GUIDELINE

Surgical Prophylaxis – Skin, soft tissue and orthopaedic

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

- These guidelines refer to recommended antibiotic use for surgical prophylaxis in the setting of elective or emergency skin, soft tissue and/or orthopaedic surgery. If there is evidence of active infection, please refer to either:
  - Skin and soft tissue infections – paediatric empiric guidelines
  - Bone and joint infections – paediatric empiric guidelines
- Surgical prophylaxis refers to a **single** preoperative dose given 0 to 60 minutes prior to surgical incision unless otherwise stated.(1)
- Patients receiving broad spectrum antibiotics prior to surgery may not require additional surgical antibiotic prophylaxis. For patients already receiving beta-lactam antibiotics (e.g. cefazolin, piperacillin tazobactam or amoxicillin clavulanate), an additional dose can be given just prior to surgical incision if the last dose was given >3 hours prior to surgery.
- If **vancomycin** is required for surgical prophylaxis, start the vancomycin infusion within the 120 minutes before surgical incision (ideally at least 15 minutes before incision) to ensure adequate blood and tissue concentrations at the time of incision and allow potential infusion-related reactions to be recognised before induction of anaesthesia. The infusion can be completed after surgical incision.(1)

CLINICAL SCENARIO	DRUGS/DOSES			
	Standard Protocol	**Known or Suspected MRSA**[a]	**Low Risk Penicillin allergy**[b]	**High Risk Penicillin allergy**[b]
Staphylococcus aureus colonisation	Patients undergoing elective orthopaedic surgery with insertion of prosthetic material should be screened for *Staphylococcus aureus* carriage and undergo decolonisation/ load reduction 5 days prior to surgery as appropriate. Refer to *Staphylococcus aureus* Decolonisation for Procedures and Guideline for Staphylococcal decolonisation (MRSA and MSSA) for further information.			
Elective and emergency orthopaedic surgery **with** an implant ≥ 4 weeks old	IV cefazolin 30 mg/kg (to a maximum of 2 grams) as a single dose If surgery >3 hours, repeat dose intraoperatively at 3 hours	**ADD** vancomycin[c] to standard protocol	As per standard protocol	vancomycin[c]
	When an infected prosthesis is suspected, antibiotic prophylaxis should ideally be delayed until after the collection of specimens.			
Elective and Emergency orthopaedic surgery **without** an implant ≥ 4 weeks old	Prophylaxis not routinely recommended			
Spinal surgery (with or without instrumentation) ≥ 4 weeks old	IV cefazolin 30 mg/kg (to a maximum of 2 grams) as a single dose If surgery >3 hours, repeat dose intraoperatively at 3 hours	**ADD** vancomycin[c] to standard protocol	As per standard protocol	vancomycin[c]
Lower limb amputation ≥ 4 weeks old	IV cefazolin 30 mg/kg (to a maximum of 2 grams) as a single dose If surgery >3 hours, repeat dose intraoperatively at 3 hours **IF the limb is ischaemic, ADD** IV metronidazole 12.5 mg/kg (to a maximum of 500 mg) as a single dose If surgery >12 hours, repeat dose intraoperatively at 12 hours	**ADD** vancomycin[c] to standard protocol	As per standard protocol	vancomycin[c] **AND** gentamicin[d] **ADD** metronidazole[e] if ischaemic limb
	For patients already receiving antibiotics for an established infection additional surgical prophylaxis is not generally required. Metronidazole[e] should be added if the regimen doesn't have sufficient anaerobic cover.			

CLINICAL SCENARIO	DRUGS/DOSES			
	Standard Protocol	Known or Suspected MRSA[a]	Low Risk Penicillin allergy[b]	High Risk Penicillin allergy[b]
Traumatic injuries **Antibiotic prophylaxis should ideally be administered within 3 hours of injury.**				
Traumatic wound requiring surgical cleaning and debridement (no fracture) ≥ 4 weeks old	IV cefazolin 50 mg/kg (to a maximum of 2 grams) as a single dose If surgery >3 hours, repeat dose intraoperatively at 3 hours **IF heavily contaminated or foreign body ADD** IV metronidazole 12.5 mg/kg (to a maximum of 500 mg) as a single dose If surgery >12 hours, repeat dose intraoperatively at 12 hours	**ADD** vancomycin[c] to standard protocol	As per standard protocol	clindamycin[f]
	Cease prophylaxis after definitive wound closure Prophylaxis should not exceed a total of 72 hours. If ongoing therapy is required, dose as per relevant ChAMP monograph.			
Open fracture – ***NO water exposure*** ≥ 4 weeks old	IV cefazolin 50 mg/kg (to a maximum of 2 grams) as a single dose If surgery >3 hours, repeat dose intraoperatively at 3 hours **IF heavily contaminated or foreign body ADD** IV metronidazole 12.5 mg/kg (to a maximum of 500 mg) as a single dose If surgery >12 hours, repeat dose intraoperatively at 12 hours	**ADD** vancomycin[c] to standard protocol	As per standard protocol	clindamycin[f] If surgery > 6 hours, repeat dose intraoperatively at 6 hours
	Cease prophylaxis after definitive wound closure Prophylaxis should not exceed a total of 72 hours. If ongoing therapy is required, dose as per relevant ChAMP monograph.			
Open fracture – ***WITH water exposure*** ≥ 4 weeks old	IV cefepime 50 mg/kg (to a maximum of 2grams) as a single dose **IF heavily contaminated or foreign body ADD** IV metronidazole 12.5 mg/kg (to a maximum of 500 mg) as a single dose If surgery >12 hours, repeat dose intraoperatively at 12 hours	**ADD** vancomycin[c] to standard protocol	As per standard protocol	clindamycin[f] If surgery > 6 hours, repeat dose intraoperatively at 6 hours **AND** ciprofloxacin[g]
	Cease prophylaxis after definitive wound closure Prophylaxis should not exceed a total of 72 hours. If ongoing therapy is required, dose as per relevant ChAMP monograph.			

<table>
<tr><th rowspan="2">CLINICAL SCENARIO</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>Acute burns requiring surgical debridement.
≥ 4 weeks old</td><td colspan="4">Prophylaxis not routinely recommended
If heavily contaminated, refer to “Traumatic wound requiring surgical cleaning and debridement (no fracture)”.

Patients with severe burns often have altered pharmacokinetics. If ongoing antibiotic therapy is required for an infected burn, antibiotic dosing should be adjusted accordingly. Contact infectious diseases or pharmacy for advice.

For any ongoing surgical procedures, antibiotic choice should be guided by local epidemiology and the results of cultures and susceptibility testing</td></tr>
<tr><td>Bite injury.
≥ 4 weeks old</td><td colspan="4">Refer to Skin and Soft Tissue Infections</td></tr>
<tr><td>Wound not requiring surgical cleaning and debridement – no contamination.
≥ 4 weeks old</td><td colspan="4">Prophylaxis not routinely recommended.</td></tr>
<tr><td rowspan="3">Wound not requiring surgical cleaning and debridement - with contamination.
≥ 4 weeks old</td><td colspan="4">Traumatic wounds that require examination and/or suture closure under anaesthesia do NOT routinely require IV surgical prophylaxis. Consider oral prophylaxis for contaminated wounds as outlined below.</td></tr>
<tr><td>Oral cefalexin 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly for 24 hours</td><td>cotrimoxazole[h]</td><td>As per standard protocol</td><td>cotrimoxazole[h]</td></tr>
<tr><td colspan="4">Prophylaxis may be continued for a maximum of 72 hours for deep penetrating injuries (e.g. penetrating nail injuries) that are not able to be adequately debrided. For all other wounds, 24 hours of prophylaxis is recommended.</td></tr>
</table>

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, Goldfields and the Pilbara) a lower threshold for suspected MRSA should be given
   iv. Children with recurrent skin infections or those unresponsive to ≥ 48 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) IV vancomycin **15 mg/kg (**to a maximum initial dose of 750 mg) given via slow infusion. Repeat dose if operation > 6 hours **(repeat dosing not required in the setting of abnormal renal function)**. Commence the infusion within the 120 minutes before surgical incision (ideally at least 15 minutes before incision) to ensure adequate blood and tissue concentrations at the time of incision and allow potential infusion-related reactions to be recognised before induction of anaesthesia. The infusion can be completed after surgical incision. For patients requiring ongoing dosing, refer to the vancomycin monograph.

d) IV gentamicin **5 mg/kg** (to a maximum of 480 mg) as a single dose

e) IV metronidazole **12.5 mg/kg** (to a maximum of 500 mg) as a single dose. If surgery >12 hours, repeat dose intraoperatively at 12 hours

f) IV clindamycin **15 mg/kg** (to a maximum of 600 mg) as a single dose. If surgery >6 hours, repeat dose intraoperatively at 6 hours

g) IV ciprofloxacin **10 mg/kg** (to a maximum of 400 mg) as a single dose. ChAMP approval required.

h) Oral cotrimoxazole **4 mg/kg/dose** (to a maximum of 160 mg trimethoprim component) 12 hourly; equivalent to 0.5 mL/kg/dose (to a maximum of 20 mL) of Septrin® suspension for 24 hours.

Related CAHS internal policies, procedures and guidelines
Antimicrobial Stewardship Policy
ChAMP Empiric Guidelines and Monographs
KEMH Neonatal Medication Protocols

References and related external legislation, policies, and guidelines

1. Antibiotic Writing Group (2025). Therapeutic Guidelines - Antibiotic. West Melbourne, Therapeutic Guidelines Ltd.
2. Bratzler DW, Dellinger EP, Olsen KM, Perl TM, Auwaerter PG, Bolon MK, et al. Clinical practice guidelines for antimicrobial prophylaxis in surgery. Am J Health Syst Pharm. 2013;70(3):195-283.

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

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