Antimicrobial guidelines

The Royal Children's Hospital Melbourne

Safer Care Victoria

This guideline has been adapted for statewide use with the support of the Victorian Paediatric Clinical Network

CENTRAL NERVOUS SYSTEM / EYE		
Infection	**Likely organisms**	**Initial antimicrobials**
Brain abscess	Often polymicrobial *S. milleri* and other streptococci Anaerobes Gram-negatives	3rd gen cephalosporin Metronidazole 7.5 mg/
Post-neurosurgery	As above plus *S. aureus* *S. epidermidis*	As above add Vancom (https://www.rch.org.a 15 mg/kg (500 mg) IV
Encephalitis (https://www.rch.org.au/clinicalguide/guideline_index/Meningitis_encephalitis/)	Herpes simplex virus Enteroviruses Arboviruses *M. pneumoniae*	Aciclovir 20 mg/kg IV gestation to <3 month 500 mg/m^2 IV 8H (3 m 10 mg/kg IV 8H (>12 y
Meningitis (https://www.rch.org.au/clinicalguide/guideline_index/Meningitis_encephalitis/) (https://www.rch.org.au/clinicalguide/guideline_index/Meningitis_encephalitis/) Over 2 months of age	*S. pneumoniae*[5] *N. meningitidis* *H. influenzae* type b[6]	3rd gen cephalosporin
Over 2 months of age and possibility of penicillin-resistant pneumococci[5]	As above	3rd gen cephalosporin Vancomycin (https://www.rch.org.a 15 mg/kg (500 mg) IV
Under 2 months of age	As above plus Group B streptococci *E. coli* and other Gram-negative coliforms *L. monocytogenes*	Benzylpenicillin 60 mg 12H (week 1 of life) 6H (week 2–4 of life) 4H (>week 4 of life) ***a*** 3rd gen cephalosporin
With shunt infection, post-neurosurgery, head trauma or CSF leak	As for over 2 months of age plus *S. epidermidis* *S. aureus* Gram-negative coliforms incl. *P. aeruginosa*	Vancomycin (https://www.rch.org.a 15 mg/kg (500 mg) IV Ceftazidime 50 mg/kg
Contact prophylaxis (https://www.rch.org.au/clinicalguide/guideline_index/Contact_prophylaxis_for_invasive_meningococcal_or_Hib_disease/)	*N. meningitidis*	Ciprofloxacin 250 mg dose Unable to take tablets mg/kg (≥1 month) (ma

Contact prophylaxis (https://www.rch.org.au/clinicalguide/guideline_index/Contact_prophylaxis_for_invasive_meningococcal_or_Hib_disease/)	*H. influenzae* type b	Rifampicin 20 mg/kg (
Postseptal (orbital) cellulitis (https://www.rch.org.au/clinicalguide/guideline_index/Periorbital_and_orbital_cellulitis/)	*S. aureus* *H. influenzae* spp. *S. pneumoniae* *M. catarrhalis* Gram-negatives Anaerobes	3rd gen cephalosporin
Preseptal (periorbital) cellulitis (https://www.rch.org.au/clinicalguide/guideline_index/Periorbital_and_orbital_cellulitis/) Mild	Group A streptococci *S. aureus* *H. influenzae* spp.	Cefalexin 20 mg/kg (7
Moderate		Cefazolin 50 mg/kg (2 Ceftriaxone 50 mg/kg
Severe, or not responding, or under 5 years of age and non-Hib immunised	As above plus *H. influenzae* type b[6]	3rd gen cephalosporin

CARDIOVASCULAR

Infection	Likely organisms	Initial antimicrobials[1] (maximum dose)	Duration of treatment[2] and other comments
Endocarditis Native valve or homograft	Viridans streptococci Other streptococci *Enterococcus* spp. *S. aureus*	Benzylpenicillin 60 mg/kg (2 g) IV 6H ***and*** Flucloxacillin 50 mg/kg (2 g) IV 6H ***and*** Gentamicin 7.5 mg/kg (320 mg) IV daily (<10 years) 6 mg/kg (560 mg) IV daily (≥10 years)	4–6 weeks Gentamicin 1 mg/kg (max 80 mg) IV 8H for 1–2 weeks when used only for synergy (Gentamicin monitoring is generally not required with low dose in this setting)
Artificial valve, post-surgery or suspected MRSA[3]	As above plus *S. epidermidis*	Vancomycin (https://www.rch.org.au/clinicalguide/guideline_index/Vancomycin/) 15 mg/kg (500 mg) IV 6H ***and*** Flucloxacillin 50 mg/kg (2 g) IV 6H ***and*** Gentamicin 7.5 mg/kg (320 mg) IV daily (<10 years) 6 mg/kg (560 mg) IV daily (≥10 years)	
Endocarditis prophylaxis For dental procedures only	Viridans streptococci *S. aureus* *S. pneumoniae* Other Gram-positive cocci *Enterococcus* spp.	Amoxicillin 50 mg/kg (2 g) Local anaesthetic: give orally 1 hour before procedure General anaesthetic: give IV with induction	Penicillin hypersensitivity: substitute Amoxicillin with Cefalexin 50 mg/kg (max 2 g) oral Immediate or severe penicillin hypersensitivity: substitute with Clindamycin 20 mg/kg (max 600 mg) oral or IV

GASTROINTESTINAL

Infection	Likely organisms	Initial antimicrobials[1] (maximum dose)	Duration of treatment[2] and other comments
Diarrhoea (https://www.rch.org.au/clinicalguide/guideline_index/Gastroenteritis/) *Salmonella* spp. isolated in infant under 3 months of age or in immunocompromised	*Salmonella* spp.	3rd gen cephalosporin[4]	5–7 days Antibiotic treatment is generally unnecessary for most other organisms Consider adding Azithromycin in returned travellers from regions with high prevalence of cephalosporin resistance
Antibiotic-associated	*C. difficile*	Metronidazole 7.5 mg/kg (400 mg) oral tds	7–10 days

Giardiasis	*G. lamblia*	Metronidazole 30 mg/kg (2 g) oral daily	3 days
Intra-abdominal infection (eg appendicitis, cholangitis, peritonitis)	Gram-negative coliforms Anaerobes *Enterococcus* spp.	Ampicillin or Amoxicillin 50 mg/kg (2 g) IV 6H ***and*** Gentamicin 7.5 mg/kg (320 mg) IV daily (<10 years) 6 mg/kg (560 mg) IV daily (≥10 years) ***and*** Metronidazole 7.5 mg/kg (500 mg) IV 8H	Up to 14 days See footnote 7 re Gentamicin dosing/monitoring
Threadworm (Pinworm)	*Enterobius vermicularis*	Mebendazole 50 mg oral (<10 kg) 100 mg oral (≥10 kg) ***or*** Pyrantel 10 mg/kg (1 g) oral	Single dose; may need to repeat after 14 days Treat whole family

GENITOURINARY

Infection	Likely organisms	Initial antimicrobials[1] (maximum dose)	Duration of treatment[2] and other comments
Urinary tract infection (https://www.rch.org.au/clinicalguide/guideline_index/Urinary_tract_infection/) (https://www.rch.org.au/clinicalguide/guideline_index/Urinary_tract_infection/) Over 3 months of age and not sick	*E. coli* *P. mirabilis* *K. oxytoca* Other Gram-negatives	Cefalexin 20 mg/kg (500 mg) oral bd ***or*** Trimethoprim 4 mg/kg (150 mg) oral bd ***or*** Trimethoprim/Sulfamethoxazole (8/40 mg/mL) 0.5 mL/kg (20 mL) oral bd	5 days
Under 3 months of age or sick or acute pyelonephritis	As above plus *Enterococcus* spp.	Benzylpenicillin 60 mg/kg (2 g) IV 6H ***and*** Gentamicin 7.5 mg/kg (320 mg) IV daily (<10 years) 6 mg/kg (560 mg) IV daily (≥10 years) 5 mg/kg (320 mg) IV daily (week 1 of life)	5–7 days for UTI 7–10 days for pyelonephritis (consider early switch to Cefalexin 45 mg/kg (max 1.5 g) oral tds) See footnote 6 re Gentamicin dosing/monitoring
UTI prophylaxis	As above	Trimethoprim 2 mg/kg (150 mg) oral daily ***or*** Trimethoprim/Sulfamethoxazole (8/40 mg/mL) 0.25 mL/kg (20 mL) oral daily	Routine prophylaxis is not recommended

RESPIRATORY

Infection	Likely organisms	Initial antimicrobials[1] (maximum dose)	Duration of treatment[2] and
Epiglottitis (https://www.rch.org.au/clinicalguide/guideline_index/Acute_upper_airway_obstruction/)	*H. influenzae* type b[6]	Ceftriaxone 50 mg/kg (1 g) IV daily	5 days Consider addition of Dexamet
Gingivostomatitis (https://www.rch.org.au/clinicalguide/guideline_index/HSV_Gingivostomatitis/) (https://www.rch.org.au/clinicalguide/guideline_index/HSV_Gingivostomatitis/) In immunocompromised In immunocompetent (only if within 72 hours of onset with severe pain and dehydration)	Herpes simplex virus	Aciclovir 500 mg/m^2 IV 8H (3 months–12 years) 10 mg/kg IV 8H (>12 years) Consider Aciclovir 10 mg/kg (400 mg) oral five times daily	7 days Until no new lesions Newer

Influenza (https://www.rch.org.au/clinicalguide/guideline_index/Influenza/)	Influenza A, B	Oseltamivir 3 mg/kg oral bd (Birth – 12 months) 30 mg oral bd (>12 months and <15 kg) 45 mg oral bd (15-23 kg) 60 mg oral bd (23-40 kg) 75 mg oral bd (>40 kg)	5 days
Otitis externa Acute diffuse	*S. aureus* *S. epidermidis* *P. aeruginosa* *Proteus* spp. *Klebsiella* spp.	Topical steroid/antibiotic drops	7 days Clean ear canal (± insertion of wick soaked in c
Acute localised (furuncle) ± cellulitis	*S. aureus* Group A streptococci	As for cellulitis	5 days
Failure of first-line treatment, high fever or severe persistent pain	As above plus *P. aeruginosa*	Piperacillin/Tazobactam 100 mg/kg (4 g) (Piperacillin component) IV 8H	14 days minimum Consider fungal infection
Otitis media (https://www.rch.org.au/clinicalguide/guideline_index/Acute_otitis_media/)	Viruses *S. pneumoniae* *M. catarrhalis* *H. influenzae* spp. Group A streptococci	Consider no antibiotics for 48 hours if over 6 months of age ***If treatment indicated*** Amoxicillin 30 mg/kg (1 g) oral bd	5 days Treatment indicated if infection associated with cochlear impla
Pertussis (https://www.rch.org.au/clinicalguide/guideline_index/Whooping_Cough_Pertussis/)	*B. pertussis*	Azithromycin 10 mg/kg (500 mg) oral daily (Birth – 6 months), 10 mg/kg oral on Day 1, then 5 mg/kg (250 mg) daily (≥6 months)	5 days Can be given up to 3 weeks af symptoms <3 weeks
Pneumonia (https://www.rch.org.au/clinicalguide/guideline_index/Community_acquired_pneumonia/) (https://www.rch.org.au/clinicalguide/guideline_index/Community_acquired_pneumonia/) Mild (outpatient)	Viruses *S. pneumoniae* *H. influenzae* spp.	Amoxicillin 30 mg/kg (1 g) oral tds	3-5 days
Moderate (inpatient)	As above	Amoxicillin 30 mg/kg (1 g) oral tds	5 days Consider Benzylpenicillin 60 m to tolerate oral intake or vomiti
Severe (≥2 of: severe respiratory distress, severe hypoxaemia or cyanosis, marked tachycardia, altered mental state OR empyema ie requiring ICU care)	As above plus *S. aureus* Group A streptococci Gram-negatives	3rd gen cephalosporin[4]	10 days minimum[2] Consider adding Azithromycin to cover *M. pneumoniae* and c Oseltamivir to cover influenza (https://www.rch.org.au/clinica virus

Tonsillitis (https://www.rch.org.au/clinicalguide/guideline_index/Sore_throat/)	Viruses Group A streptococci (GAS)	Features of GAS infection in child ≥4 years AND high-risk group ***or*** suppurative complications: Phenoxymethylpenicillin (Penicillin V) 250 mg oral bd (<20 kg) 500 mg oral bd (≥20 kg) ***or*** Benzathine benzylpenicillin 450mg (600 000 units) IM (<20 kg), 900 mg (1.2 million units) IM (>20 kg) as a single dose	10 days oral treatment High-risk groups: • Indigenous Australians • Maori and Pacific Islander • Personal history of rheumat disease • Family history of rheumatic • Immunosuppressed
Quinsy (peritonsillar abscess)		Benzylpenicillin 50 mg/kg (1.2g) IV 6H	Continue IV therapy for 1-2 da drainage, then switch to oral th days
Retropharyngeal abscess		Amoxicillin/Clavulanate 25 mg/kg (1 g) (Amoxicillin component) IV 8H (≥3 months and ≥4 kg)	10-14 days

SKIN/SOFT TISSUE/BONE

Infection	Likely organisms	Initial antimicrobials[1] (maximum dose)
Bites (animal/human) (https://www.rch.org.au/clinicalguide/guideline_index/Cellulitis_and_other_bacterial_skin_infections/)	Viridans streptococci *S. aureus* Group A streptococci Oral anaerobes *E. corrodens* *Pasteurella* spp. (cat and dog) *C. canimorsus* (dog)	Amoxicillin/Clavulanate (400/57 mg/5 mL) 2 (Amoxicillin component) 0.3 mL/kg (11 mL)
If severe, penetrating injuries, esp. involving joints or tendons	As above	Amoxicillin/Clavulanate 25 mg/kg (1 g) (Amoxicillin component) IV 1 or <4 kg), 8H (≥3 months and ≥4 kg)

Cellulitis (https://www.rch.org.au/clinicalguide/guideline_index/Cellulitis_and_other_bacterial_skin_infections/) (https://www.rch.org.au/clinicalguide/guideline_index/Cellulitis_and_other_bacterial_skin_infections/) Mild/moderate (outpatient)	Group A streptococci *S. aureus*	Cefalexin 20 mg/kg (750 mg) oral tds
Moderate/severe (inpatient)		Cefazolin 50 mg/kg (2 g) IV 8H ***or*** Ceftriaxone 50 mg/kg (2 g) IV daily (for hosp
Facial cellulitis in child under 5 years of age and non-Hib immunised	As above plus *S. pneumoniae* *H. influenzae* spp.[6]	3rd gen cephalosporin[4]
Necrotising fasciitis	As above	Vancomycin (https://www.rch.org.au/clinicalguide/guidelir 15 mg/kg (500 mg) IV 6H ***and*** Meropenem 20 mg/kg (1 g) IV 8H ***and*** Clindamycin 15 mg/kg (600 mg) IV 8H
Dental abscess	Often polymicrobial Viridans and anginosus group streptococci Oral anaerobes *S. aureus*	Amoxicillin 25 mg/kg (500 mg) oral tds ***or*** Be mg/kg (1.2g) IV 6H
Head lice	*Pediculus humanus* var. *capitis*	Dimeticone 4% gel
Impetigo (https://www.rch.org.au/clinicalguide/guideline_index/Cellulitis_and_other_bacterial_skin_infections/)	Group A streptococci *S. aureus*	Mupirocin 2% ointment top tds if localised ***or*** Cefalexin 20 mg/kg (750 mg) oral tds
Lymphadenitis (cervical) (https://www.rch.org.au/clinicalguide/guideline_index/Cervical_lymphadenopathy/) Mild	*S. aureus* Group A streptococci Oral anaerobes	Cefalexin 20 mg/kg (750 mg) oral tds
Severe	As above	Cefazolin 50 mg/kg (2 g) IV 8H
Osteomyelitis (https://www.rch.org.au/clinicalguide/guideline_index/Bone_and_joint_infection/) (https://www.rch.org.au/clinicalguide/guideline_index/Osteomyelitis_and_septic_arthritis/) Uncomplicated	*S. aureus* Group A streptococci *Kingella kingae* (partic ≤4y) *S. pneumoniae*	Cefazolin 50 mg/kg (2 g) IV 8H
If under 5 years of age and non-Hib immunised	As above plus *H. influenzae* type b[6]	3rd gen cephalosporin[4]
In patient with sickle cell anaemia	As above plus *Salmonella* spp.	3rd gen cephalosporin[4]
With penetrating foot injury	As above plus *P. aeruginosa*	Piperacillin/Tazobactam 100 mg/kg (4 g) (Pi IV 6H

Scabies	*Sarcoptes scabiei*	Permethrin 5% cream top
Septic arthritis (https://www.rch.org.au/clinicalguide/guideline_index/Bone_and_joint_infection/)	As for osteomyelitis	As for osteomyelitis
Chickenpox (https://www.rch.org.au/clinicalguide/guideline_index/Chickenpox_varicella/) (https://www.rch.org.au/clinicalguide/guideline_index/Chickenpox_varicella/) In immunocompromised or neonate **Shingles** In immunocompromised Involving eye	Varicella zoster virus	Aciclovir 20 mg/kg IV 12H (<30 weeks gesta gestation – <3 mths corrected age) 500 mg/m^2 IV 8H (3 months – 12 years), 10 years) Oral treatment (above) ***and*** Aciclovir ointme day

SEPSIS (UNDER 2 MONTHS OF AGE)		
Infection	**Likely organisms**	**Initial antimicrobials[1] (maximum do**
Sepsis (https://www.rch.org.au/clinicalguide/guideline_index/SEPSIS_assessment_and_management/) (https://www.rch.org.au/clinicalguide/guideline_index/SEPSIS_assessment_and_management/) Community-acquired infection	Group B streptococci *E. coli* and other Gram-negative coliforms *L. monocytogenes* *H. influenzae* spp.[6] plus those listed below for 'Septicaemia with unknown CSF'	Benzylpenicillin 60 mg/kg IV 12H (week 1 of life) 6H (week 2–4 of life) 4H (>week 4 of life) ***and*** 3rd gen cephalosporin[4]
If abdominal source suspected	As above plus Anaerobes	Amoxicillin or Ampicillin 50 mg/kg (2 g) Gentamicin 5 mg/kg IV 24H (week 1 of thereafter ***and*** Metronidazole 15 mg/kg IV stat, then 7.
SEPSIS (OVER 2 MONTHS OF AGE)		

Sepsis with unknown CSF (https://www.rch.org.au/clinicalguide/guideline_index/SEPSIS_assessment_and_management/) Meningitis not excluded	*S. pneumoniae*[5] *N. meningitidis* *S. aureus* Group A streptococci Gram-negatives	3rd gen cephalosporin (high dose)[4]
If central line *in situ* (non-oncology) or suspected MRSA infection	As above plus *S. epidermidis*	Add Vancomycin (https://www.rch.org.au/clinicalguide/gu mg/kg (500 mg) IV 6H
Sepsis with normal CSF (https://www.rch.org.au/clinicalguide/guideline_index/SEPSIS_assessment_and_management/) Meningitis excluded: clinically (and LP therefore not performed) or normal CSF	As above	Cefazolin 50 mg/kg (2 g) IV 8H ***and*** Gentamicin 7.5 mg/kg (320 mg) IV daily mg) IV daily (≥10 years)
In non-Hib immunised	As above plus *H. influenzae* type b[6]	3rd gen cephalosporin[4]
In neutropenic patient (https://www.rch.org.au/clinicalguide/guideline_index/Fever_and_suspected_or_confirmed_neutropenia/)	As above plus *Enterococcus* spp. *P. aeruginosa*	Piperacillin/Tazobactam 100 mg/kg (4 g 6H (8H if <6 months) If systemic compromise ***or*** high-risk ca onset of symptoms ***add*** Amikacin 22.5 mg/kg (1.5 g) IV dai g) IV daily (≥10 years)
In neutropenic patient with potential line infection (https://www.rch.org.au/clinicalguide/guideline_index/Fever_and_suspected_or_confirmed_neutropenia/) (or with severe sepsis or suspected resistant Gram-positive infection)	As above plus Gram-positive cocci incl. *S. epidermidis*	Piperacillin/Tazobactam as above ***and*** Amikacin as above ***and*** Vancomycin (https://www.rch.org.au/clinicalguide/gu mg/kg (500 mg) IV 6H
Toxic shock syndrome	*S. aureus* Group A streptococci	3rd gen cephalosporin (high dose)[4] ***and*** Vancomycin (https://www.rch.org.au/clinicalguide/gu mg/kg (500 mg) IV 6H ***and*** Clindamycin 15 mg/kg (600 mg) IV 8H Intravenous immunoglobulin 2 g/kg IV

Notes to antimicrobial guidelines

- These guidelines have been developed to assist doctors with their choice of initial empiric treatment
- Except where specified, they **do not apply to neonates or immunocompromised patients**
- Always ask about previous hypersensitivity reactions to antibiotic
- The choice of antimicrobial, dose and frequency of administration for continuing treatment may require adjustment according to the clinical situation
- The recommendations are not intended to be prescriptive and alternative regimens may also be appropriate
- Antimicrobial recommendations may vary according to local antimicrobial susceptibility patterns; please refer to local guidelines (https://www.rch.org.au/clinicalguide/guideline_index/Local_Antimicrobial_Guidelines/)

1. Antimicrobial choice and dose

- Antibiotics should be changed to narrow spectrum agents once sensitivities are known
- Dose adjustments may be necessary for neonates, and for children with renal or hepatic impairment
- Alternative antimicrobial regimens may be more appropriate for neonates, immunocompromised patients or others with a special infection risk (e.g. cystic fibrosis, sickle cell anaemia)
- Resistance to antimicrobials is an increasing problem worldwide. Of particular concern is the increasing incidence of penicillin-resistant pneumococci (see footnote 5). It is important to take into account local resistance patterns when using these guidelines

2. Duration of treatment

- Duration of treatment is given as a guide only and may vary with the clinical situation
- 'Step down' from intravenous to oral treatment is appropriate in many cases
- **Durations given generally refer to the minimum total intravenous plus oral treatment** (*See McMullan et al. Lancet Infect Dis. 2016;16:e139-52* (https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(16)30024-X/fulltext) *or this PDF version (www.rch.org.au/uploadedFiles/Main/Content/clinicalguide/guideline_index/IV to oral switch.pdf))*

3. Methicillin-resistant *Staphylococcus aureus* (MRSA)

- If penicillin hypersensitivity or risk of MRSA: substitute Cefazolin or Flucloxacillin with Vancomycin (https://www.rch.org.au/clinicalguide/guideline_index/Vancomycin/) 15 mg/kg (500 mg) IV 6H ***or*** Clindamycin 15mg/kg (600 mg) oral tds ***or*** Trimethoprim with sulfamethoxazole (8/40 mg/mL) 4/20 mg/kg bd (320/1600 mg) oral bd
- Risk factors for infection with MRSA:
  - Residence in an area with high prevalence of MRSA, eg Northern Territory, remote communities in northern Queensland
  - Previous colonisation or infection with MRSA (particularly recent)
  - Aboriginal and Torres Strait Islander or Pacific Islander child

4. Third-generation cephalosporins

- Cefotaxime: 50 mg/kg (2 g) IV 12H (week 1 of life), 6-8H (week 2-4 of life), 6H (>week 4 of life)
- Ceftriaxone:
  - standard dose 50 mg/kg (2 g) IV daily;
  - severe infection (including meningitis, brain abscess and orbital cellulitis) 100 mg/kg (4 g) IV daily
  - Where possible, ceftriaxone should be avoided in neonates <41 weeks gestation, particularly if jaundiced or receiving calcium containing solutions, including TPN

5. Pneumococci with reduced susceptibility to penicillin

- The prevalence of invasive strains that are highly resistant to penicillin or cephalosporins in Melbourne remains low
- A third-generation cephalosporin remains the drug of first choice for the empiric treatment of meningitis, however Vancomycin (https://www.rch.org.au/clinicalguide/guideline_index/Vancomycin/) should be added if *S. pneumoniae* is suspected (eg Gram-positive cocci on CSF microscopy). This should be stopped if *S. pneumoniae* sensitivity to a third-generation cephalosporin is confirmed, as will be the case with most isolates, or once an alternative aetiology is confirmed
- Penicillin remains the drug of first choice for the empiric treatment of non-CNS infections, such as suspected pneumococcal pneumonia, regardless of susceptibility. High doses of penicillin overcome resistance in this setting and should be used for confirmed non-CNS infection caused by penicillin-resistant pneumococci

6. Invasive *H. influenzae* type b disease

- Since the introduction of *H. influenzae* type b (Hib) immunisation, there has been a dramatic decline in the incidence of invasive disease
- However, in children with potential invasive disease who are not fully immunised against Hib, therapy should include cover against Hib

Therapeutic dose monitoring

Gentamicin once-daily dosing

- Once-daily administration of gentamicin is safe and effective for most patients. Certain patients, such as neonates and those with cystic fibrosis, endocarditis or renal failure, may require special dosing consideration
- The regimen for monitoring Gentamicin levels is different for once-daily and 8, 12 or 18H dosing, and depends on renal function:
  - Normal renal function – if more than 3 doses required, the trough level (pre-dose) should be checked before the third dose and then every 3 days (target level <1 mg/L)
  - Abnormal renal function – trough levels may need to be checked earlier and more frequently (target level <1 mg/L)
  - Renal failure – levels should be checked prior to each dose and the results should be discussed with a specialist familiar with therapeutic drug monitoring before the next dose is given

Vancomycin (https://www.rch.org.au/clinicalguide/guideline_index/Vancomycin/)

- Target trough level 10–15 mg/L for cellulitis, 15-20 mg/L for severe infection (bacteraemia, endocarditis, pneumonia, osteomyelitis, meningitis) or known high MIC

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