

Guideline

Paediatric Antibiocard: Empirical Antibiotic Guidelines

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HUMAN RIGHTS

This governance document has been human rights compatibility assessed. No limitations were identified indicating reasonable confidence that, when adhered to, there are no implications arising under the *Human Rights Act 2019*.

PURPOSE

The recommendations of this guideline are for the initial treatment of presumptive infections in patients cared for by Children's Health Queensland (CHQ). These guidelines are to be used only before the results of microbiological investigations are available or finalised.

SCOPE

This guideline provides information for all Queensland Health employees (permanent, temporary and casual) and all organisations and individuals acting as its agents (including Visiting Medical Officers and other partners, contractors, consultants and volunteers).



GUIDELINE

Introduction

Standards of Antimicrobial Stewardship in Children's Health Queensland

- Take cultures before starting antibiotics. In children commenced on empiric MRSA coverage, please do MRO screening swabs for MRSA to guide ongoing management/oral stepdown.
- Cease antibiotics if cultures negative at 48 hours **except if**:
 - the child has signs of severe sepsis.
 - cultures were taken after antibiotic treatment was started, discuss with Infectious Diseases (ID) team.
 - ongoing infection is likely.
- Change to narrow spectrum antibiotics once sensitivities are known.
- Consult Infection specialist.
 - if patient has a previous (or new onset) severe antimicrobial hypersensitivity reaction (include the following information: type of antimicrobial, type of reaction and severity, onset of reaction in relation to commencing antimicrobial, treatment required to treat symptoms).
 - for recommendations for treatment duration in confirmed infections.
- Document indication, Infectious Diseases (ID) approval number (where applicable) and planned duration/review date on the electronic Medication order in the integrated electronic medical record (ieMR) or the Paediatric National Inpatient Medication Chart (P-NIMC) when prescribing antimicrobials.
- Daily review of antibiotic plan (stop/continue antibiotics) should occur during ward round, review is to include:
 - Consideration of Early Intravenous (IV) to Oral Switch Therapy - Patients should be reviewed at 24 to 48 hours to consider whether early IV to oral switch would be appropriate. Refer to [CHQ-GDL-01057 Antimicrobial treatment: Antibiotic duration and timing of the switch from intravenous to oral for common bacterial infections in children](#) for further information. Exercise caution when considering a switch to oral in neonates and infants because of the relatively high incidence of bacteremia and the possibility of variable oral absorption.
 - Review of pathology results and appropriate antimicrobial dosing and choice based on these results.
- Seek Pharmacist / ID advice on appropriate therapeutic drug monitoring (TDM) and appropriate dosing for patients in renal failure
 - [Paediatric Aminoglycoside \(Tobramycin/Gentamicin/Amikacin\) Guideline](#)
 - [Paediatric Vancomycin Therapeutic Drug Monitoring](#)
- Patients labelled with an antibiotic allergy have longer hospital stays and increased exposure to suboptimal antibiotics. Take a comprehensive antimicrobial allergy history and assess the risk as per the [CHQ-GDL-01076 Paediatric antibiotic allergy assessment, testing and de-labelling](#)
- For ID consults:
 - Normal business hours (Monday to Friday) – contact QCH ID registrar
 - For Queensland Children's hospital, please also order a "Consult to Infectious Diseases" via iEMR
 - Afterhours – page QCH Paediatric infection specialist (ID SMO) on call via QCH switchboard

INFECTION	FIRST CHOICE ANTIMICROBIAL (* IV Lincomycin and IV Clindamycin can be used interchangeably for indications as specified in guideline in infants and children >1 month of age. Please confirm supply availability at your local hospital)	Alternative antibiotic in the event of immediate type (e.g. anaphylaxis) or delayed type (e.g. rash) hypersensitivity to 1 st line antimicrobial
SEPSIS (Oncology / Haematology)		
Febrile neutropenia (Oncology / Haematology)	Refer to CHQ-GDL-01249 Management of Fever in a Paediatric Oncology Patient (Febrile Neutropenia and Febrile Non-neutropoenia) . Review at 48 to 72 hours	
Febrile non-neutropenia (Oncology)	Refer to CHQ-GDL-01249 Management of Fever in a Paediatric Oncology Patient (Febrile Neutropenia and Febrile Non-neutropenia) Review at 48 to 72 hours	
SEPSIS		
COMMUNITY ACQUIRED SEPSIS (non PICU)	Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose); <u>OR</u> Ceftriaxone IV 100 mg/kg once daily (maximum 4 g/day). Note: If Meningitis clinically or by LP treat as below under MENINGITIS. Review antibiotics at 48 hours.	Immediate type hypersensitivity Ciprofloxacin IV 10 mg/kg/dose 8-hourly (maximum 400 mg/dose) PLUS Vancomycin IV Seek ID advice within 24 hours.
	Less than 1 month old: Refer to neonatal dosing section . Cefotaxime IV PLUS Ampicillin IV (or Amoxicillin IV)	
	If at risk of nmMRSA: Cefotaxime IV PLUS Lincomycin* IV 15 mg/kg/dose every 8 hourly (maximum 1.2 g/dose). Less than 1 month old: Refer to neonatal dosing section . Cefotaxime IV PLUS Ampicillin IV (or Amoxicillin IV) PLUS Clindamycin IV	
	If at risk of multi-resistant MRSA Cefotaxime IV PLUS Vancomycin IV 15 mg/kg every 6 hours (maximum initial Vancomycin dose of 750 mg) (Perform TDM). Less than 1 month old: Refer to neonatal dosing section Cefotaxime IV PLUS Ampicillin IV (or Amoxicillin IV) PLUS Vancomycin IV	

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CARDIAC		
Endocarditis (Note: For directed therapy, seek ID advice)	Benzylpenicillin IV 50 mg/kg/dose every 4 hours (maximum 1.8 g/dose) PLUS Flucloxacillin IV 50 mg/kg/dose every 4 hours (maximum 2 g/dose) PLUS Gentamicin IV (Dose based on adjusted body weight. Perform TDM). <ul style="list-style-type: none"> If more than 1 month and less than 10 years old: 7.5 mg/kg once daily (maximum 320 mg/day). If more than 10 years old: 6 mg/kg once daily (maximum 560 mg/day). Note: If less than 1 month old, refer to neonatal dosing section . ID review required within 24 hours	Delayed type hypersensitivity Cefazolin IV 50 mg/kg every 8 hours (maximum 2 g/dose) PLUS Gentamicin IV PLUS Vancomycin IV and seek ID advice within 24 hours.
Endocarditis (prosthetic valve, nosocomial infection or community acquired MRSA is suspected) (Note: For directed therapy, seek ID advice)	Vancomycin IV (Perform TDM) <ul style="list-style-type: none"> If more than 1 month old: 15 mg/kg/dose IV every 6 hours (maximum initial dose of 750 mg). PLUS Flucloxacillin IV <ul style="list-style-type: none"> If more than 1 month old: 50 mg/kg/dose IV every 4 hours (maximum 2 g/dose) PLUS Gentamicin IV (Dose based on adjusted body weight. Perform TDM) <ul style="list-style-type: none"> If more than 1 month and less than 10 years old: 7.5 mg/kg once daily (maximum 320 mg/day) If more than 10 years old: 6 mg/kg once daily (maximum 560 mg/day) ID review required within 24 hours. If <i>Pseudomonas aeruginosa</i> cultured, seek ID advice on appropriate directed therapy. Note: If less than 1 month old, refer to neonatal dosing section . Perform TDM for Gentamicin and Vancomycin . If <i>Pseudomonas aeruginosa</i> cultured, seek ID advice on appropriate directed therapy.	Immediate type hypersensitivity, Gentamicin IV PLUS Vancomycin IV and seek ID advice within 24 hours.

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CENTRAL NERVOUS SYSTEM		
Meningitis	<p>More than one month old: Cefotaxime IV 50 mg/kg/dose IV every 6 hours (maximum 2 g/dose) OR Ceftriaxone IV 100 mg/kg/dose (maximum 4 g/dose) daily. Discuss with ID within 24 to 48 hours with cerebrospinal fluid (CSF) culture and susceptibility results. PLUS If more than 2 months old: Dexamethasone IV 0.15 mg/kg/dose (maximum 10 mg) every 6 hourly for 4 days. Start before or with first dose of antibiotics (ideally administered within 4 hours after starting IV antibiotic) but not beyond 12 hours.</p> <p>Less than one month old: Refer to neonatal dosing section Cefotaxime IV Plus Ampicillin IV (or Amoxicillin IV) Review antibiotics at 48 hours. For Gram negative meningitis/sepsis, consult ID</p>	<p>Immediate type hypersensitivity, Ciprofloxacin IV 10 mg/kg/dose 8-hourly (maximum 400 mg/dose) PLUS Vancomycin IV and seek ID advice within 24 hours.</p>
	<p>If Gram positive cocci in CSF: Add Vancomycin IV (see TDM section) and discuss with ID. If more than 1 month old: 15 mg/kg/dose IV every 6 hours (maximum 750 mg/dose starting dose). Perform TDM.</p>	
If Encephalitis suspected	<p>Add Aciclovir IV Less than one month old: Refer to neonatal dosing section If more than 2 months old or less than 12 years old: 500 mg/m²/dose IV every 8 hours (maximum 1000 mg/dose). If more than 12 years old: 10 mg/kg/dose IV every 8 hours (maximum 1000 mg/dose). If less than 2 months old: 20 mg/kg/dose IV every 8 hours Review at 24 to 48 hours.</p>	

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Prophylaxis for <i>N. meningitidis</i>	Ciprofloxacin oral: Infant or Child 3 months to 5 years old: 30 mg/kg (up to 125 mg) orally as a single dose. Child 5 to 12 years old: 250 mg orally, as a single dose. Adolescents more than 12 years old: 500 mg orally, as a single dose.	Seek ID advice.
	OR Rifampicin oral: Less than 1 month old: 5 mg/kg/dose orally twice daily for 2 days. More than 1 month old: 10 mg/kg/dose orally twice daily (maximum 600 mg/dose) for 2 days.	
Public Health Fact sheet	Meningococcal disease - antibiotics for close contacts of a person with meningococcal infection: ciprofloxacin, rifampicin Health and wellbeing Queensland Government (www.qld.gov.au)	
CSF shunt infection	Neonates: Seek ID advice. If more than 1 month old: Cefotaxime IV 50 mg/kg/dose IV every 6 hours (Maximum 2 g/dose) AND Vancomycin IV (Perform TDM) 15 mg/kg/dose IV every 6 hours (maximum initial dose of 750 mg) Discuss with ID within 48 hours.	Immediate type hypersensitivity, seek ID advice.

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RESPIRATORY		
Community acquired Pneumonia Neonate (less than or equal to 1 month old)	Ampicillin IV (or Amoxicillin IV) PLUS Gentamicin IV Age dependent dosing - Refer to neonatal dosing section . Use adjusted body weight for dosing Gentamicin and perform TDM . Review antibiotics at 24 to 48 hours. (Comment: Consider adding oral azithromycin if pertussis, <i>chlamydia trachomatis</i> likely. Discuss with ID within 24 hours)	Immediate type hypersensitivity, seek ID advice.
Community acquired Pneumonia (CAP) (more than 1 month old)	Amoxicillin orally 30 mg/kg/dose every 8 hours (maximum 1 g/dose). Comment: Oral antibiotics are sufficient in most children with CAP unless unable to tolerate oral or severe/complicated disease.	Immediate type hypersensitivity, Azithromycin orally 10 mg/kg/dose once daily (maximum 500 mg/dose)
Community acquired Pneumonia (more than 1 month old) (unable to tolerate oral)	Benzylpenicillin IV 60 mg/kg/dose every 6 hours (maximum 2.4 g/dose). Review antibiotics at 24 to 48 hours.	Delayed type hypersensitivity, Cefazolin IV 50 mg/kg/dose (maximum 2 g/dose) 8 hourly. Immediate type hypersensitivity, seek ID advice within 24 hours.
Empyema (more than 1 month old) Neonates – seek ID advice	Benzylpenicillin IV 60 mg/kg/dose every 6 hours (maximum 2.4 g/dose) PLUS, Lincomycin IV 15 mg/kg/dose every 8 hours (maximum 1.2 g/dose) If < 5 years AND not fully vaccinated for HiB, use Cefotaxime 50 mg/kg/dose (maximum 2 g/dose) 6 hourly PLUS Lincomycin IV Seek ID advice within 48 hours. Consult respiratory team regarding pleural drainage.	Delayed type hypersensitivity, Cefazolin IV plus Lincomycin IV and seek ID advice within 24 hours Immediate type hypersensitivity, seek ID advice.

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Severe Pneumonia (Paediatric intensive care (PICU)) (more than 1 month old) Neonates – seek ID advice	<p>Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose). PLUS, Lincomycin IV 15 mg/kg/dose every 8 hours (maximum 1.2 g/dose)</p> <p>Discuss with ID within 48 hours.</p> <hr/> <p>If life threatening pneumonia <u>OR</u> multi-resistant MRSA suspected:</p> <p>Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose) PLUS Lincomycin IV 15 mg/kg/dose every 6 hours (maximum 1.2 g/dose) PLUS Vancomycin IV 15 mg/kg/dose IV every 6 hours (maximum initial dose of 750 mg) (Perform therapeutic drug monitoring for Vancomycin.) PLUS if <i>M. pneumoniae</i> suspected, add Azithromycin IV 10 mg/kg once daily (maximum 500 mg/day). Switch to oral Azithromycin after 24 hours.</p> <p>Seek ID advice within 24 hours. Consult respiratory team regarding pleural drainage if applicable.</p>	Immediate type hypersensitivity, seek ID advice.
Tracheitis/Epiglottitis	Cefotaxime IV 50 mg/kg/dose IV every 6 hours (maximum 2 g/dose) and seek ID review within 24 hours.	Immediate type hypersensitivity, seek ID advice.
Pertussis	<p>Azithromycin oral Less than or equal to 6 months old: 10 mg/kg orally once daily (maximum 500 mg/day) for 5 days. More than 6 months old: 10 mg/kg orally once daily on Day 1 (maximum 500 mg), then 5 mg/kg daily on Day 2 to 5 (maximum 250 mg/day).</p> <p>Notifiable disease - Pertussis Disease control guidance (health.qld.gov.au)</p>	Immediate type hypersensitivity, seek ID advice.

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EAR, NOSE AND THROAT (ENT)		
Tonsillitis	Phenoxymethylpenicillin 15 mg/kg/dose orally twice daily (maximum 500 mg/dose) for 10 days.	Delayed type hypersensitivity Azithromycin 10mg/kg orally once daily for 5 days.
Acute Otitis Media	Amoxicillin 30 mg/kg/dose orally every 8 hours (maximum 1 g/dose) for 5 days. For further information, refer to CHQ-GDL-6000 Acute otitis media - Emergency management in children.	Delayed type hypersensitivity, Cephalexin orally 30 mg/kg/dose every 8 hourly (maximum 1 g/dose).
Otitis externa	Refer to CHQ-GDL-00720 Otitis Externa: Emergency Management in Children for guidance.	
Mastoiditis	Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose) and seek ID review within 72 hours.	Immediate type hypersensitivity, seek ID advice
Retropharyngeal abscess	IV Amoxicillin-Clavulanic acid Neonates and Infants (0 to 3 months old): If less than or equal to 4 kg: 25 mg/kg/dose (amoxicillin component) every 12 hours. If more than 4 kg: 25 mg/kg/dose (amoxicillin component) every 8 hours. Infants and children (more than 3 months old): Severe infection: 25 mg/kg/dose (amoxicillin component) every 6 hourly (maximum 1 g/dose Amoxicillin component). Adolescents older than 12 years old (and more than 40 kg): Severe infection: 25 mg/kg/dose (amoxicillin component) every 6 hourly (maximum 1 g/dose Amoxicillin component; maximum 200 mg/dose clavulanate component). Seek ID review within 24 hours.	Delayed type hypersensitivity, Cefotaxime IV.

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GASTRO-INTESTINAL		
Appendicitis SURGICAL PROPHYLAXIS	For patients transferring to theatre for appendicectomy, refer to CHQ-GDL-01064 CHQ Paediatric surgical antibiotic prophylaxis guidelines for guidance on peri-operative antibiotic prophylaxis. Note: To achieve optimal cover, per-operative prophylaxis should be administered at time of induction (knife to skin).	
Appendicitis UNCOMPLICATED (e.g. no perforation)	<p>IV antibiotics are not usually required for postoperative treatment of uncomplicated appendicitis.</p> <p>If operative intervention will be significantly delayed (> 6 hours) preoperative antibiotics below may be started.</p> <p>If post operative antibiotics are requested a short course (e.g. <72 hours) is usually sufficient: Seek ID advice within 72 hours.</p> <p>Amoxicillin-Clavulanic acid IV Neonates and Infants (0 to 3 months old): If less than or equal to 4 kg: 25 mg/kg/dose (amoxicillin component) every 12 hours. If more than 4 kg: 25 mg/kg/dose (amoxicillin component) every 8 hours.</p> <p>Infants and children (more than 3 months old): Severe infection: 25 mg/kg/dose (amoxicillin component) every 6 hours (maximum 1 g/dose Amoxicillin component).</p> <p>Adolescents older than 12 years (and more than 40kg): Severe infection: 25 mg/kg/dose (amoxicillin component) every 6 hours (maximum 1 g/dose Amoxicillin component; maximum 200 mg/dose clavulanate component).</p>	<p>Immediate type hypersensitivity, Gentamicin IV (dose based on adjusted body weight) PLUS Lincomycin IV 15 mg/kg/dose every 8 hours (maximum 1.2 g/dose). Seek ID advice within 48 hours.</p>

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Appendicitis COMPLICATED (e.g. perforation, appendiceal collection / abscess) Peritonitis NEC (for neonates - Age dependent dosing - Refer to Ampicillin/Amoxicillin, Metronidazole and Gentamicin neonatal section). Note: If Pseudomonas aeruginosa cultured, seek ID advice on directed therapy.	EMPIRICAL ANTIBIOTICS FOR FIRST 72 HOURS, CHOOSE EITHER:		Seek ID advice within 48 hours.
	Ampicillin IV (or Amoxicillin IV) If more than 1 month old: 50 mg/kg/dose every 6 hours (maximum 2 g/dose) PLUS Metronidazole IV 7.5 mg/kg/dose every 8 hours (Maximum 500 mg/dose) PLUS Gentamicin IV (Dose based on Adjusted body weight. Perform TDM) If more than 1 month and less than (or equal to) 10 years old: 7.5 mg/kg once daily (maximum 320 mg/day). If more than 10 years old: 6mg/kg once daily (maximum 560 mg/day). Seek ID advice within 72 hours. Due to risk of toxicity, consider switching to non-aminoglycoside containing regimen.	Piperacillin/Tazobactam 100mg/kg/dose IV every 6 hours (maximum 4 g/dose Piperacillin component).	Delayed type hypersensitivity, Ceftriaxone IV 50 mg/kg once daily (Maximum 2 g/day) PLUS Metronidazole IV. If associated sepsis, give Ceftriaxone IV 100 mg/kg once daily (Maximum 4 g/day) PLUS Metronidazole IV.
	IF ANTIBIOTICS REQUIRED BEYOND 72 HOURS, CHANGE TO EITHER:		Immediate type hypersensitivity, Gentamicin IV PLUS Lincomycin IV 15 mg/kg/dose every 8 hours (maximum of 1.2 g/dose).
	Amoxicillin-Clavulanic acid IV (for up to 4 days) Neonates and Infants (0 to 3 months old): If less than or equal to 4 kg: 25 mg/kg/dose (amoxicillin) every 12 hours. If more than 4 kg: 25 mg/kg/dose (amoxicillin) every 8 hours. Infants and children (more than 3 months old): Severe infection: 25 mg/kg/dose (amoxicillin) every 6 hours (maximum 1 g/dose Amoxicillin component). Adolescents older than 12 years (and more than 40kg): Severe infection: 25 mg/kg/dose (amoxicillin) every 6 hours (maximum 1 g/dose Amoxicillin component; maximum 200 mg/dose clavulanate component).	Piperacillin/Tazobactam 100mg/kg/dose IV every 6 hours (maximum 4 g/dose Piperacillin component) (for up to 4 days).	
	Oral option to complete course: Amoxicillin/ Clavulanic acid 22.5 mg/kg/dose orally twice daily (maximum 875 mg/dose Amoxicillin component). Early oral switch can take place if patient clinically improving.		Immediate type hypersensitivity, seek ID advice.
	If poor clinical response , antibiotic regimens may be modified based upon the results of cultures of blood, peritoneal fluid, or surgical specimens - seek ID advice. Antibiotic therapy is generally required for total 4 to 7 days, the duration may need to be further prolonged if there are deep undrained collections. Seek ID advice for treatment beyond 7 days.		

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GASTRO-INTESTINAL		
Cholangitis	<p>Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose) (OR if more than one month old: Ceftriaxone IV 50 mg/kg once daily (maximum 2 g/day)) PLUS Metronidazole IV 7.5 mg/kg/dose every 8 hours (maximum 500 mg/dose). Seek ID advice within 72 hours.</p> <p><u>If associated sepsis,</u> Give Ceftriaxone IV 100 mg/kg once daily (maximum 4 g/day) PLUS Metronidazole IV 7.5 mg/kg/dose every 8 hours (maximum 500 mg/dose). Seek ID advice within 72 hours.</p>	Immediate type hypersensitivity seek ID advice
Giardiasis	Metronidazole 30 mg/kg/dose orally once daily (maximum 2 g/dose) for 3 days.	
Clostridium Difficile	Refer to CHQ-GDL-01058 Paediatric Clostridium (Clostridioides) Difficile Infection - Treatment Guidelines for guidance.	
Suspected salmonella (non typhoidal) infection	Refer to CHQ-GDL-63001 Management Guideline for Non-typhoidal Salmonellosis in Children for guidance.,	
Pinworms (Treat all family members)	Mebendazole: If less than or equal to 1 year old: 50 mg orally as a single dose. If more than 1 year old: 100 mg orally as a single dose.	

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URINARY TRACT		
Uncomplicated Urinary Tract Infection (UTI)	<p>UTI and less than 3 months old - Treat as for Pyelonephritis.</p> <p>Infants and children more than 3 months old:</p> <p>Trimethoprim/ Sulfamethoxazole 4 mg/kg/dose orally twice daily (maximum 160 mg/dose Trimethoprim component) for 5 days.</p> <p>OR Cefalexin 30 mg/kg/dose orally every 8 hours (maximum 1 g/dose)</p>	
Pyelonephritis	<p>If more than 1 month old: Ampicillin IV (or Amoxicillin IV) 50 mg/kg/dose IV every 6 hours (maximum 2 g/dose) PLUS Gentamicin IV (Dose based on adjusted body weight. See TDM section) If more than 1 month old and less than (or equal to) 10 years old: 7.5 mg/kg once daily (maximum 320 mg/day). If more than 10 years old: 6 mg/kg IV once daily (maximum 560 mg/day). Seek ID advice within 48 hours. Perform TDM.</p> <p>Less than 1 month old: Refer to neonatal dosing section.</p>	<p>Immediate or delayed hypersensitivity penicillin, use Gentamicin IV as single agent initially then seek ID advice within 48 hours.</p>

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SKELETAL / SOFT TISSUE / SKIN		
Mild Cellulitis Mild Periorbital cellulitis Impetigo Cervical lymphadenitis (Outpatient)	Cefalexin 30 mg/kg/dose orally every 8 hours (maximum 1 g/dose) OR Flucloxacillin 25 mg/kg/dose orally four times a day (maximum 1 g/dose) (For children who can swallow capsules). If at risk of nmMRSA or if family/personal history of boils (Previous nmMRSA, History of boils or Aboriginal or Pacific islander descent) Trimethoprim/ Sulfamethoxazole 4 mg/kg/dose orally twice daily (maximum 160 mg/dose Trimethoprim component). OR Clindamycin 10 mg/kg/dose orally three times a day (maximum 600 mg/dose) (For children who can swallow capsules whole) Duration: Refer to CHQ GDL 01057 Antimicrobial treatment: Antibiotic duration and timing of the switch from intravenous to oral for common bacterial infections in children - Paediatric Guideline	Immediate type hypersensitivity to penicillin or cephalosporin, give Trimethoprim / Sulfamethoxazole orally.
Severe cellulitis Severe preseptal cellulitis Severe cervical lymphadenitis (Inpatient)	Flucloxacillin 50 mg/kg/dose IV 6 hourly (maximum 2 g/dose) For patients who are likely to require >72 hours of IV therapy, to conserve peripheral intravenous cannula, suggest Cefazolin switching to 50mg/kg/dose IV 8 hourly (maximum 2 g/dose) If at risk of nmMRSA or if family/personal history of boils (Previous nmMRSA, History of boils or Aboriginal or Pacific islander descent) Lincomycin IV 15 mg/kg/dose every 8 hours (maximum 1.2 g/dose). Review antibiotics with ID within 48 hours	Immediate type hypersensitivity to penicillin, give Lincomycin IV 15mg/kg 8 hourly (maximum 1.2 g/dose)

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Osteomyelitis Septic Arthritis	<p>Under 5 years of age (risk of Kingella infections): Cefazolin IV 50 mg/kg/dose (maximum 2 g/dose) every 8 hours</p> <p>Under 5 years AND not immunised against HiB (ie. No HiB containing vaccines received): Cefotaxime IV 50 mg/kg/dose (maximum 2 g/dose) every 6 hours</p> <p>Over 5 years of age: Flucloxacillin IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose). For patients who are likely to require >48-72 hours of IV therapy AND have no long line, to conserve peripheral IV cannula, suggest Cefazolin 50 mg/kg/dose IV 8 hourly (maximum 2 g/dose) Refer to CHQ-GDL-01067 Paediatric Bone and Joint Infection Management for further information.</p> <p>If at risk of nmMRSA or if family/personal history of boils (Previous nmMRSA, History of boils or Aboriginal or Pacific islander descent) ADD Lincomycin IV 15 mg/kg/dose every 8 hours (maximum 1.2 g/dose). Review antibiotics with ID within 48 hours</p>	<p>Delayed type hypersensitivity to flucloxacillin, give Cefazolin IV.</p> <p>Immediate type hypersensitivity to penicillins or cephalosporins, Lincomycin IV and seek ID advice.</p>
<p>Moderate to Severe Periorbital cellulitis (under 5 years and not immunised against HiB) OR Orbital Cellulitis (<u>ALL</u> ages)</p>	<p>Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose) If peri-orbital or orbital cellulitis suspected, refer to CHQ-GDL-00723 Peri-Orbital and Orbital Cellulitis: Emergency Management in Children Review antibiotics with ID within 48 hours</p> <p>If at risk of nmMRSA: Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose). PLUS Lincomycin IV 15 mg/kg/dose every 8 hours (maximum 1.2 g/dose) Review antibiotics with ID within 48 hours</p> <p>If at risk of multi-resistant MRSA: Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose) PLUS Vancomycin IV 15 mg/kg/dose every 6 hours (maximum initial dose of 750 mg). (Perform TDM for Vancomycin). Review antibiotics with ID within 48 hours</p>	<p>Immediate type hypersensitivity, seek ID advice.</p>

INFECTION	FIRST CHOICE ANTIMICROBIAL (* IV Lincomycin and IV Clindamycin can be used interchangeably for indications as specified in guideline in infants and children >1 month of age. Please confirm supply availability at your local hospital)	Alternative antibiotic in the event of immediate type (e.g. anaphylaxis) or delayed type (e.g. rash) hypersensitivity to 1 st line antimicrobial
SKELETAL / SOFT TISSUE / SKIN		
Suspected necrotising fasciitis	Cefotaxime IV 50 mg/kg/dose every 6 hours (maximum 2 g/dose). PLUS Lincomycin IV 15 mg/kg/dose every 8 hours (maximum 1.2 g/dose) PLUS Vancomycin IV 15 mg/kg/dose every 6 hours (maximum initial dose of 750 mg). (Perform therapeutic drug monitoring for Vancomycin). Seek ID advice within 24 hours.	Immediate type hypersensitivity seek ID advice.
	If external wound / inoculation associated with necrotising fasciitis: Meropenem IV 40 mg/kg/dose every 8 hours (maximum 2 g/dose) PLUS Lincomycin IV 15 mg/kg/dose every 8 hours (maximum 1.2 g/dose) PLUS Vancomycin IV 15 mg/kg/dose every 6 hours (maximum initial dose of 750 mg). (Perform therapeutic drug monitoring for Vancomycin). Seek ID advice within 24 hours.	
Compound fractures	For open fractures with <u>no</u> clinical evidence of skin or soft tissue infection or severe tissue damage, give systemic antibiotic prophylaxis: Cefazolin IV 50 mg/kg/dose (maximum 2 g/dose) every 8 hourly and seek ID advice within 24 hours.	Immediate type hypersensitivity Lincomycin IV and seek ID advice.
	For open fractures with severe tissue damage or clinical evidence of skin or soft tissue infection: Piperacillin - Tazobactam IV 100 mg/kg/dose every 6 hours (maximum 4 g/dose Piperacillin component) and seek ID advice within 24 hours.	Immediate type hypersensitivity Ciprofloxacin IV (10 mg/kg/dose 12-hourly (maximum 400 mg/dose) PLUS Lincomycin IV and seek ID advice within 24 hours.

INFECTION	FIRST CHOICE ANTIMICROBIAL (* IV Lincomycin and IV Clindamycin can be used interchangeably for indications as specified in guideline in infants and children >1 month of age. Please confirm supply availability at your local hospital)	Alternative antibiotic in the event of immediate type (e.g. anaphylaxis) or delayed type (e.g. rash) hypersensitivity to 1 st line antimicrobial
SKELETAL / SOFT TISSUE / SKIN		
Animal Bites with established infection Prophylaxis for animal bites is not indicated for small wounds not involving deeper tissues that present within 8 hours and can be adequately debrided and irrigated Always check Tetanus immunisation status	Amoxicillin/ Clavulanic acid 22.5 mg/kg/dose orally twice daily (maximum 875 mg/dose Amoxycillin component). Duration: 5 to 7 days	Delayed type <u>OR</u> immediate type hypersensitivity, Trimethoprim/ Sulfamethoxazole orally 4 mg/kg/dose twice daily (maximum 160 mg/dose trimethoprim component) <u>PLUS</u> Metronidazole orally 7.5 mg/kg/dose every 8 hours (maximum 400 mg/dose).
	For Severe infection: Amoxicillin-Clavulanic acid IV (seek ID advice within 48 hours) Neonates and Infants (0 to 3 months old): If less than or equal to 4 kg: 25 mg/kg/dose (amoxicillin component) every 12 hours. If more than 4 kg: 25 mg/kg/dose (amoxicillin component) every 8 hours. Infants and children (more than 3 months old): Severe infection: 25 mg/kg/dose (amoxicillin component) every 6 hourly (maximum 1 g/dose amoxicillin component). Adolescents older than 12 years old (and more than 40kg): Severe infection: 25 mg/kg/dose (amoxicillin component) every 6 hourly (maximum 1 g/dose amoxicillin component; note: maximum 200 mg/dose clavulanate component).	Delayed type hypersensitivity, IV Ceftriaxone 100 mg/kg once daily (maximum 4 g/day) <u>PLUS</u> Metronidazole orally 7.5 mg/kg/dose every 8 hours (maximum 400 mg/dose).

INFECTION	FIRST CHOICE ANTIMICROBIAL (* IV Lincomycin and IV Clindamycin can be used interchangeably for indications as specified in guideline in infants and children >1 month of age. Please confirm supply availability at your local hospital)	Alternative antibiotic in the event of immediate type (e.g. anaphylaxis) or delayed type (e.g. rash) hypersensitivity to 1 st line antimicrobial
SKELETAL / SOFT TISSUE / SKIN		
Antibiotic prophylaxis for wounds (excluding fractures, wounds sustained in water and animal bites) Always check Tetanus immunisation status	<p>Antibiotic prophylaxis is not routinely required for traumatic wounds that do not require surgical management and are not significantly contaminated. If concerned about infection, send swabs from base of wound for M/C/S.</p> <p><u>Severe wounds</u> Cefazolin IV 50 mg/kg/dose (maximum 2 g/dose) every 8 hourly PLUS Metronidazole IV 7.5 mg/kg/dose (maximum 500 mg/dose) every 8 hourly For severe wounds contaminated with vegetative matter (soil, grass etc) use piperacillin-tazobactam IV 100 mg/kg/dose (maximum 4g/dose) every 6 hourly.</p> <p>Discontinue at wound closure (Maximum 24 hours IV antibiotics). If severe seek ID advice (may require continuation 24 hours after definitive wound closure – ID approval required).</p> <p><u>Less severe wounds</u> Flucloxacillin orally 25 mg/kg (Maximum 500mg/dose) 6-hourly for 24 hours. OR Cefalexin orally 30 mg/kg (Maximum 1 g/dose) 8-hourly for 24 hours. Maximum duration 72 hours. Seek ID advice.</p>	Delayed type <u>OR</u> immediate type hypersensitivity, seek ID advice.
Wounds sustained in water Always check Tetanus immunisation status	Refer to CHQ-GDL-63000 Management of Water-immersed Wound Infections in Children for guidance. Seek ID advice within 24 hours.	
Bat (Lyssavirus) exposure	Refer to CHQ-GDL-00719 Management of children presenting with potential Lyssavirus (rabies) exposures - Emergency Management in Children for guidance. Notify Public Health and CHQ ID service.	

SPECIFIC NEONATAL ANTIMICROBIAL DOSING - AUSTRALASIAN NEONATAL MEDICINES FORMULARY (ANMF) and NEOMEDQ		
Antimicrobial	Australasian Neonatal Medicines Formulary (ANMF)	NeoMedQ
Aciclovir IV	ANMF – Aciclovir	NeomedQ – Aciclovir
Amikacin IV	ANMF – Amikacin	-
Amoxicillin IV	ANMF – Amoxicillin	NeomedQ - Amoxicillin
Amoxicillin/clavulanate	ANMF – Amoxicillin-clavulanate	-
Ampicillin IV	ANMF – Ampicillin	NeomedQ - Ampicillin
Azithromycin	ANMF – Azithromycin	NeomedQ - Azithromycin
Benzylpenicillin IV	ANMF – Benzylpenicillin	NeomedQ - Benzylpenicillin
Cefalexin PO	ANMF – Cefalexin	
Cefazolin IV	ANMF – Cefazolin	NeomedQ - Cefazolin
Cefepime IV	ANMF - Cefepime	NeomedQ - Cefepime
Cefotaxime IV	ANMF – Cefotaxime	NeomedQ - Cefotaxime
Ceftazidime IV	ANMF – Ceftazidime	-
Clindamycin IV Comment: Does not provide CNS cover – seek ID advice	ANMF - Clindamycin	-
Flucloxacillin IV Comment: Higher <u>oral</u> mg/kg doses may be required in neonates – see AMH CDC for dosing recommendations	ANMF – Flucloxacillin	NeomedQ - Flucloxacillin
Gentamicin IV Comment: TDM required. Seek AMS/ Pharmacist advice.	ANMF – Gentamicin	NeomedQ - Gentamicin
Meropenem IV	ANMF – Meropenem	NeomedQ - Meropenem
Metronidazole IV	ANMF – Metronidazole	NeomedQ - Metronidazole
Piperacillin/Tazobactam IV Comment: Does not provide CNS cover – seek ID advice	ANMF – Piperacillin/Tazobactam	-
Tobramycin IV Comment: TDM required. Seek AMS/ Pharmacist advice.	ANMF – Tobramycin	-
Trimethoprim/ sulfamethoxazole PO Caution: Kernicterus risk in neonates – seek ID advice	ANMF – Trimethoprim/sulfamethoxazole	NeomedQ – Trimethoprim/sulfamethoxazole
Vancomycin IV Comment: TDM required. Seek AMS/ Pharmacist advice.	ANMF – Vancomycin	NeomedQ - Vancomycin

SUPPORTING DOCUMENTS

- [CHQ-PROC-01036 Antimicrobial: Prescribing and Management](#)
- [CHQ-GDL-01057 Antimicrobial treatment: Antibiotic duration and timing of the switch from intravenous to oral for common bacterial infections in children](#)
- [CHQ Antimicrobial restrictions](#)
- [CHQ-GDL-01076 Paediatric antibiotic allergy assessment, testing and de-labelling](#)
- [Pathology Queensland – Queensland Children's Hospital Antibigrams](#)
- [Pathology Queensland – All children at Queensland Public Hospitals Antibigrams](#)
- [Queensland Paediatric Statewide Sepsis Pathway](#)

CONSULTATION

Key stakeholders who reviewed this version:

<ul style="list-style-type: none"> • Service Group Director - Infection Management and Prevention service, Rheumatology and Immunology • Paediatric Surgeon • Paediatric Infection Specialist Consultant and Fellow Team (CHQ) 	<ul style="list-style-type: none"> • Paediatric Infection Specialist Consultant, Gold Coast University Hospital Clinical Pharmacist Lead - Antimicrobial Stewardship • Medicines Advisory Committee (CHQ) – endorsed 20/10/2022
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DEFINITIONS

Term	Definition
ABW	Actual body weight
AMS	Antimicrobial stewardship
CHQ	Children's Health Queensland
CNS	Central nervous system
CSF	Cerebral spinal fluid
IBW	Ideal body weight
iEMR	Integrated electronic medical record
ID	Infectious diseases team
IV	Intravenous
LP	Lumbar puncture
MRSA	Multi-resistant staphylococcus aureus
nmMRSA	Non multi-resistant staphylococcus aureus
QCH	Queensland Children's hospital
TDM	Therapeutic drug monitoring

REFERENCES

No.	Reference
1	Antibiotic Therapeutic Guidelines (14th Edition) Therapeutic Guidelines Committee, North Melbourne, Victoria (2021).
2	Taketomo CK eds. Pediatric Dosage Handbook International – available online: https://uptodate.chq.health.qld.gov.au/ [Accessed 25 August 2024]
3	The Australasian Neonatal Medicines Formulary Steering group. https://www.anmfonline.org/clinical-resources/ [Accessed 25 August 2024]
4	Bijleveld YA et al. Population Pharmacokinetics and Dosing Considerations for Gentamicin in Newborns with Suspected or Proven Sepsis Caused by Gram-Negative Bacteria. Antimicrobial Agents and Chemotherapy. 2017; 61 (1): e01304-16.

GUIDELINE REVISION AND APPROVAL HISTORY

Version No.	Modified by	Amendments authorised by	Approved by	Comments
2.0	Infectious Diseases Consultant-Antimicrobial Stewardship (Infection Management and Prevention Service)	Medicines Advisory Committee (CHQ)	General Manager Operations	
3.0 (04/08/2016)	Infectious Diseases Consultants (Infection Management and Prevention Service) Antimicrobial Stewardship Pharmacist (CHQ)	Medicines Advisory Committee (CHQ) Infectious Diseases Consultant team and Medical Lead - Antimicrobial Stewardship (Infection Management and Prevention Service)	General Manager Operations	
4.0 (30/11/2016)	Infectious Diseases Consultants (Infection Management and Prevention Service) Antimicrobial Stewardship Pharmacist (CHQ)	Medicines Advisory Committee (CHQ) Infectious Diseases Consultant team and Medical Lead - Antimicrobial Stewardship (Infection Management and Prevention Service)	Executive Director Hospital Services	
5.0 (11/10/2017)	Infectious Diseases Consultants (Infection Management and Prevention Service) Antimicrobial Stewardship Pharmacist (CHQ)	Medicines Advisory Committee (CHQ) Infectious Diseases Consultant team and Medical Lead - Antimicrobial Stewardship (Infection Management and Prevention Service)	Executive Director Hospital Services	
6.0 (12/03/2019)	Infectious Diseases Consultants (Infection Management and Prevention Service)	Medicines Advisory Committee (CHQ)	Executive Director Clinical Services (QCH)	

	Antimicrobial Stewardship Pharmacist (CHQ)			
7.0 (20/06/2019)	Director, Infection Management and Prevention Services Medical Lead, Antimicrobial Stewardship (QCH)	Medicines Advisory Committee (CHQ)	Executive Director Clinical Services (QCH)	
8.0 (10/06/2021)	Director, Infection Management and Prevention Services Clinical Pharmacist Lead, Antimicrobial Stewardship (QCH)	Medicines Advisory Committee (CHQ)	Executive Director Clinical Services (QCH)	
8.1 (21/09/2021)	Medical Lead, Paediatric Sepsis program Clinical Pharmacist Lead, Antimicrobial Stewardship (QCH)	Medicines Advisory Committee (CHQ)	Executive Director Clinical Services (QCH)	
9.0 (18/10/2022)	Clinical Pharmacist Lead, Antimicrobial Stewardship (QCH)	Director, Infection Management and Prevention Services	Divisional Director Medicine	
10.0 27/09/2024	Pharmacist Advanced – Antimicrobial Stewardship	Director, Infection Management and Prevention Services	Executive Director Medical Services	Scheduled review
10.1 12/12/2024	Pharmacist Advanced – Antimicrobial Stewardship			Minor change to correct typo
10.2 11/02/2025	Pharmacist Advanced – Antimicrobial Stewardship			Minor change to add revised risk assessment

Key words	Paediatric antibiocard, empirical, antimicrobial stewardship, sepsis, pneumonia, empyema, meningitis, CSF shunt infection, febrile neutropenia, non-neutropenia, community acquired, meningitis, encephalitis, pertussis, cholangitis, uncomplicated appendicitis, complicated appendicitis, necrotising enterocolitis, NEC, peritonitis, endocarditis, mastoiditis, retropharyngeal abscess, otitis media, tonsillitis, tracheitis, epiglottitis, compound fracture osteomyelitis, septic arthritis, cellulitis, periorbital cellulitis, orbital cellulitis, animal bites, wounds, UTI, urinary tract infection, pyelonephritis, giardiasis, pinworms, neonatal antibiotic dosing, therapeutic drug monitoring, ampicillin, amoxicillin, azithromycin, benzylpenicillin, gentamicin, cefotaxime, cefazolin, ceftriaxone, ciprofloxacin, clindamycin, vancomycin, gentamicin , flucloxacillin, mebendazole, cefalexin, clindamycin, trimethoprim/sulfamethoxazole, metronidazole, meropenem, piperacillin-tazobactam, lincomycin, amoxicillin/ clavulanic acid, therapeutic drug monitoring, TDM, area under the curve, AUC, nmMRSA, mrMRSA, ANMF, NeoMedQ, 01202
Accreditation references	<p>National Safety and Quality Health Service Standards (1-8):</p> <ul style="list-style-type: none"> • Standard 3 Preventing and Controlling Healthcare-Associated Infection, • Standard 4 Medication Safety