GUIDELINE

# Urinary Tract Infection – Paediatric

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|---|---|
| **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**

- The ages in this guideline refer to term neonates and older. For dosing in pre-term neonates or those with a corrected gestational age of 4 weeks or younger, contact infectious diseases or ChAMP for advice.
- In children who have previously isolated resistant Gram-negative bacteria (e.g. *Pseudomonas aeruginosa*, extended spectrum beta lactamase (ESBL) containing Gram-negative bacteria), contact infectious diseases for therapeutic advice.
- The following options are for empiric therapy and should be used whilst awaiting the results of culture and susceptibility testing.

| CLINICAL SCENARIO | Usual duration | DRUGS/DOSES | | |
|---|---|---|---|---|
| | | Standard Protocol | Low Risk Penicillin allergy[a] | High Risk Penicillin allergy[a] |
| Urinary Tract Infection<br>< 4 weeks old | | IV amoxicillin<br>**AND**<br>IV gentamicin<br>(doses as per neonatal guidelines) | IV cefotaxime[b]<br>(doses as per neonatal guidelines) | Discuss with ID or clinical microbiology service |

<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">Cystitis<br>(≥ 4 weeks old and systemically well)<br><br>Localising symptoms and afebrile</td><td rowspan="2">3 days</td><td>Oral cefalexin 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly<br>OR<br>Oral cotrimoxazole 4 mg/kg/dose (to a maximum of 160 mg trimethoprim component) 12 hourly</td><td>As per standard protocol</td><td>Oral cotrimoxazole[c] for 3 days<br>OR<br>Oral nitrofurantoin[d] for 5 days</td></tr>
<tr><td colspan="3">If cystitis symptoms are improving and culture and susceptibility testing demonstrate the organism is resistant to empiric therapy – a change in therapy is NOT required.</td></tr>
<tr><td rowspan="2">Non-severe Pyelonephritis<br>(≥ 3 months old)<br><br>- Nil risk factors for serious illness<br>- Able to tolerate oral therapy<br><br>For children <3 months, treat as severe pyelonephritis below</td><td rowspan="2">7-10 days</td><td>Oral amoxicillin/clavulanic acid 25 mg/kg/dose (to a maximum 875 mg amoxicillin component) 12 hourly<br>OR<br>Oral cefalexin 45 mg/kg/dose (to a maximum of 1500 mg) 8 hourly<br>OR<br>Oral cotrimoxazole 4 mg/kg (to a maximum of 160 mg trimethoprim component) 12 hourly</td><td>Oral cefalexin[e]<br>OR<br>Oral cotrimoxazole[c]</td><td>Oral cotrimoxazole[c]<br>OR<br>Oral ciprofloxacin[f]</td></tr>
<tr><td colspan="3">Empirical therapy should be modified based on susceptibility – use the narrowest spectrum of activity to which the organism is susceptible.</td></tr>
<tr><td rowspan="3">Severe pyelonephritis<br>≥ 4 weeks old<br>(e.g. with persistent tachycardia)<br><br>- Risk factors for serious illness<br>- Unable to tolerate oral therapy</td><td colspan="4">If concern of urosepsis – refer to Sepsis and Bacteraemia: paediatric</td></tr>
<tr><td rowspan="2">7-10 days (IV and oral)</td><td>IV amoxicillin 50 mg/kg/dose (to a maximum of 2 grams) 6 hourly<br>AND<br>IV gentamicin 7 mg/kg/dose to a maximum of 560 mg) given once daily</td><td>IV gentamicin[g]<br>OR<br>IV ceftriaxone[h]</td><td>As per standard protocol</td></tr>
<tr><td colspan="3">Patients should be switched to oral therapy (or narrower spectrum IV therapy if oral switch contraindicated) based on the results of culture and susceptibility results as soon as they are clinically stable and are able to tolerate oral therapy (usually within 24 to 72 hours).<br><br>If the patient is asymptomatic, there is no need for a post-treatment urine culture to demonstrate proof of cure.</td></tr>
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| CLINICAL SCENARIO | Usual duration | DRUGS/DOSES | | |
|---|---|---|---|---|
| | | Standard Protocol | Low Risk Penicillin allergy[a] | High Risk Penicillin allergy[a] |
| Urosepsis | Refer to Sepsis and Bacteraemia: paediatric | | | |
| Urinary Tract Infection prophylaxis<br><br>Children ≥ 4 weeks old | Antibiotic prophylaxis is not routinely recommended for children following their first episode of a urinary tract infection but may be considered for children with severe or recurrent UTIs or those with vesicoureteric reflux grades III to V.<br>In children who have previously isolated resistant Gram-negative bacteria (e.g. *Pseudomonas aeruginosa*, ESBL containing Gram-negative bacteria), contact infectious diseases/ clinical microbiology for advice on prophylaxis. | | | |
| | N/A | Oral cotrimoxazole 2 mg/kg (to a maximum of 80 mg trimethoprim component) 24 hourly at night<br>**OR**<br>Oral cefalexin 12.5 mg/kg (to a maximum of 250 mg) 24 hourly at night | As per standard protocol | Oral cotrimoxaxole[i]<br>**OR**<br>Oral nitrofuranotoin[j] |
| Epididymo-orchitis (If urinalysis negative)<br><br>Children ≥ 4 weeks old | Nil | If urinalysis is negative for leucocyte esterase and nitrate antibiotic therapy is not required - treat symptomatically with paracetamol or ibuprofen. | | |
| Epididymo-orchitis (If urinalysis positive)<br><br>Children ≥ 4 weeks old | 14 days (IV and oral) | If urinalysis is positive for leucocyte esterase or nitrite, ensure a mid=stream urine is taken for microscopy, culture and susceptibility and treat as for non-severe or severe pyelonephritis as appropriate.<br><br>For adolescent patients, consider sexually acquired infection and alter therapy accordingly. Refer to Sexually Transmitted Infections (PIC) | | |

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. Use doses as per neonatal guidelines for patients less than 4 weeks of age.

c. Oral cotrimoxazole **4 mg/kg/dose** (equivalent to 0.5 mL/kg/dose of oral suspension), trimethoprim component, to a maximum of 160 mg (equivalent to 20 mL of oral suspension), 12 hourly.

d. Oral nitrofurantoin **0.75 – 1.75 mg/kg/dose** (to a maximum of 100 mg) given four times daily for 5 days.

e. Oral cefalexin **45 mg/kg/dose** (to a maximum of 1500 mg) given 8 hourly.

f. Oral ciprofloxacin **10 – 15 mg/kg/dose** (to a maximum of 500 mg) given twice daily.

g. IV gentamicin **7 mg/kg/dose** (to a maximum of 560 mg) given ONCE daily. Therapeutic drug monitoring required.
h. IV ceftriaxone **50 mg/kg/dose** to a maximum of 2 grams, given once daily.
i. Oral cotrimoxazole **2 mg/kg/dose** (equivalent to 0.25 mL/kg/dose of oral suspension), trimethoprim component, to a maximum of 80 mg (equivalent to 10 mL of oral suspension), given once daily at night.
j. Oral nitrofurantoin **1 – 2 mg/kg/dose** (to a maximum of 100 mg) given once daily at bedtime.

| Related CAHS internal policies, procedures and guidelines |
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| Antimicrobial Stewardship Policy |
| ChAMP Empiric Guidelines |
| KEMH Neonatal Medication Protocols |
| Urine Specimen Collection |

## References and related external legislation, policies, and guidelines

1. Antibiotic Writing Group (2025). Therapeutic Guidelines - Antibiotic. West Melbourne, Therapeutic Guidelines Ltd.

2. McMullan BJ, Andresen D, Blyth CC, Avent ML, Bowen AC, Britton PN, Clark JE, Cooper CM, Curtis N, Goeman E, Hazelton B, Haeusler GM, Khatami A, Newcombe JP, Osowicki J, Palasanthiran P, Starr M, Lai T, Nourse C, Francis JR, Isaacs D, Bryant PA, ANZPID-ASAP group. Antibiotic duration and timing of the switch from intravenous to oral route for bacterial infections in children: systematic review and guidelines. The Lancet. Infectious diseases 16 (8) : e139 - 52(2016)

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

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