



GUIDELINE

Surgical Prophylaxis: Vascular, Cardiovascular and Neurosurgery

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](#)

- Surgical prophylaxis refers to a **single** preoperative dose given 0-60 minutes prior to surgical incision unless otherwise stated.
- 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 toxicity to be recognised before induction of anaesthesia. The infusion can be completed after surgical incision¹.
- Consider a higher capped dose of cefazolin (to a maximum of 3 grams) in obese patients. Refer to [Guidelines for Drug Dosing in Overweight and Obese Children 2 to 18 years of age](#).
- All patients undergoing vascular, cardiovascular or neurosurgical procedures should receive *Staphylococcus aureus* decolonisation prior to the procedure. Refer to [Staphylococcus aureus Decolonisation for Procedures](#)

CLINICAL SCENARIO (all ages)		DRUGS/DOSES			
		Standard Protocol	Known or Suspected MRSA ^a	Low Risk Penicillin Allergy ^b	High Risk Penicillin Allergy ^b
Vascular	Vascular surgery including placements of grafts or stents	IV cefazolin 30 mg/kg (to a maximum of 2 grams) as a single dose. Repeat dose if operation > 3 hours.	ADD vancomycin ^c to standard protocol	As per standard protocol	vancomycin ^c AND gentamicin ^e

Surgical Prophylaxis: Vascular, Cardiovascular and Neurosurgery

CLINICAL SCENARIO (all ages)		DRUGS/DOSES			
		Standard Protocol	Known or Suspected MRSA ^a	Low Risk Penicillin Allergy ^b	High Risk Penicillin Allergy ^b
Vascular	Implantable Central Venous Access Device (CVAD) Placement	IV cefazolin 30 mg/kg (to a maximum of 2 grams) as a single agent.	ADD vancomycin ^c to standard protocol	As per standard protocol	vancomycin ^c
		<p>ALL patients require <i>Staphylococcus aureus</i> decolonisation for each insertion of a CVAD. Ideally decolonisation should be completed prior to the surgical procedure. If this is not possible, patients should commence decolonisation prior to surgery with the full five-day course completed post operatively.</p> <p>Refer to: Central Venous Access Devices (CVAD) and Midline Insertion and Management</p>			
Cardiothoracic	Cardiac Surgery	<p>IV cefazolin 30 mg/kg (to a maximum of 2 grams).</p> <p>Repeat if operation > 3 hours OR if there is excessive blood loss</p> <p>Continue 8 hourly for a total of 24 hours.</p>	ADD vancomycin ^d to standard protocol	As per standard protocol	vancomycin ^d AND gentamicin ^g
	Thoracotomy or thoracoscopic surgery into an uninfected surgical site	<p>IV cefazolin 30 mg/kg (to a maximum of 2 grams) as a single dose</p> <p>Repeat dose if operation > 3 hours.</p>	ADD vancomycin ^c	As per standard protocol	vancomycin ^c
Neurosurgery	Routine neurosurgery including uncomplicated shunt insertions	<p>Patients scheduled for an intracranial shunt should be vaccinated against <i>Streptococcus pneumoniae</i> ideally before the procedure. Refer to the Australian Immunisation Handbook for further information.</p>			
		<p>IV cefazolin 30 mg/kg (to a maximum of 2 grams) as a single dose.</p> <p>Repeat dose if operation > 3 hours.</p> <p>Duration of surgical prophylaxis dependent on device inserted^f.</p> <p>Antibiotic impregnated EVD or VP shunt: single pre-operative dose only</p> <p>Standard or silver impregnated EVD or VP shunt used: continue cefazolin 8 hourly for a total of 24 hours.</p>	ADD vancomycin ^c to standard protocol	As per standard protocol	vancomycin ^c

CLINICAL SCENARIO (all ages)		DRUGS/DOSES			
		Standard Protocol	Known or Suspected MRSA ^a	Low Risk Penicillin Allergy ^b	High Risk Penicillin Allergy ^b
Neurosurgery	VP shunt insertion in high risk patients (neonates and infants with recurrent shunt complications)	IV vancomycin 15 mg/kg/dose (to a maximum of 750 mg, regardless of gestational age). Continue 8 hourly (neonates) or 6 hourly (infants) for 24 hours. AND IV cefotaxime 50 mg/kg (to a maximum of 2 grams). Continue 8 hourly for a total maximum duration of 24 hours.	As per standard protocol	As per standard protocol	vancomycin ^d AND gentamicin ^e
		For neonates born pre-term refer to neonatal guidelines for ongoing doses.			
	Myelomeningocele repair – No VP shunt insertion	IV cefazolin 30 mg/kg (to a maximum of 2 grams) as a single dose. Repeat dose if operation > 3 hours.	ADD vancomycin ^c to standard protocol	As per standard protocol	vancomycin ^c
		If concurrent VP shunt insertion, refer to; “VP shunt insertion in high risk patients” above.			

- a) Children known or suspected to be colonised with MRSA may need to have their therapy/prophylaxis modified. Children suspected of having MRSA include:
- Children previously colonised with MRSA. Check for MicroAlert B or C on iCM.
 - Household contacts of MRSA colonised individuals
 - 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.
 - 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) IV [vancomycin](#) **15 mg/kg** (to a maximum initial dose of 750 mg) given via slow infusion. Repeat dose if operation > 6 hours (**not required in setting of abnormal renal function**). 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 toxicity to be recognised before induction of anaesthesia. The infusion can be completed after surgical incision.
- d) IV [vancomycin](#) **15 mg/kg** (to a maximum of 750 mg) continued 6 hourly for 24 hours, adjust dose for patients with renal impairment.
- e) IV [gentamicin](#) **2 mg/kg** as a single dose only – based on adjusted body weight
- f) Where standard (or silver impregnated) catheters are used for EVD or VP shunt insertion in the context of a shortage of antibiotic-impregnated catheters, [cefazolin](#) should be continued at a dose of 25 mg/kg/dose (to a maximum of 2 grams) 8 hourly for a total of 24 hours.
- g) IV [gentamicin](#) **5mg/kg** (to a maximum of 480mg) as a single dose – based on adjusted body weight

Related CAHS internal policies, procedures and guidelines





[Antimicrobial Stewardship Policy](#)

[ChAMP Empiric Guidelines](#)

References and related external legislation, policies, and guidelines

1. Antibiotic Writing Group. Therapeutic Guidelines - Antibiotic. West Melbourne: Therapeutic Guidelines Ltd; 2019. Available from: <https://tgldcdp-tg-org-au.pklibresources.health.wa.gov.au/etgAccess>.
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;70:195-283.

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

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