GUIDELINE

Ear, Nose, Throat and Dental Infections: Paediatric Empiric Guidelines

Scope (Staff):	Clinical Staff – Medical, Nursing, Pharmacy
Scope (Area):	Perth Children's Hospital (PCH)

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this disclaimer

- For patients who are severely unwell, the sepsis pathway should be followed.
- Discuss all patients below 4 weeks of age with the suspected or confirmed infections included in the table with Infectious Diseases.

CLINICAL SCENARIO		Usual duration	DRUGS/DOSES			
			Standard Protocol	Known or Suspected MRSA[a]	Low risk Penicillin allergy[b]	High risk Penicillin allergy[b]
Ear infections (low risk of CSOM)	Acute otitis media (no systemic features) **Child ≥4 weeks**	N/A	Acute otitis media is usually self-limiting and antibiotic treatment of Acute otitis media has limited benefit in those six (6) months and older with unilateral disease and no systemic features. A 'wait and watch' approach with symptom control (e.g. with paracetamol and/or ibuprofen) is recommended for these children. The Australian Commission on Safety and Quality in Healthcare has developed the following decision aid for consumers: Middle ear infection: Should my child take antibiotics? (safetyandquality.gov.au). **Antibiotic therapy may decrease the duration of symptoms in children:** • < 6 months old • < 2 years old with bilateral infection • With otorrhoea • Systemically unwell (e.g. lethargic, pale, very irritable) **Antibiotic therapy may prevent complications in:** • Immunocompromised children • Children with cochlear implants • Aboriginal and Torres Strait Islander children			

<table>
<tr><th colspan="2" rowspan="2">CLINICAL SCENARIO</th><th rowspan="2">Usual duration</th><th colspan="4">DRUGS/DOSES</th></tr>
<tr><th>Standard Protocol</th><th>Known or Suspected MRSA[a]</th><th>Low risk Penicillin allergy[b]</th><th>High risk Penicillin allergy[b]</th></tr>
<tr><td rowspan="2">Ear infections (low risk of CSOM)</td><td>Acute otitis media with systemic features (e.g. fever, vomiting, lethargy)
Child ≥4 weeks</td><td>5 days</td><td colspan="2">Oral amoxicillin 15 mg/kg/dose (to a maximum of 1 gram) 8 hourly
OR
For recurrent/unresponsive infection:
Oral amoxicillin/clavulanic acid 25 mg/kg/dose (to a maximum of 875 mg amoxicillin component) twice daily.</td><td>cefuroxime[c]
OR
consider amoxicillin challenge in discussion with immunology</td><td>cotrimoxazole[d]</td></tr>
<tr><td colspan="6">Those living in rural or remote Aboriginal communities where persistent disease and chronic perforation of the eardrum are common are at a higher risk of Chronic Suppurative Otitis Media (CSOM).
For remote and rural practice, consider referring to: CARPA Standard Treatment Manual for remote and rural practice.</td></tr>
<tr><td rowspan="3">Ear infections (Aboriginal or Torres Strait Islanders / high risk of CSOM)</td><td rowspan="2">Acute otitis media WITHOUT perforation
Child ≥4 weeks</td><td colspan="5">Consider antibiotic treatment if less than 2 years of age with bilateral disease and/or with a history of ear discharge or systemic features.</td></tr>
<tr><td>7 days</td><td colspan="2">Oral amoxicillin 15 mg/kg/dose (to a maximum of 1 gram) 8 hourly

IF no response after 4 to 7 days, increase to oral amoxicillin 30 mg/kg/dose (to a maximum of 1 gram) 8 hourly for a further 7 days.</td><td>cotrimoxazole[d]
OR
consider amoxicillin challenge in discussion with immunology</td><td>cotrimoxazole[d]</td></tr>
<tr><td>Acute otitis media WITH perforation
Child ≥4 weeks</td><td>Variable</td><td colspan="2">Oral amoxicillin 30 mg/kg/dose (to a maximum of 1 gram) 8 hourly for 14 days.</td><td>azithromycin[e] as a single dose and repeated after 7 days OR consider amoxicillin challenge in discussion with immunology</td><td>azithromycin[e] as a single dose and repeated after 7 days</td></tr>
<tr><td colspan="5">In patients with persistent perforation (>7 days) consider oral amoxicillin with clavulanic acid (25 mg/kg/dose - to a maximum of 875 mg amoxicillin component twice daily for seven days)</td></tr>
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<tr><th>Standard Protocol</th><th>Known or Suspected MRSA[a]</th><th>Low risk Penicillin allergy[b]</th><th>High risk Penicillin allergy[b]</th></tr>
<tr><td rowspan="4">Ear infections (Aboriginal or Torres Strait Islanders / high risk of CSOM)</td><td rowspan="2">Persistent otitis media with effusion OR Recurrent acute otitis media Child ≥4 weeks</td><td rowspan="2">3-6 months</td><td colspan="4">• Persistent otitis media with effusion defined as: presence of fluid in middle ear for >3 months without inflammation
• Recurrent acute otitis media (AOM) defined as: ≥3 episodes of AOM within 6 months OR ≥ 4 episodes in 12 months</td></tr>
<tr><td colspan="2">Consider
Oral amoxicillin 25 mg/kg/dose (to a maximum of 1 gram) 12 hourly</td><td>Consider amoxicillin challenge in discussion with immunology</td><td>Discuss with Infectious Diseases</td></tr>
<tr><td>Chronic suppurative otitis media (perforated eardrum and discharge >6 weeks) Child ≥4 weeks</td><td>Variable</td><td colspan="4">Cleaning and drying of the ear canal are important and must be done six (6) hourly and/or prior to the instillation of any ear drops.

Topical ciprofloxacin 0.3 % ear drops, instil 5 drops into the affected ear(s) 12 hourly until free of discharge for at least three (3) days.

Note: Ciproxin HC® (ciprofloxacin 0.2 % with hydrocortisone 1 %) ear drops should not be used routinely as there is inadequate evidence to support its use.</td></tr>
<tr><td rowspan="4">Mastoiditis</td><td rowspan="2">Acute Mastoiditis (<1 month duration) Child ≥4 weeks</td><td rowspan="2">12-15 days (IV and oral) min 5 days IV</td><td colspan="4">Antibiotics alone are not definitive management. Urgent referral to the ENT team is essential. Therapy may need to be modified on the basis of previous microbiology.</td></tr>
<tr><td>IV ceftriaxone 50 mg/kg/dose (to a maximum of 2 grams) once daily</td><td>ADD vancomycin[f] to standard protocol</td><td>As per standard protocol</td><td>Discuss with Infectious Diseases</td></tr>
<tr><td>Acute Mastoiditis (<1 month duration) – oral switch options Child ≥4 weeks</td><td>To complete total course of 12-15 days</td><td colspan="4">Switch to oral therapy based on available microbiological sensitivities following clinical improvement to complete a total duration of 12 to 15 days.</td></tr>
<tr><td colspan="2">If pathogen not identified: Oral amoxicillin/clavulanic acid 25 mg/kg/dose (to a maximum of 875 mg amoxicillin component) 12 hourly</td><td>Discuss with Infectious Diseases</td><td>cefuroxime[c] OR consider amoxicillin challenge in discussion with immunology</td><td>azithromycin[g]</td></tr>
</table>

CLINICAL SCENARIO		Usual duration	DRUGS/DOSES			
			Standard Protocol	Known or Suspected MRSA[a]	Low risk Penicillin allergy[b]	High risk Penicillin allergy[b]
Mastoiditis	Acute Mastoiditis (with history of chronic ear disease **OR** isolation of *Pseudomonas aeruginosa* from mastoid) **Child ≥4 weeks**	12-15 days (IV and oral) min 5 days IV	IV cefepime 50 mg/kg/dose (to a maximum of 2 grams) 8 hourly If concern regarding intracranial extension, discuss with Infectious Diseases.	**ADD** vancomycin[f] to standard protocol	As per standard protocol	Discuss with Infectious Diseases
Otitis externa	Otitis externa **Child ≥4 weeks**	7 days	Cleaning and drying of the ear canal are important and must be done six (6) hourly and / or prior to the instillation of any ear drops.			
			Oral antibiotic therapy is not indicated. Topical dexamethasone 0.05 % + framycetin 0.5 % + gramicidin 0.005 % (Sofradex®) ear drops. Instil 3 drops into the affected ear(s) three times a day.			
Perichondritis	Perichondritis **Child ≥4 weeks**	Variable	Oral ciprofloxacin 10 – 15 mg/kg/dose (to a maximum of 500 mg) given 12 hourly **OR** if systemically unwell; IV piperacillin/ tazobactam 100 mg/kg/dose (to a maximum of 4 grams piperacillin component) given 8 hourly	**ADD** oral cotrimoxazole[d] to standard protocol **OR** if systemically unwell add IV vancomycin[f] to standard protocol	As per standard protocol	Oral ciprofloxacin[h] **OR** if systemically unwell IV ciprofloxacin[i]
Sinusitis	Acute bacterial sinusitis (mild) **Child ≥4 weeks**	5 days based on clinical response	The majority of cases are due to acute viral rhinosinusitis and 80% resolve spontaneously or improve within two (2) weeks. Consider antibiotic treatment if: Purulent discharge for longer than seven (7) days, sinus tenderness, fever or worsening after an initial improvement. The Australian Commission on Safety and Quality in Healthcare has developed the following decision aid for consumers: Sinusitis: Should I take antibiotics? (safetyandquality.gov.au).			
			Consider Oral amoxicillin 15 mg/kg/dose (to a maximum of 500 mg) 8 hourly **or if inadequate response** Oral amoxicillin/clavulanic acid 25 mg/kg/dose (to a maximum of 875 mg amoxicillin component) 12 hourly		cefuroxime[c] **OR** consider amoxicillin challenge in discussion with immunology	doxycycline[k]

CLINICAL SCENARIO		Usual duration	DRUGS/DOSES			
			Standard Protocol	Known or Suspected MRSA[a]	Low risk Penicillin allergy[b]	High risk Penicillin allergy[b]
Sinusitis	Acute bacterial sinusitis (moderate or treatment failure with oral antibiotics >72 hours) **Child ≥4 weeks**	7-14 days based on clinical response	IV ceftriaxone 50 mg/kg/dose (to a maximum of 2 grams) once daily	**ADD** vancomycin[f] to standard protocol	As per standard protocol	Discuss with Infectious Diseases
	Acute bacterial sinusitis (severe: CNS complications) **Child ≥4 weeks**	Refer to ID	IV ceftriaxone 50 mg/kg/dose (to a maximum of 2 grams) 12 hourly **AND** IV metronidazole 12.5 mg/kg (to a maximum 500mg) 8 hourly	**ADD** vancomycin[f] to standard protocol	As per standard protocol	Discuss with Infectious Diseases
Dental infections	Superficial Dental infections **Child ≥4 weeks**	5 days	Oral antibiotics should be considered if there is infection that has caused facial swelling WITHOUT severe or systemic features. Antibiotics alone are not definitive management. Immediate referral to appropriate specialist dental services is essential.			
			Oral phenoxymethylpenicilllin 12.5 mg/kg/dose (to a maximum of 500 mg) 6 hourly **AND** Oral metronidazole 10 mg/kg/dose (to a maximum of 400 mg) 12 hourly		clindamycin[l] **OR** consider penicillin challenge in discussion with immunology	clindamycin[l]
	Deep dental infections **Child ≥4 weeks**	5 days IV and oral	IV antibiotics should be considered only if the infection has spread beyond the jaw and has produced facial swelling, or if there are systemic symptoms/ fever. Antibiotics alone are not definitive management. Immediate referral to appropriate specialist dental services is essential.			
			IV benzylpenicillin 50 mg/kg/dose (to a maximum of 1.8 grams) 4 hourly **AND** IV metronidazole 12.5 mg/kg/dose (to a maximum of 500 mg) 12 hourly		cefazolin[m] **AND** metronidazole[n]	clindamycin[o]

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<tr><td rowspan="4">Pharyngeal / retropharyngeal infections</td><td rowspan="2">Suspected or proven Group A Streptococcal Tonsillitis/ Pharyngitis
Child ≥4 weeks</td><td rowspan="2">Variable</td><td colspan="4">Antibiotic therapy is only recommended in the following patient groups:
• patients aged 2 to 25 years with sore throat in communities with a high incidence of acute rheumatic fever (e.g. Aboriginal or Torres Strait Islander children, Māori and Pacific Islander people, children from countries with a high burden of rheumatic fever e.g. refugees)
• patients of any age with existing rheumatic heart disease
• patients with scarlet fever.

The Australian Commission on Safety and Quality in Healthcare has developed the following decision aid: Sore throat: should I take antibiotics? | Australian Commission on Safety and Quality in Health Care.</td></tr>
<tr><td colspan="2">Consider
Oral phenoxymethylpenicilllin (Penicillin V) 15 mg/kg/dose (to a maximum of 500 mg) 12 hourly for 10 days
or
IM benzathine benzylpenicillin as a single dose
< 10kg: 450,000 units

≥ 10 kg - <20 kg: 600,000 units

≥20kg: 1,200,000 units</td><td>cefalexin[p] for 10 days
OR
consider penicillin challenge in discussion with immunology</td><td>azithromycin[q] for 5 days</td></tr>
<tr><td>Peritonsillar abscess (quinsy)
Child ≥4 weeks</td><td>10 days - IV and oral</td><td colspan="4">Antibiotics alone are not definitive management. Immediate referral to appropriate specialist surgical services is essential.</td></tr>
<tr><td></td><td></td><td colspan="2">IV benzylpenicillin 50 mg/kg/dose (to a maximum of 1.2 grams) 6 hourly
Consider oral switch 1-2 days following surgical drainage.</td><td>clindamycin[o]</td><td>clindamycin[o]</td></tr>
<tr><td>Peritonsillar abscess (quinsy) – oral switch options
Child ≥4 weeks</td><td>10 days - IV and oral</td><td colspan="2">Oral phenoxymethylpenicillin
15 mg/kg/dose (to a maximum of 500mg) 12 hourly</td><td>cefalexin[p]
OR
consider penicillin challenge in discussion with immunology</td><td>azithromycin[q]
OR
clindamycin[l]</td></tr>
<tr><td rowspan="2">Pharyngeal / retropharyngeal</td><td rowspan="2">Retropharyngeal abscess/ deep neck space infection (>3 months old)</td><td rowspan="2">10-14 days IV and oral</td><td colspan="4">Antibiotics alone are not definitive management. Immediate referral to appropriate specialist surgical services is essential</td></tr>
<tr><td>IV amoxicillin/clavulanic acid 25 mg/kg/dose (to a maximum of 1 gram amoxicillin component) 8 hourly</td><td>ADD
vancomycin[f] to standard protocol</td><td>cefazolin[m]
AND
metronidazole[n]</td><td>clindamycin[o]</td></tr>
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CLINICAL SCENARIO		Usual duration	DRUGS/DOSES			
			Standard Protocol	Known or Suspected MRSA[a]	Low risk Penicillin allergy[b]	High risk Penicillin allergy[b]
Pharyngeal / retropharyngeal	Retropharyngeal abscess/ deep neck space infection (>3 months old) Oral switch options	10-14 days IV and oral	Oral amoxicillin/clavulanic acid 25 mg/kg/dose (to a maximum of 875mg amoxicillin component) 12 hourly	clindamycin[l] **OR** cotrimoxazole[d]	clindamycin[l] **OR** consider amoxicillin challenge in discussion with immunology	clindamycin[l] **OR** cotrimoxazole[d]
	Cervical lymphadenitis		Refer to ChAMP Guidelines – Skin and soft tissue infections			
Tracheitis	Bacterial tracheitis **Child ≥4 weeks**	Variable	IV ceftriaxone 50 mg/kg/dose (to a maximum of 2 grams) once daily	**ADD** IV vancomycin[f] to standard protocol	As per standard protocol	Discuss with Infectious Diseases
Herpes simplex virus (HSV)	Primary herpetic gingivostomatitis in immunocompetent patient **Child ≥3 months**	5 to 7 days	Aciclovir or valaciclovir is proven to be beneficial for HSV gingivostomatitis if commenced within 72 hours of onset. Oral aciclovir: 10 mg/kg/dose (to a maximum of 200 mg) five (5) times daily. **OR** Oral valaciclovir: 20 mg/kg/dose (to a maximum of 1 gram) 12 hourly **OR** If unable to tolerate oral therapy consider: IV aciclovir ≥4 weeks: 10 mg/kg/dose (to a maximum of 750 mg) 8 hourly			
	Oral mucocutaneous or skin herpes simplex virus (HSV) – infrequent and severe recurrences	1 day	Adolescents ≥ 12 years: Oral valaciclovir: 2000 mg dose 12 hourly for 2 doses only. at the earliest symptoms of a cold sore.			

a. Children known or suspected to be colonised with MRSA may need to have their therapy/prophylaxis modified. Children suspected of having MRSA include:
   i. Children previously colonised with MRSA
   ii. Household contacts of MRSA colonised individuals
   iii. In children who reside in regions with higher MRSA rates (e.g. Kimberley, Pilbara and Goldfields) a lower threshold for suspected MRSA should be given
   iv. Children with recurrent skin infections or those unresponsive to ≥ 48 hours of beta-lactam therapy. For further advice, discuss with Microbiology or ID service

b. Refer to the ChAMP Beta-lactam Allergy Guideline:
   - Low risk allergy: a delayed rash (>1hr after initial exposure) without mucosal or systemic involvement (without respiratory distress and/or cardiovascular compromise).

- High risk allergy: an immediate rash (<1hr after exposure); anaphylaxis; severe cutaneous adverse reaction {e.g. Drug Rash with Eosinophilia and Systemic Symptoms (DRESS) and Stevens – Johnson syndrome (SJS) / Toxic Epidermal Necrolysis (TEN)} or other severe systemic reaction.

c. Oral cefuroxime: **15mg/kg/dose** (to a maximum of 500mg) twice daily
d. Oral cotrimoxazole **4mg/kg/dose** of trimethoprim component twice daily; equivalent to 0.5mL/kg/dose of the mixture. Maximum of 160mg trimethoprim component per dose.
e. Oral azithromycin **30mg/kg/dose** (to a maximum of 1000mg) as a single dose
f. IV vancomycin **15mg/kg/dose** (to a maximum initial dose of 750mg) 6 hourly. Therapeutic drug monitoring required.
g. Oral azithromycin **10mg/kg/dose** (to a maximum of 500mg) once daily
h. Oral ciprofloxacin **10mg/kg/dose** (to a maximum of 400mg) twice daily
i. IV ciprofloxacin **10mg/kg/dose** (to a maximum of 500mg) twice daily
j. IV cefepime **50mg/kg/dose** (to a maximum of 2 grams) 8 hourly
k. Oral doxycycline **2mg/kg/dose** (to a maximum of 100mg) 12 hourly.
l. Oral clindamycin **10mg/kg/dose** (to a maximum of 450mg) 8 hourly
m. IV cefazolin **50mg/kg/dose** (to a maximum of 2 grams) 8 hourly
n. IV metronidazole **12.5mg/kg/dose** (to a maximum of 500mg) 12 hourly
o. IV clindamycin **15mg/kg/dose** (to a maximum of 600mg) 8 hourly
p. Oral cefalexin **25mg/kg/dose** (to a maximum of 1 gram) 12 hourly
q. Oral azithromycin **12mg/kg/dose** (to a maximum of 500mg) for five (5) days

Related CAHS internal policies, procedures and guidelines

Antimicrobial Stewardship Policy

ChAMP Empiric Guidelines

References and related external legislation, policies, and guidelines *(if required)*

1. Shulman ST, Bisno AL, Clegg HW, Gerber MA, Kaplan EL, Lee G, Martin JM, Van Beneden C. Clinical Practice Guideline for the Diagnosis and Management of Group A Streptococcal Pharyngitis: 2012 Update by the Infectious Diseases Society of America. Clin Inf Dis. 2012 Sept;55(10).
2. Antibiotic Writing Group. eTG complete. West Melbourne: Therapeutic Guidelines Ltd; 2020. Available from: https://tgldcdp-tg-org-au.pklibresources.health.wa.gov.au/etgAccess.
3. BMJ Best Practice [Internet]. BMJ Publishing Group Limited. 2016 [cited 01/11/2019]. Available from: http://bestpractice.bmj.com.pklibresources.health.wa.gov.au/best-practice/welcome.html.
4. McMullen BJ et al. Antibiotic duration and timing of the switch from intravenous to oral route for bacterial infections in children: systematic review and guidelines. Lancet Infect Dis. 2016;16:e139-52.
5. Leach, A. J., et al. (2021). "Otitis media guidelines for Australian Aboriginal and Torres Strait Islander children: summary of recommendations." Med J Aust **214**(5): 228-233.

Useful resources (including related forms)

2020 Otitis Media Guidelines

This document can be made available in alternative formats on request.

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