GUIDELINE

# Skin and Soft Tissue Infections - Paediatric Empiric Guidelines

| | |
|---|---|
| **Scope (Staff):** | Medical, Nursing and 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 management of cellulitis or soft tissue infection PLUS concern for sepsis, refer to Sepsis and Bacteraemia.

| QUICKLINKS | | | |
|---|---|---|---|
| Bites | Burns | Cellulitis | Impetigo |
| Lymphadenitis | Traumatic wounds | Traumatic wounds – immersed in water | Scabies |

| CLINICAL SCENARIO | | Usual duration | DRUGS/DOSES | | | |
|---|---|---|---|---|---|---|
| | | | Standard Protocol | Known or Suspected MRSA[a] | Low Risk Penicillin allergy[b] | High Risk Penicillin allergy[b] |
| Cellulitis, abscess or soft tissue infection | Cellulitis, abscess or soft tissue infection in neonates < 4 weeks old | 5-10 days | IV flucloxacillin[c] (dose as per neonatal guidelines) | vancomycin[c] (dose as per neonatal guidelines) | | |
| | Mild cellulitis, abscess or soft tissue infection in children ≥ 4 weeks old | 5 days | Oral cefalexin 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly **OR** Oral flucloxacillin 12.5 mg/kg/dose (to a maximum of 500 mg) 6 hourly | cotrimoxazole[d] | cefalexin[e] | cotrimoxazole[d] |

<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="6">Cellulitis, abscess or soft tissue infection</td><td rowspan="2">Moderate cellulitis, abscess or soft tissue infection OR patient unable to tolerate oral therapy in children ≥ 4 weeks old</td><td rowspan="2">5 to 10 days (oral + IV)</td><td>IV flucloxacillin 50 mg/kg/dose (to a maximum of 2 grams) 6 hourly<br>OR<br>IV cefazolin 50 mg/kg/dose 8 hourly</td><td>ADD vancomycin[h] to standard protocol</td><td>cefazolin[f]</td><td>cotrimoxazole[d]</td></tr>
<tr><td colspan="4">IV therapy is often only required for up to 48 hours. Oral switch can be considered as soon as patient is ready (clinically stable, can tolerate oral therapy, abscess drained or cellulitis improving).<br>For oral switch options refer to mild cellulitis, abscess or soft tissue infection ≥ 4 weeks old above.</td></tr>
<tr><td rowspan="2">Moderate to severe cellulitis suitable for management on HiTH in children ≥ 4 weeks old</td><td rowspan="2">5 to 10 days (oral + IV)</td><td colspan="4">Refer to HiTH Common Conditions and Referral Pathways</td></tr>
<tr><td>IV ceftriaxone 50 mg/kg/dose (to a maximum of 2 grams) given ONCE daily</td><td>Not suitable for early HiTH referral</td><td>As per standard protocol</td><td>Discuss with Infctious Diseases</td></tr>
<tr><td rowspan="2">Severe skin and soft tissue infection in children ≥ 4 weeks old</td><td rowspan="2">Discuss with Infectious Diseases</td><td>IV flucloxacillin 50 mg/kg/dose (to a maximum of 2 grams) 6 hourly<br>AND<br>IV vancomycin 15 mg/kg/dose (to a maximum initial dose of 750 mg) 6 hourly</td><td>As per standard protocol</td><td>cefazolin[f]<br>AND<br>vancomycin[h]</td><td>vancomycin[h]<br>AND<br>clindamycin[g]</td></tr>
<tr><td colspan="4">If features of toxic shock syndrome or suspected/proven Streptococcus pyogenes necrotising fasciitis ADD clindamycin[g] and consider early IV Immunoglobulin (IVIG) in discussion with Infectious Diseases.<br><br>In suspected/proven polymicrobial necrotising fasciitis - see below:<br>Suspected or proven polymicrobial necrotising fasciitis</td></tr>
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<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"></td><td rowspan="2">Suspected or proven polymicrobial necrotising fasciitis/ Fournier's gangrene in children ≥ 4 weeks old</td><td rowspan="2">Discuss with Infectious Diseases</td><td colspan="4">Surgical removal of devitalised tissue and urgent antibiotic therapy are essential<br><br>Discuss ALL patients with Infectious Diseases</td></tr>
<tr><td>IV meropenem<br>20 mg/kg/dose (to a maximum of 1 gram)<br>8 hourly<br>AND<br>IV vancomycin<br>15 mg/kg/dose (to a maximum initial dose of 750 mg) 6 hourly<br>AND<br>IV clindamycin<br>15 mg/kg/dose (to a maximum of 600 mg)<br>8 hourly</td><td colspan="2">As per standard protocol</td><td>Discuss with Infectious Diseases</td></tr>
<tr><td>Decolonisation</td><td>Recurrent skin and soft tissue infection due to Staphylococcus aureus (cellulitis, abscess, boils etc)</td><td>5 days</td><td colspan="4">Consider decolonising patients and household members to reduce staphylococcal carriage after acute lesions have healed.<br><br>Refer to: Staphylococcus aureus decolonisation - Paediatric</td></tr>
<tr><td></td><td>Periorbital cellulitis</td><td colspan="5">Refer to: Eye Infections empiric guidelines</td></tr>
<tr><td></td><td>Bilateral cervical lymphadenitis</td><td colspan="5">Bilateral cervical lymphadenitis is often of viral eitiology and resolves within one to two weeks. Antibiotic therapy is not required.</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="2">Lymphadenitis</td><td rowspan="2">Mild unilateral cervical lymphadenitis in children<br>≥ 4 weeks old</td><td rowspan="2">7<br>days</td><td>Oral cefalexin<br>20 mg/kg/dose<br>(to a maximum of 750 mg)<br>8 hourly<br>OR<br>Oral flucloxacillin<br>12.5 mg/kg/dose (to a maximum of 500 mg)<br>6 hourly</td><td>cotrimoxazole[d]</td><td>cefalexin[e]</td><td>cotrimoxazole[d]</td></tr>
<tr><td colspan="4">Consider adding<br>Oral metronidazole 10 mg/kg/dose (to a maximum of 400 mg) 12 hourly in patients with poor oral hygiene or periodontal disease</td></tr>
<tr><td rowspan="2">Lymphadenitis</td><td rowspan="2">Moderate to severe unilateral cervical lymphadenitis OR patient requiring IV therapy in children<br>≥ 4 weeks old</td><td rowspan="2">7 days<br>(oral + IV)</td><td>IV flucloxacillin<br>50 mg/kg/dose<br>(to a maximum of 2 grams)<br>6 hourly</td><td>ADD<br>vancomycin[h]<br>to standard protocol</td><td>cefazolin[f]</td><td>vancomycin[h]</td></tr>
<tr><td colspan="4">Consider adding<br>Oral metronidazole 10 mg/kg/dose (to a maximum of 400 mg) 12 hourly in patients with poor oral hygiene or periodontal disease<br><br>Course may be completed before 7 days if clinically resolved. For oral switch options refer to mild cervical lymphadenitis above.</td></tr>
<tr><td rowspan="2">Lymphadenitis</td><td rowspan="2">Lymphadenitis in children ≥ 3 months old. Not systemically unwell and suitable for management on HiTH</td><td rowspan="2">7 days<br>(oral + IV)</td><td colspan="4">Refer to HiTH Common Conditions and Referral Pathways</td></tr>
<tr><td>IV ceftriaxone<br>50 mg/kg/dose (to a maximum of 2 grams) given ONCE daily</td><td>Not suitable for early HiTH referral</td><td>As per standard protocol</td><td>Discuss with Infectious Diseases</td></tr>
<tr><td>Impetigo</td><td>Impetigo – mild / localised (≤ 2 lesions) in children ≥ 4 weeks old</td><td>5 days</td><td>Topical mupirocin 2% ointment apply 8 hourly</td><td colspan="3">As per standard protocol</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>Impetigo</td><td>Impetigo > 2 lesions in children ≥ 4 weeks old</td><td>3 days</td><td>Oral cotrimoxazole<br>4 mg/kg/dose (to a maximum of 160 mg trimethoprim component) twice daily for THREE days<br>OR<br>Single dose of IM Benzathine benzylpenicillin.<br>Refer to monograph for dosing</td><td colspan="3">cotrimoxazole<br>doses as per standard protocol</td></tr>
<tr><td>Scabies</td><td>Scabies</td><td>Treatment for scabies needs to occur on days 1 and 7 for topical and oral therapies</td><td colspan="4">Children < 2 months of age: Topical crotamiton 10% cream over whole face (excluding mouth, lips and eyes) and body. Topical permethrin 5% can be used if crotamiton not available. Leave on for 6-8 hours then wash off. Application should be repeated after 7 days.<br><br>Children ≥ 2 months of age: Topical permethrin 5% - apply over the entire face (excluding mouth, lips and eyes) and body. Leave on for 8 to 12 hours then wash off. Application should be repeated after 7 days.<br>OR<br>Children ≥ 15 kg: Oral ivermectin 0.2 mg/kg/dose as a single dose on days 1 and 7. Suggested dose bands:
<table>
<tr><th>Weight</th><th>Rounded dose</th></tr>
<tr><td>15 – 24 kg</td><td>3 mg (1 tablet)</td></tr>
<tr><td>25 – 35 kg</td><td>6 mg (2 tablets)</td></tr>
<tr><td>36 – 50 kg</td><td>9 mg (3 tablets)</td></tr>
<tr><td>51 – 65 kg</td><td>12 mg (4 tablets)</td></tr>
<tr><td>66 – 79 kg</td><td>15 mg (5 tablets)</td></tr>
<tr><td>≥ 80 kg</td><td>0.2 mg/kg</td></tr>
</table>
Further information is available in the National Healthy Skin Guideline – 2nd edition</td></tr>
<tr><td>Tinea</td><td>Tinea – small localised infections</td><td>variable</td><td colspan="4">Topical terbinafine 1% cream - apply twice daily to the affected area(s) for two weeks or until resolved<br>Note: terbinafine is not routinely used in children under 12 months of age or those weighing less than 10kg. Contact Infectious Diseases for advice.<br>OR<br>Topical miconazole 2% cream - apply twice daily to the affected area(s) for four to six weeks and for two weeks after rash has cleared.</td></tr>
</table>

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|---|---|---|---|---|---|---|
| | | | Standard Protocol | Known or Suspected MRSA[a] | Low Risk Penicillin allergy[b] | High Risk Penicillin allergy[b] |
| Tinea | Tinea – generalised infections OR infections affecting the scalp or nails | Skin: 2 to 4 weeks<br>Scalp: 4 to 6 weeks<br>Nails: until clinical clearance | Oral terbinafine<br>≥ 10 – 20 kg: 62.5 mg once daily<br>≥ 20 to 40 kg: 125 mg (three quarters of a tablet) once daily<br>≥ 40 kg: 250 mg once daily<br>Note: terbinafine is not routinely used in children under 12 months of age or those weighing less than 10kg. Contact Infectious Diseases for advice. | | | |
| Head Lice | Head lice | Single application followed by a second application after 1 week | There are a multitude of preparations available, the National Healthy Skin Guidelines 2nd edition recommend:<br>Topical dimeticone 4% lotion<br>**OR**<br>Topical malathion 0.5% shampoo<br>Refer to individual product packaging for application instructions<br>Application of topical treatment must be completed in combination with thorough combing of the hair with a head lice comb to remove live lice and eggs. | | | |
| Bites | Bites, scratches exposed to saliva or neural tissue from mammals (e.g. dog, cat, monkey or bat) in rabies-endemic regions | Refer to Rabies and Lyssavirus guideline for bites at risk of Rabies and lyssavirus | | | | |
| | Human and Animal Bites - presumptive therapy or localised infection in children ≥ 4 weeks old | 3 days - presumptive therapy<br>5 days - local infection | Oral amoxicillin/clavulanic acid 25 mg/kg/dose (to a maximum of 875 mg of amoxicillin component) 12 hourly | Discuss with Infectious Diseases | cotrimoxazole[d] **AND** metronidazole[i] **OR** consider amoxicillin challenge in discussion with immunology | cotrimoxazole[d] **AND** metronidazole[i] |
| | | | Tetanus immunisation history needs to be reviewed. Consider the need for tetanus prophylaxis as per Tetanus prone wounds. | | | |
| Bites | Bites - Systemic features or deep tissue involvement in | 14 days (IV + oral) | IV amoxicillin/clavulanic acid[j] | **ADD** vancomycin[h] to standard protocol | ceftriaxone[k] **AND** metronidazole[l] | ciprofloxacin[m] **AND** clindamycin[g] |

| CLINICAL SCENARIO | | Usual duration | DRUGS/DOSES | | | |
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| | | | Standard Protocol | Known or Suspected MRSA[a] | Low Risk Penicillin allergy[b] | High Risk Penicillin allergy[b] |
| | children ≥ 4 weeks old | | For oral step down options refer to human or animal bites, presumptive therapy or localised infection above.<br>Tetanus immunisation history needs to be reviewed. Consider the need for tetanus prophylaxis as per Tetanus prone wounds. | | | |
| Traumatic wounds | Traumatic wound – no significant contamination / no surgical debridement required | Nil | Antibiotic prophylaxis not routinely required.<br>Refer to Surgical prophylaxis: Skin and soft tissue for traumatic wounds requiring surgical debridement | | | |
| | Traumatic wound - mildly contaminated in children ≥ 4 weeks old | 1 to 3 days prophylaxis<br>5 days local infection | Oral cefalexin<br>20 mg/kg/dose<br>(to a maximum of 750 mg)<br>8 hourly<br>**OR**<br>Oral flucloxacillin<br>12.5 mg/kg/dose (to a maximum of 500 mg)<br>6 hourly | cotrimoxazole[d] | cefalexin[e] | cotrimoxazole[d] |
| | Traumatic wound infection with systemic features or involving deep tissue in children ≥ 4 weeks old | 5 to 7 days (IV +oral) | IV cefazolin 50 mg/kg/dose (to a maximum of 2000 mg) 8 hourly<br>**OR IF** heavily contaminated or significant tissue maceration use:<br>IV amoxicillin/clavulanic acid[j] | Discuss with Infectious Diseases | cefazolin[f]<br>If heavily contaminated or significant tissue maceration<br>**ADD**<br>metronidazole[l] | clindamycin[g] |
| | | | Refer to: Traumatic wound - mildly contaminated (above) for oral switch options | | | |

| CLINICAL SCENARIO | | Usual duration | DRUGS/DOSES | | | |
|---|---|---|---|---|---|---|
| | | | Standard Protocol | Known or Suspected MRSA[a] | Low Risk Penicillin allergy[b] | High Risk Penicillin allergy[b] |
| Water-immersed wounds | Local infection of sea-water immersed wound **OR** Localised infection of fresh, brackish or aquarium water immersed wounds in children ≥ 4 weeks old | 5 days | Oral cotrimoxazole 8 mg/kg/dose (to a maximum of 320 mg trimethoprim component) twice daily **OR** Children ≥ 2 years: Oral doxycycline monotherapy 1 – 2 mg/kg/dose (to a maximum of 100 mg) twice daily | cotrimoxazole[d] | As per standard protocol | cotrimoxazole[d] |
| | Localised infection of soil or sewerage contaminated water immersed wounds in children ≥ 4 weeks old | 5 days | Oral cotrimoxazole 8 mg/kg/dose (to a maximum of 320 mg trimethoprim component) twice daily **AND** Oral metronidazole 10 mg/kg/does (to a maximum of 400 mg) twice daily | As per standard protocol | | |
| | Severe wounds with water exposure (sea, fresh, brackish or aquarium) or localised infection with systemic features in children ≥ 4 weeks old | 5 to 7 days (IV and oral) | IV flucloxacillin 50 mg/kg/dose (to a maximum of 2 grams) 6 hourly **AND** IV ciprofloxacin 10 mg/kg/dose (to a maximum of 400 mg) 8 hourly | **ADD** vancomycin[h] to standard protocol | cefazolin[f] **AND** ciprofloxacin[m] | clindamycin[g] **AND** ciprofloxacin[m] |
| | Severe wounds exposed to soil or sewerage contaminated water (including shark or crocodile bites) in children ≥ 4 weeks old | Discuss with Infectious Diseases | IV cefepime 50 mg/kg/dose (to a maximum of 2 grams) 8 hourly **AND** IV metronidazole 12.5 mg/kg/dose (to a maximum of 500 mg) 12 hourly | **ADD** vancomycin[h] to standard protocol | As per standard protocol | clindamycin[g] **AND** ciprofloxacin[m] |

| CLINICAL SCENARIO | | Usual duration | DRUGS/DOSES | | | |
|---|---|---|---|---|---|---|
| | | | Standard Protocol | Known or Suspected MRSA[a] | Low Risk Penicillin allergy[b] | High Risk Penicillin allergy[b] |
| Burns | Burns – colonisation without features of infection | Nil | Antibiotic therapy is not routinely recommended for colonisation of burns without signs of infection | | | |
| | Infected burns – early infection (<1 week post injury) in children ≥ 4 weeks old | Discuss with ID | IV cefazolin 25 mg/kg/dose (to a maximum of 2 grams) 8 hourly | **ADD** vancomycin[h] to standard protocol | As per standard protocol | Discuss with Infectious Diseases |
| | Infected burns – late infection (>1 week post injury) in children ≥ 4 weeks old | Discuss with ID | Adjust empiric therapy based on previous wound swabs<br><br>IF suspected pseudomonal / environmental Gram negative infection **USE** IV cefepime 50 mg/kg/dose (to a maximum of 2 grams) 8 hourly | **ADD** vancomycin[h] to standard protocol | As per standard protocol | Discuss with Infectious Diseases |
| | Burns – with features of sepsis | | Refer to Sepsis and Bacteraemia: Healthcare associated sepsis | | | |

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. Check for MicroAlert B or C on ICM.
   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 Infectious Diseases.

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. Doses as per neonatal guidelines

d. Oral cotrimoxazole **4 mg/kg/dose of trimethoprim component 12 hourly; equivalent to 0.5 mL/kg/dose of mixture**, (maximum of 160 mg trimethoprim component per dose)

e. Oral cefalexin **20 mg/kg/dose** (to a maximum of 750 mg) 8 hourly.

f. IV cefazolin **50 mg/kg/dose** (to a maximum of 2 grams) 8 hourly.

g. IV clindamycin **15 mg/kg/dose** (to a maximum of 600 mg) 8 hourly.

h. IV vancomycin **15 mg/kg/dose** (to a maximum initial dose of 750 mg) 6 hourly. Therapeutic drug monitoring required.

i. Oral metronidazole **10 mg/kg/dose** (to a maximum of 400 mg) 12 hourly.

j. IV amoxicillin/clavulanic acid (doses based on amoxicillin component)

- Birth (term) to 3 months and < 4kg: IV infusion **25 mg/kg/dose** 12 hourly.
- Birth (term) to 3 months and > 4kg: IV infusion **25 mg/kg/dose** 8 hourly.
- 3 months and < 40kg: IV **25 mg/kg/dose** (maximum 1 gram) 8 hourly; increase to 6 hourly in severe infections.
- > 40kg: IV **1 gram 8 hourly**; increase to 6 hourly in severe infections. Up to 2 grams every 6-8 hours can be used.

k. IV ceftriaxone **50 mg/kg/dose** (to a maximum of 2 grams) 24 hourly

l. IV metronidazole **12.5 mg/kg/dose** (to a maximum of 500 mg) 12 hourly.

m. IV ciprofloxacin **10 mg/kg/dose** (to a maximum of 400 mg) 8 hourly. ChAMP approval required

## Related CAHS internal policies, procedures and guidelines

Antimicrobial Stewardship Policy (Medication Management Manual)

ChAMP Empiric Guidelines

Neonatal Medication Protocols

ChAMP Monographs

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

1. Antibiotic Writing Group. Therapeutic Guidelines - Antibiotic. West Melbourne: Therapeutic Guidelines Ltd; 2022. Available from: https://tgldcdp-tg-org-au.pklibresources.health.wa.gov.au/etgAccess.
2. The Australian Healthy Skin Consortium. National Healthy Skin guidelines: for the Diagnosis, Treatment and Prevention of Skin Infections for Aboriginal and Torres Strait Islander Children and Communities in Australia. 2023;2nd Edition.

## Useful resources (including related forms)

National Healthy Skin Guideline: For the Diagnosis, Treatment and Prevention of Skin Infections for Aboriginal and Torres Strait Islander Children and Communities in Australia. 2nd Edition.

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

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|---|---|---|---|
| File Path: | W:\Safety & Quality\CAHS\CLOVERS MEDICAL Pharmacy\Procedures Protocols and Guidelines\ChAMP | | |
| Document Owner: | Head of Department – Infectious Diseases | | |
| Reviewer / Team: | Children's Antimicrobial Management Program | | |
| Date First Issued: | October 2013 | Last Reviewed: | March 2024 |
| Amendment Dates: | April 2020, June 2020, March 2024 | Next Review Date: | November 2026 |
| Approved by: | Drug and Therapeutics Committee | Date: | November 2023 |
| Endorsed by: | Chair, Drug and Therapeutics Committee | Date: | November 2023 |
| Aboriginal Impact Statement and Declaration (ISD) | | Date ISD approved: | August 2023 |
| Standards Applicable: | NSQHS Standards:<br>NSMHS: N/A<br>Child Safe Standards: N/A | | |

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Compassion | Excellence | Collaboration | Accountability | Equity | Respect

Neonatology | Community Health | Mental Health | Perth Children's Hospital