection

Added April, 2023

Management

Antibiotic treatment is recommended for confirmed *Mycoplasma genitalium* infection following discussion with a sexual health physician or clinical microbiologist.

M. genitalium often co-exists with other bacterial STIs such as chlamydia or trichomoniasis.

Most people are asymptomatic and do not develop complications; spontaneous resolution of *M. genitalium* is possible. Routine testing is not recommended, however, it may be required for patients who present with persistent or recurrent penile urethritis who have not responded to standard empiric antibiotic treatment and sexual contacts of positive cases.

Patients with confirmed infection or sexual contacts of confirmed cases should be discussed with a sexual health physician or clinical microbiologist before initiating treatment, due to high rates of resistance.

The treatment regimen recommended for patients with confirmed *M. genitalium* infection depends on the presenting condition, whether the infection is macrolide susceptible and any previous antibiotic treatments that have been given for the infection.

A test of cure should be done five weeks after initiation of treatment in all patients with confirmed *M. genitalium* infection.

For further information, see: ***Mycoplasma genitalium:* considerations for testing and treatment in primary care**

For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **https://sti.guidelines.org.nz/infections/mycoplasma-genitalium/**

Common pathogens

Mycoplasma genitalium

Antibiotic treatment

Confirmed *M. genitalium* infection following discussion with a sexual health physician or clinical microbiologist

First choice

INITIAL TREATMENT (to reduce bacterial load):

Doxycycline (as a pre-treatment to reduce bacterial load in symptomatic patients)
Adult: 100 mg, twice daily, for seven days

FOLLOWED BY EITHER:

Azithromycin (if macrolide susceptible)
Adult: 1 g, single oral dose, on day one, followed by 500 mg, once daily, on days two to four (total 2.5 g)

OR

Moxifloxacin* (if macrolide resistant†, macrolide resistance unknown or treatment with azithromycin has failed)
Adult: 400 mg, once daily, for seven days

N.B. If *M. genitalium* infection has been confirmed and it has been less than two weeks since the patient completed a course of doxycycline, a repeat pre-treatment course of doxycycline is not necessary.

* Unapproved indication. Fully funded with Special Authority approval (application by or on recommendation of a sexual health physician).

† If susceptibility testing confirms macrolide resistant *M. genitalium* and the patient is pregnant or breastfeeding, discuss with a sexual health physician

Pelvic inflammatory disease Updated April, 2023

Management

Antibiotic treatment is required for females who are symptomatic.

Pelvic inflammatory disease (PID) is usually caused by a STI, particularly in females aged < 30 years, those who have had a recent change of sexual partner or those with a previous history of gonorrhoea or chlamydia.

Recommended investigations include:

- STI testing
- Urine pregnancy test
- Urinalysis

Treatment should be initiated for patients who present with lower abdominal pain and one or more of adnexal, cervical motion or uterine tenderness. Treatment should cover infection with gonorrhoea, chlamydia and anaerobes.

Patients should be followed up within 24 to 72 hours of starting treatment. Females with severe symptoms (e.g. fever, vomiting, acute abdominal pain), symptoms that are not improving within 72 hours and pregnant females require referral for specialist assessment. Hospital referral may be required for IV antibiotics.

Advise abstinence from sexual intercourse until abdominal pain has settled and avoidance of unprotected sexual intercourse for 14 days after treatment initiation, and for at least seven days after any sexual contacts have been treated, to avoid re-infection.

For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **https://sti.guidelines.org.nz/syndromes/pelvic-inflammatory-disease/**

Common pathogens

Chlamydia trachomatis, Neisseria gonorrhoeae, mycoplasmas and mixed anaerobes

Antibiotic treatment

Suspected pelvic inflammatory disease

First choice

Ceftriaxone
Adult: 500 mg, single IM dose, (funded by endorsement on PSO or prescription, make up with 2 mL of 1% lignocaine) or single IV dose (make up with 5 mL of sterile water and administer over a period of two to four minutes)

PLUS

Doxycycline
Adult: 100 mg, twice daily, for 14 days

PLUS

Metronidazole
Adult: 400 mg, twice daily, for 14 days (metronidazole may be discontinued if not tolerated)

Alternatives

If pregnant, breastfeeding or if adherence is likely to be poor:

Ceftriaxone
Adult: 500 mg, single IM dose, (funded by endorsement on PSO or prescription, make up with 2 mL of 1% lignocaine) or single IV dose (make up with 5 mL of sterile water and administer over a period of two to four minutes)

PLUS

Azithromycin
Adult: 1 g, single oral dose, on day one and 1 g, single oral dose on day eight

PLUS

Metronidazole
Adult: 400 mg, twice daily, for 14 days

N.B. **Ornidazole** may be considered as an alternative if metronidazole is not tolerated.

Proctitis – STI cause

Added April, 2023

Management

Antibiotic treatment is recommended for patients with proctitis caused by a STI.

Management can be complex, and it is recommended that patients with proctitis that could be caused by a STI are referred to a specialist sexual health clinic or discussed with a sexual health physician.

Investigations for patients with anorectal symptoms and a history of anal intercourse should include STI testing, and a rectal swab for chlamydia, syphilis, *Neisseria gonorrhoeae* and herpes simplex virus. If positive test for chlamydia, discuss with a sexual health physician or clinical microbiologist as they may recommend testing for *Lymphogranuloma venereum* (LGV). If the patient is experiencing diarrhoea, a faecal specimen should be collected to test for enteric pathogens, which can be transmitted sexually. Sexual contacts should receive STI testing.

If STI test results are negative, antibiotic treatment can be stopped. Further discussion with a sexual health physician is recommended for patients who remain symptomatic.

Advise patients to avoid unprotected sexual intercourse until treatment has been completed and symptoms have resolved.

Advice regarding a test of cure will depend on the specific pathogen. See relevant section of the guide.

Repeat STI testing in three months.

For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **https://sti.guidelines.org.nz/syndromes/anorectal-syndromes/**

Common pathogens

Herpes simplex viruses (HSV Types 1 and 2), *Chlamydia trachomatis, Neisseria gonorrhoeae, Treponema pallidum* (syphilis), *Mycoplasma genitalium*

Antibiotic treatment

Patients with proctitis with a suspected STI cause

First choice

Treatment should be guided by a sexual health physician, as management may be complex, and further testing may be required

A regimen for non-specific proctitis may be:

Doxycycline
Adult: 100 mg, twice daily, for 21 days*

PLUS

Ceftriaxone
Adult: 500 mg, single IM dose (funded by endorsement on PSO or prescription, make up with 2 mL of 1% lignocaine)

PLUS

Valaciclovir
Adult: 500 mg, twice daily, for seven days

* Treatment duration is 21 days to cover possible *Lymphogranuloma venereum* proctitis

Prostatitis – bacterial

Added September, 2023

Management

Antibiotic treatment is recommended for all males with acute or chronic bacterial prostatitis.

Patients with prostatitis often present with pelvic or genitourinary pain, e.g. perineal pain, rectal pain, pain during or after ejaculation, and lower urinary tract symptoms such as urgency, dysuria, hesitancy, incomplete bladder emptying.

Acute bacterial prostatitis can be diagnosed clinically by the rapid onset of severe urinary symptoms and patients are often systemically unwell, e.g. fever, rigors, vomiting.

Consider chronic bacterial prostatitis if symptoms (usually less severe) are present intermittently or continuously for at least three months, and other causes have been excluded, e.g. STIs and prostate cancer.

A mid-stream urine sample should be collected for susceptibility testing to guide antibiotic selection and to support the diagnosis. Appropriate antibiotics are those with good penetration into prostatic tissue.

N.B. Antibiotics are not recommended for the treatment of chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS), i.e. prostatitis without a history of urinary tract infections or the identification of a potentially causative pathogen

For further information, see; **Prostatitis: diagnosis and management in primary care**

Common pathogens

Gram-negative bacteria are the most common cause, e.g. *Escherichia coli*, *Klebsiella* spp., *Proteus* spp. and *Enterococcus* spp.

Pseudomonas aeruginosa (in patients with an indwelling catheter or who have undergone a recent urological procedure)

Antibiotic treatment

Bacterial prostatitis

First choice

Trimethoprim
Adult: 300 mg, once daily, for two to four weeks* if **acute** infection, or four to six weeks if **chronic** infection

OR

Trimethoprim + sulfamethoxazole
Adult: 960 mg, twice daily, for two to four weeks* if **acute** infection, or four to six weeks if **chronic** infection

* After 14 days treatment efficacy should be reviewed. Antibiotic treatment can be withdrawn if the symptoms have resolved, or an additional 14 days of treatment may be advised depending on the patient's symptoms, signs and test results.

Alternatives

Ciprofloxacin
Adult: 500 mg, twice daily, for four weeks

Trichomoniasis Updated April, 2023

Management	Antibiotic treatment is indicated for patients with confirmed trichomoniasis and their sexual partners or if there is a high suspicion of trichomoniasis (symptoms and/or signs). Co-infection with other STIs should be considered and co-existent bacterial vaginosis is common. Empiric treatment may be commenced while awaiting laboratory results. Due to low sensitivity, culture of urethral swabs is rarely positive in males, even if infection is present. Advise patients to avoid unprotected sexual intercourse for seven days after treatment initiation, and for at least seven days after any sexual contacts have been treated, to avoid re-infection. A test of cure is not usually required unless there is a risk of re- exposure or symptoms persist. Repeat STI testing in three months as re-infection is common. For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **https://sti.guidelines.org.nz/infections/trichomoniasis/**
Common pathogens	*Trichomonas vaginalis*
Antibiotic treatment	**Confirmed or suspected trichomoniasis**
First choice	**Metronidazole** **Adult:** 400 mg, twice daily, for seven days; or 2 g, single oral dose* N.B. Manufacturers recommend to avoid metronidazole for trichomoniasis in the first trimester of pregnancy. Single dosing can be used in breastfeeding; milk should be discarded for 24 hours following dose. * Single-dose treatment is associated with an increased risk of adverse effects and diminished efficacy but may be appropriate if adherence is an issue
Alternatives	**Ornidazole** **Adult:** 500 mg, twice daily, for five days; or 1.5 g, single oral dose N.B. Manufacturers of ornidazole advise to only use in pregnancy if potential benefit outweighs risk (animal studies suggest no adverse effects). There are no data in breastfeeding. STI guidelines recommend to avoid ornidazole in pregnancy.

Urethritis – acute non-specific, male Updated April, 2023

Management

Antibiotic treatment is required for males who are symptomatic and their sexual contacts within the last three months.

Non-specific urethritis is a diagnosis of exclusion. A first void urine sample should be taken to exclude gonorrhoea and chlamydia (consider a urethral swab for herpes simplex virus if patient has meatitis, inguinal lymphadenopathy or severe dysuria). Advise patients to avoid unprotected sexual intercourse for seven days after treatment initiation, and for at least seven days after any sexual contacts have been treated, to avoid re-infection.

In patients with symptoms persisting for more than two weeks, or with recurrence of symptoms, consider retesting or refer to a sexual health clinic or urologist.

A test of cure is not usually required unless patient remains symptomatic following treatment or *Mycoplasma genitalium* was the causal pathogen.

Repeat STI testing in three months.

For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **https://sti.guidelines.org.nz/syndromes/urethritis/**

Common pathogens

Urethritis not attributable to *Neisseria gonorrhoeae* or *Chlamydia trachomatis* is termed non-specific urethritis and there may be a number of pathogens responsible, e.g. *Mycoplasma genitalium* or *Trichomonas vaginalis*

Antibiotic treatment

Symptomatic acute non-specific urethritis

First choice

If discharge is minimal, or not visible:
Doxycycline
Adult: 100 mg, twice daily, for seven days

OR

If significant visible discharge or known contact with gonorrhoea:
Ceftriaxone
Adult: 500 mg, single IM dose (funded by endorsement on PSO or prescription, make up with 2 mL of 1% lignocaine)

PLUS

Azithromycin
Adult: 1 g, single oral dose

OR

If confirmed chlamydia or gonorrhoea infection:
Ceftriaxone
Adult: 1 g, single IM dose (funded by endorsement on PSO or prescription, make up with 3.5 mL of 1% lignocaine)

PLUS

Doxycycline
Adult: 100 mg, twice daily, for seven days

Alternative

If adherence to doxycycline is a concern or an alternative is required:
Azithromycin
Adult: 1 g, single oral dose

Urinary tract infection – cystitis: adult Updated October, 2023

Management

Antibiotic treatment is indicated for adults with symptoms and signs of cystitis (lower urinary tract infection).

Urine culture is not necessary to diagnose cystitis in females with uncomplicated cystitis – most cases can be reliably diagnosed according to clinical presentation (urine dipstick may be required to confirm infection or if there is uncertainty or atypical features).

Laboratory microscopy, urine culture and sensitivity testing may be required only in certain circumstances, including:

- When dipstick testing is negative, but cystitis is still strongly suspected after considering differential diagnoses
- People with recurrent urinary tract infections, atypical symptoms or persistent symptoms despite antibiotic treatment
- People with suspected pyelonephritis
- Females with complicating factors, e.g. pregnancy, catheterisation, urinary tract abnormalities, immunosuppression, renal impairment, diabetes
- Other high-risk groups, including males and people living in residential care facilities

N.B. Routine urine dipstick screening for asymptomatic bacteriuria is not recommended and should not be treated in patient groups other than pregnant females. Pregnant females should be screened via urine culture for asymptomatic bacteriuria at their first antenatal appointment.

For further information, see: **Urinary tract infections (UTIs) – an overview of lower UTI management in adults**

Also see **Urinary tract infection – pyelonephritis**

Common pathogens

Escherichia coli, Staphylococcus saprophyticus, Proteus spp., *Klebsiella* spp., *Enterococcus* spp.

Antibiotic treatment

Symptomatic cystitis (adult)

First choice

Nitrofurantoin*

Adult: 100 mg (modified release, Macrobid), twice daily, for five days; or 50 mg (immediate release, Nitrofuran), four times daily, for five days

* Avoid after 36 weeks gestation in pregnant females, and in patients with creatinine clearance < 60 mL/min

Treat for **seven days** in pregnant females and in males, regardless of antibiotic choice.

Alternatives

Cefalexin

Adult: 500 mg, twice daily, for three days

OR

Trimethoprim*

Adult: 300 mg, once daily at night, for three days

* Avoid during the first trimester of pregnancy

If susceptibility testing indicates resistance to commonly available antibiotics, discuss treatment with an infectious diseases physician or clinical microbiologist.

Urinary tract infection – cystitis: child

Updated January, 2024

Management	Antibiotic treatment is indicated for all children with suspected cystitis. Hospital referral for antibiotic treatment is recommended for children: ■ Aged < 6 months ■ With severe illness (including pyelonephritis) ■ With renal tract abnormality Children with recurrent cystitis should be referred for paediatric assessment. All children with suspected urinary tract infection should have a urine sample for microscopy, culture and sensitivity testing collected (clean catch, midstream urine, catheter) as it may be a marker for previously undetected renal malformations, particularly in younger children. In older children it can be an indicator for bladder and/or bowel dysfunction. For information on collecting a urine specimen in children, see: **starship.org.nz/guidelines/urinary-tract-infection**
Common pathogens	*Escherichia coli*, *Proteus* spp., *Klebsiella* spp., *Enterococcus* spp.
Antibiotic treatment	**Mild cystitis (child)**
First choice	**Cefalexin** **Child:** 25 mg/kg/dose (maximum 500 mg/dose), three times daily, for three days* * Give for **seven days** in moderate to severe infection
Alternatives	**Trimethoprim + sulfamethoxazole** **Child > 8 weeks:** 24 mg/kg/dose (maximum 960 mg/dose), twice daily, for three days* ***OR*** **Amoxicillin + clavulanic acid** **Child:** 30 mg/kg/dose (maximum 625 mg/dose), three times daily, for three days* ***OR*** **Nitrofurantoin** (immediate release tablets) **Child:** 1.5 mg/kg/dose (maximum 50 mg/dose), four times daily, for three days* * Give for **seven days** in moderate to severe infection

Urinary tract infection – pyelonephritis Updated December, 2023

Management	Antibiotic treatment (oral) is required for all patients with mild symptoms of pyelonephritis (upper urinary tract infection); adult patients with more severe symptoms (e.g. vomiting, dehydration, high fever), may require hospital referral for treatment. However, if the patient meets eligibility criteria for treatment in the community and appropriate monitoring is available, give one dose of **IV (or IM) ceftriaxone** or **IV gentamicin** (refer to local protocols or NZF for dosing information), followed by standard oral treatment. **All** infants and children require hospital referral for treatment. Pregnant females require immediate obstetric referral. Urine culture is recommended for all patients with suspected pyelonephritis. Renal tract ultrasound may also be appropriate depending on the clinical situation.
Common pathogens	*Escherichia coli*, *Proteus* spp., *Klebsiella* spp., *Enterococcus* spp.
Antibiotic treatment	**Mild pyelonephritis (adult)**
First choice	**Cefalexin** **Adult:** 1 g, three to four times daily, for ten days
Alternatives	**Trimethoprim + sulfamethoxazole** **Adult:** 960 mg, twice daily, for ten days ***OR*** **Amoxicillin clavulanate** **Adult:** 625 mg, three times daily, for ten days ***OR*** **Ciprofloxacin** only if *Pseudomonas* suspected/confirmed or organism resistant to the other alternatives **Adult:** 500 mg, twice daily, for seven days N.B. If symptoms have not fully resolved, courses can be extended up to 14 days (or ten days for ciprofloxacin)

Vaginosis – bacterial Updated April, 2023

Management	Antibiotic treatment is recommended for females who are symptomatic, pregnant or if an invasive procedure is planned, e.g. insertion of an intrauterine contraceptive or surgical abortion. Approximately half of females found to have bacterial vaginosis are asymptomatic; antibiotic treatment is not necessary in these cases if there are no other risk factors. Treatment of male sexual contacts is not usually necessary. For the Aotearoa New Zealand STI Guidelines for use in primary care, see: **https://sti.guidelines.org.nz/infections/bacterial-vaginosis/**
Common pathogens	*Gardnerella vaginalis, Bacteroides* spp., *Peptostreptococcus* spp. and *Mobilunculus* spp.
Antibiotic treatment	**Symptomatic bacterial vaginosis**
First choice	**Metronidazole** **Adult:** 400 mg, twice daily, for seven days; or 2 g, single oral dose* N.B Manufacturers recommend to avoid metronidazole for bacterial vaginosis in the first trimester of pregnancy. * If adherence to treatment is a concern, however, this is associated with a higher relapse rate
Alternatives	**Ornidazole** **Adult:** 500 mg, twice daily, for five days N.B. Manufacturers of ornidazole advise to only use in pregnancy if potential benefit outweighs risk (animal studies suggest no adverse effects). STI guidelines recommend to avoid ornidazole in pregnancy. There are no data in breastfeeding. ***OR*** **Clindamycin** **Adult:** 300 mg, twice daily, for seven days