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.

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 < 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 ≥ 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]

QUICKLINKS

Bites	Burns	Cellulitis	Impetigo
Lymphadenitis	Traumatic wounds	Traumatic wounds – immersed in water	Footnotes

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	Moderate cellulitis, abscess or soft tissue infection **OR** patient unable to tolerate oral therapy ≥ 4 weeks old	5 to 10 days (oral + IV)	IV flucloxacillin 50 mg/kg/dose (to a maximum of 2 grams) 6 hourly **OR** IV cefazolin 50 mg/kg/dose 8 hourly	**ADD** vancomycin[h] to standard protocol	cefazolin[f]	cotrimoxazole[d]
			IV therapy is often only required for up to 48 hours. Oral switch can be consided as soon as patient is ready (clinically stable, can tolerate oral therapy, abscess drained or cellulitis improving) . For oral switch options refer to mild cellulitis, abscess or soft tissue infection ≥ 4 weeks old above.			
	Moderate to severe cellulitis suitable for management on HiTH ≥ 4 weeks old	5 to 10 days (oral + IV)	Refer to HiTH Common Conditions and Referral Pathways			
			IV ceftriaxone 50 mg/kg/dose (to a maximum of 2 grams) given ONCE daily	Not suitable for early HiTH referral	As per standard protocol	Discuss with ID or Clinical Microbiology
	Severe skin and soft tissue infection	refer to ID	IV flucloxacillin 50 mg/kg/dose (to a maximum of 2 grams) 6 hourly **AND** IV vancomycin 15 mg/kg/dose (to a maximum initial dose of 750 mg) 6 hourly	As per standard protocol	cefazolin[f] **AND** vancomycin[h]	vancomycin[h] **AND** clindamycin[g]
			If features of toxic shock syndrome or suspected/proven *Streptococcus pyogenes* necrotising fasciitis ADD clindamycin[g] and consider early IVIG in discussion with Infectious Diseases. In suspected/proven polymicrobial necrotising fasciitis - see below: Suspected or proven polymicrobial necrotising fasciitis			

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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]
	Suspected or proven polymicrobial necrotising fasciitis/ Fournier's gangrene	refer to ID	Surgical removal of devitalised tissue and urgent antibiotic therapy are essential Discuss ALL patients with Infectious Diseases			
			IV meropenem 20 mg/kg/dose (to a maximum of 2 grams) 8 hourly **AND** IV vancomycin 15 mg/kg/dose (to a maximum initial dose of 750 mg) 6 hourly **AND** IV clindamycin 15 mg/kg/dose (to a maximum of 600 mg) 8 hourly	As per standard protocol		Discuss with Infectious Diseases
Decolonisation	Recurrent skin and soft tissue infection due to *Staphylococcus aureus* (cellulitis, abscess, boils etc)	5 days	Consider decolonising patients and household members to reduce staphylococcal carriage after acute lesions have healed. Refer to: Staphylococcus aureus decolonisation - Paediatric			
	Periorbital cellulitis	Refer to: Eye Infections empiric guidelines				
	Bilateral cervical lymphadenitis	Bilateral cervical lymphadenitis is often of viral eitiology and resolves within one to two weeks. Antibiotic therapy is not required.				

QUICKLINKS			
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Lymphadenitis	**Traumatic wounds**	**Traumatic wounds – immersed in water**	**Footnotes**

<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">Lymphadenitis ≥4 weeks old</td><td rowspan="2">Mild unilateral cervical lymphadenitis ≥ 4 weeks</td><td rowspan="2">7 days</td><td>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</td><td>cotrimoxazole[d]</td><td>cefalexin[e]</td><td>cotrimoxazole[d]</td></tr>
<tr><td colspan="4">Consider the addition of anaerobic cover in patients with periodontal disease or poor oral hygiene. Call Infectious Diseases for advice.</td></tr>
<tr><td rowspan="4">Lymphadenitis ≥4 weeks old</td><td rowspan="2">Moderate to severe unilateral cervical lymphadenitis OR patient requiring IV therapy</td><td rowspan="2">7 days (oral + IV)</td><td>IV flucloxacillin
50 mg/kg/dose
(to a maximum of 2 grams)
6 hourly</td><td>ADD
vancomycin[h]
to standard protocol</td><td>cefazolin[f]</td><td>vancomycin[h]</td></tr>
<tr><td colspan="4">Course may be completed before 7 days if clinically resolved. For oral switch options refer to mild cervical lymphadenitis above.

Consider the addition of anaerobic cover in patients with periodontal disease or poor oral hygiene. Call Infectious Diseases for advice.</td></tr>
<tr><td rowspan="2">Lymphadenitis in a child ≥ 3 months old. Not systemically unwell and suitable for management on HiTH</td><td rowspan="2">7 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 Infectious Diseases</td></tr>
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QUICKLINKS			
Bites	**Burns**	**Cellulitis**	**Impetigo**
Lymphadenitis	**Traumatic wounds**	**Traumatic wounds – immersed in water**	**Footnotes**

CLINICAL SCENARIO		Usual duration	DRUGS/DOSES			
			Standard Protocol	Known or Suspected MRSA[a]	Low Risk Penicillin allergy[b]	High Risk Penicillin allergy[b]
Impetigo ≥4 weeks old	Impetigo – mild/ localised (≤ 2 lesions)	5 days	Topical mupirocin 2% ointment apply 8 hourly	As per standard protocol		
	Impetigo > 2 lesions or endemic settings, recurrent and/or risk of ARF/ PSGN ¥	3 days	Oral cotrimoxazole 4 mg/kg/dose (to a maximum of 160 mg trimethoprim component) twice daily for THREE days **OR** Single dose of IM Benzathine benzylpenicillin. Refer to monograph for dosing	cotrimoxazole doses as per standard protocol		
Bites ≥4 weeks old	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				
	Bites - presumptive therapy or localised infection	3 days - presumptive therapy 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.			

QUICKLINKS

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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]
Bites ≥4 weeks old	Bites - Systemic features or deep tissue involvement	14 days (IV + oral)	IV amoxicillin/clavulanic acid[m]	**ADD** vancomycin[h] to standard protocol	ceftriaxone[k] **AND** metronidazole[l]	ciprofloxacin[m] **AND** clindamycin[g]
			For oral step down options refer to bites, presumptive therapy or localised infection above. Tetanus immunisation history needs to be reviewed. Consider the need for tetanus prophylaxis as per Tetanus prone wounds.			
Traumatic wounds ≥ 4	Traumatic wound – no significant contamination / no surgical debridement required	Nil	Antibiotic prophylaxis not routinely required. Refer to Surgical prophylaxis: Skin and soft tissue for traumatic wounds requiring surgical debridement			
Traumatic wounds ≥ 4 weeks old	Traumatic wound - mildly contaminated	1 to 3 days prophylaxis 5 days local infection	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]
	Traumatic wound infection with systemic features or involving deep tissue	5 to 7 days (IV +oral)	IV cefazolin 50 mg/kg/dose (to a maximum of 2000 mg) 8 hourly **OR IF** heavily contaminated or significant tissue maceration use: IV amoxicillin/clavulanic acid[m]	Discuss with Infectious Diseases	cefazolin[f] If heavily contaminated or significant tissue maceration **ADD** metronidazole[l]	clindamycin[g]
			Refer to: Traumatic wound - mildly contaminated (above) for oral switch options			

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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]
Water-immersed wounds ≥4 weeks old	Local infection of sea-water immersed wound **OR** Localised infection of fresh, brackish or aquarium water immersed wounds	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	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		
Water-immersed wounds ≥4 weeks old	Severe wounds with water exposure (sea, fresh, brackish or aquarium) or localised infection with systemic features	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)	Refer to ID	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]

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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]
Burns ≥4 weeks old	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)	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)	Discuss with ID	Adjust empiric therapy based on previous wound swabs 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
   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. 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

¥ Children living in remote Indigenous communities or with previous acute rheumatic fever (ARF) or post-streptococcal glomerulonephritis (PSGN) are at greatest risk. IM Benzathine benzylpenicillin should be used for impetigo.

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; 2019. Available from: http://online.tg.org.au.pklibresources.health.wa.gov.au/ip/.
2. Stevens DL, Bisno AL, Chambers HF, Dellinger EP, Godlstein EJ, Gorbach SL, Hirschmann SL, Montoya JG, Wade JC. Practice Guidelines for the Diagnisis and Management of Skin and Soft Tissues Infections: 2014 Update by the Infectious Diseases Society of America. 2014 52(2).
3. The 2020 Australian guideline for prevention, diagnosis and management of acute rheumatic heart disease (3rd edition). Available from : https://www.rhdaustralia.org.au/system/files/fileuploads/arf_rhd_guidelines_3rd_edition_final.pdf

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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