GUIDELINE

Protracted Bacterial Bronchitis, Chronic Suppurative Lung Disease and Bronchiectasis – 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

- Where possible a sputum sample for culture should be collected prior to commencement of empiric antibiotic therapy. Children with bronchiectasis who are improving on empiric therapy do NOT require adjustment of therapy based on sputum culture. These results should be used to guide therapy in children who DO NOT respond to therapy who do NOT have *Pseudomonas aeruginosa* isolated for the first time.[1]
- All patients with presumed or confirmed bronchiectasis should be referred to a paediatric specialist.[1, 2]
- All patients should receive the annual influenza vaccine and patients with chronic suppurative lung disease and bronchiectasis are recommended to receive additional pneumococcal vaccination as per the WA immunisation schedule.
- Please contact the Infectious Diseases Department to discuss treatment at any stage.

Required monitoring:

- For children on courses of oral antibiotics beyond 2 weeks of therapy including either a beta lactam or fluoroquinolone antibiotic, recommend Full Blood Count (FBC), Electrolytes, Urea and Creatinine (EUC), and Liver Function Tests (LFTs) be done monthly. Monitoring for other medications should be conducted as per the relevant ChAMP monograph.

<table>
<tr><th rowspan="2">CLINICAL SCENARIO</th><th rowspan="2">Usual duration</th><th colspan="3">DRUGS/ DOSES</th></tr>
<tr><th>Standard Protocol</th><th>Low Risk Penicillin allergy[a]</th><th>High Risk Penicillin allergy[a]</th></tr>
<tr><td rowspan="2">Protracted bacterial bronchitis
(productive [wet or moist] cough in children that lasts for 4 weeks or longer)
Children ≥ 4 weeks of age</td><td rowspan="2">2 weeks</td><td>Oral amoxicillin/clavulanic acid 25 mg/kg/dose (based on amoxicillin component - to a maximum of 875 mg amoxicillin) given 12 hourly</td><td>Oral cefuroxime[b]</td><td>Oral cotrimoxazole[c]</td></tr>
<tr><td colspan="3">• If there is no resolution of symptoms after 2 weeks of antibiotic therapy, patients should be reviewed and consider extending treatment with the SAME antibiotic for another 2 weeks.[1, 3]
• Patients who do not respond to the 4 weeks therapy or who have more than 3 episodes in 12 months should be referred to a paediatric specialist.[1, 3]</td></tr>
<tr><td rowspan="2">Chronic suppurative lung disease
OR
Mild bronchiectasis exacerbation
(NO Pseudomonas aeruginosa isolated)
Children ≥ 4 weeks of age</td><td rowspan="2">2 weeks</td><td>Oral amoxicillin/clavulanic acid 25 mg/kg/dose (based on amoxicillin component - to a maximum of 875 mg amoxicillin) given 12 hourly
OR
Oral cefuroxime
≥ 3 months old: 15 mg/kg/dose (to a maximum of 500 mg) given 12 hourly
OR
Oral doxycycline
< 21 kg: 2.2 mg/kg (to a maximum of 50 mg) given 12 hourly
≥ 21 kg to < 26 kg: 50 mg given 12 hourly
≥ 26 kg to < 35kg: 75 mg given 12 hourly
≥ 35 kg 100 mg given 12 hourly</td><td>Oral cefuroxime[b]
OR
Oral doxycycline[d]</td><td>Oral cotrimoxazole[c]
OR
Oral doxycycline[d]</td></tr>
<tr><td colspan="3">• Where possible a sputum sample for culture should be collected prior to commencement of empiric antibiotic therapy. These results should be used to guide therapy in children who DO NOT respond to therapy.</td></tr>
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<tr><td>Chronic suppurative lung disease
OR
Mild bronchiectasis exacerbation (patient colonised with Pseudomonas aeruginosa)
Children ≥ 4 weeks of age</td><td>10 to 14 days</td><td colspan="3">Oral ciprofloxcin 15 to 20 mg/kg/dose (to a maximum of 750 mg) 12 hourly rounded down to the nearest portion of a tablet.</td></tr>
<tr><td></td><td></td><td colspan="3">• If Pseudomonas aeruginosa is newly isolated from lower tract sample consider eradication therapy (see below)
• Course may be shortened to 10 days if there is a rapid response to therapy (e.g. resolution of cough at 7 days)(1)</td></tr>
<tr><td rowspan="3">Chronic suppurative lung disease
OR
Severe bronchiectasis exacerbation (NO Pseudomonas aeruginosa isolated):
- Increased work of breathing
- Hypoxaemia
- No response to oral therapy
- Unable to tolerate oral therapy(1)

Children ≥ 4 weeks of age</td><td rowspan="3">Up to 14 days (IV and oral)</td><td colspan="3">For further information on the management of bronchiectasis, refer to Thoracic Society of Australia and New Zealand Guidelines:
Thoracic Society of Australia and New Zealand (TSANZ) position statement on chronic suppurative lung disease and bronchiectasis in children adolescents and adults in Australia and New Zealand.(2)</td></tr>
<tr><td>IV ceftriaxone 50 mg/kg/dose (to a maximum of 2 grams) 24 hourly
OR
Child ≥3 months old:
IV amoxicillin/clavulanic acid 25 mg/kg/dose (based on amoxicillin component - to a maximum of 1000 mg amoxicillin) given 8 hourly
For children < 3 months old, refer to the ChAMP monograph for dosing.</td><td>IV ceftriaxone[e]</td><td>IV moxifloxacin[f]</td></tr>
<tr><td colspan="3">• Where possible a sputum sample for culture should be collected prior to commencement of empiric antibiotic therapy. These results should be used to guide therapy in children who DO NOT respond to therapy who do NOT have Pseudomonas aeruginosa isolated for the first time.
• For oral switch options refer to mild bronchiectasis listed above.
• Course can be completed earlier than 14 days if a number of patient focused outcomes are met, including:
- Rapid response to treatment (e.g. resolution of cough at 7 days)
- Exacerbation NOT due to a first isolation of Pseudomonas aeruginosa</td></tr>
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<tr><td rowspan="2">Chronic suppurative lung disease
OR
Severe bronchiectasis exacerbation (patient colonised with Pseudomonas aeruginosa):
- Increased work of breathing
- Hypoxaemia
- No response to oral therapy
- Unable to tolerate oral therapy[(1)]
Children ≥ 4 weeks of age</td><td rowspan="2">10 to 14 days (IV and oral)</td><td>IV ceftazidime 50 mg/kg/dose (to a maximum of 2 grams) 8 hourly
OR
IV cefepime 50 mg/kg/dose (to a maximum of 2 grams) 8 hourly
OR
IV piperacillin/tazobactam 100 mg/kg/dose (to a maximum of 4 grams piperacillin component) 8 hourly

In patients who are not responding to empiric therapy, with severe disease or isolation of a multi-drug resistant Pseudomonas aeruginosa;
CONSIDER ADDING
IV tobramycin 7 mg/kg/dose (to a maximum of 560 mg) 24 hourly</td><td>IV ceftazidime[g]
OR
IV cefepime[h]

In patients who are not responding to empiric therapy, with severe disease or isolation of a multi-drug resistant Pseudomonas aeruginosa;
CONSIDER ADDING
IV tobramycin[i]</td><td>Discuss with Infectious Diseases</td></tr>
<tr><td colspan="3">• Course may be shortened to 10 days if there is a rapid response to therapy (e.g. resolution of cough at 7 days)[(1)]
• Oral switch to ciprofloxacin may be considered in patients with a susceptible strain.[(1)]</td></tr>
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<tr><td rowspan="2">Eradication of newly isolated Pseudomonas aeruginosa from lower tract sample and symptomatic[2]
Children ≥ 4 weeks of age</td><td rowspan="2">14 days</td><td>IV tobramycin dose as per ChAMP monograph
WITH
IV piperacillin/tazobactam 100 mg/kg/dose (to a maximum of 4 grams piperacillin component) 8 hourly
OR
IV ceftazidime 50 mg/kg/dose (to a maximum of 2 grams) 8 hourly
FOLLOWED BY
4 to 12 weeks of inhaled tobramycin dose as per ChAMP monograph</td><td>IV tobramycin[i]
WITH
IV ceftazidime[g]
FOLLOWED BY
4 to 12 weeks of inhaled tobramycin[j]</td><td>Discuss with Infectious Diseases</td></tr>
<tr><td colspan="3">• All patients with newly isolated Pseudomonas aeruginosa should be referred to a respiratory physician for eradication therapy[1, 2]
A lower airway specimen should be collected at the completion of inhaled therapy, if Pseudomonas aeruginosa is still present, the total course may be repeated.[2]</td></tr>
<tr><td>Frequent exacerbations (≥3 exacerbations or ≥2 hospitalisations in the preceding 12 months)</td><td>Up to 12 months</td><td colspan="3">CONSIDER
Oral azithromycin as an anti-inflammatory agent:
Child ≥ 1 – 6 years: 10 mg/kg/dose three times a week
Child ≥ 6 years: 25-40 kg: 250 mg three times a week
Child ≥ 6 years: ≥ 40 kg: 500 mg three times a week
OR
Children ≥ 1 year: 30 mg/kg/dose (to a maximum of 1.5 grams) once a week

Exclude non-tuberculosis mycobacterial infection prior to initiation and ensure regular clinical review to confirm benefit of ongoing azithromycin.</td></tr>
</table>

a) 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.

b) Oral cefuroxime **15 mg/kg/dose** (to a maximum of 500 mg) given twice daily. Refer to ChAMP monograph for suggested dose bands.

c) Oral cotrimoxazole 4 mg/kg/dose (to a maximum of 160 mg trimethoprim component) given twice daily. Equivalent to 0.5 mL/kg/dose (to a maximum of 20 mL) given twice daily.
d) Oral doxycycline - suggested dose bands:
   < 21 kg: 2.2 mg/kg (to a maximum of 50mg) given 12 hourly
   ≥ 21 kg to < 26 kg: 50 mg given 12 hourly
   ≥ 26 kg to < 35kg: 75 mg given 12 hourly
   ≥ 35 kg: 100 mg given 12 hourly
e) IV ceftriaxone 50 mg/kg/dose (to a maximum of 2 grams) given 24 hourly
f) IV moxifloxacin (≥ 3 months old) 10 mg/kg/dose (to a maximum of 400 mg) given 24 hourly
g) IV ceftazidime 50 mg/kg/dose (to a maximum of 2 grams) given 8 hourly
h) IV cefepime 50 mg/kg/dose (to a maximum of 2 grams) given 8 hourly
i) IV tobramycin 7 mg/kg/dose (to a maximum of 560 mg) given 24 hourly
j) Inhaled tobramycin (≥ 6 months) – refer to ChAMP monograph for dose.

References and related external legislation, policies, and guidelines

1. Antibiotic Writing Group. Therapeutic Guidelines - Antibiotic. West Melbourne: Therapeutic Guidelines Ltd; 2025. Available from: https://tgldcdp-tg-org-au.pklibresources.health.wa.gov.au/etgAccess.
2. Chang AB, Bell SC, Byrnes CA, Dawkins P, Holland AE, Kennedy E, et al. Thoracic Society of Australia and New Zealand (TSANZ) position statement on chronic suppurative lung disease and bronchiectasis in children, adolescents and adults in Australia and New Zealand. Respirology. 2023;28(4):339-49.
3. Marchant JM, Chang AB, Kennedy E, King D, Perret JL, Schultz A, et al. Cough in Children and Adults: Diagnosis, Assessment and Management (CICADA). Summary of an updated position statement on chronic cough in Australia. Med J Aust. 2024;220(1):35-45.

Useful resources (including related forms)

Thoracic Society of Australia and New Zealand (TSANZ) position statement on chronic suppurative lung disease and bronchiectasis in children adolescents and adults in Australia and New Zealand.

Cough in Children and Adults: Diagnosis and Management (CICADA) Australian Chronic Cough Position Statement Update

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

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