

### Preoperative Considerations

**Consider individual risk factors for every patient** including the need for prophylaxis. Antibiotic choice/dose may need to be modified according to patient factors (e.g. immune suppression, presence of prostheses, allergies, renal function, obesity, malnutrition, diabetes, malignancy, infection at another site, colonisation with multi-drug resistant bacteria and available pathology).

**Consider surgical wound classification (clean, clean-contaminated, contaminated, dirty-infected)** when determining the need for, or choice of, antibiotic prophylaxis. Refer to [Surgical Antimicrobial Prophylaxis Prescribing Guideline](#) for further information.

**Pre-existing infections (known or suspected)** – if present, use appropriate treatment regimen instead of prophylactic regimen for procedure but ensure the treatment regimen has activity against the organism(s) most likely to cause postoperative infection. Adjust the timing of the treatment dose to achieve adequate plasma and tissue concentrations at the time of surgical incision and for the duration of the procedure - seek advice from ID or the AMS team if unsure.

For patients with specific cardiac conditions undergoing a procedure that involves manipulation of the gingival or periapical tissue or perforation of the oral mucosa antibiotic prophylaxis against streptococcal endocarditis may be required - refer to [Antibiotic Prophylaxis for Prevention of Endocarditis in High Risk Patients](#) for further information.

### Practice Points

#### Timing and administration of antibiotics

Surgical antibiotic prophylaxis must be administered before surgical incision to achieve effective plasma and tissue concentrations at the time of incision. Administration of any antibiotic after skin incision reduces effectiveness.

- > IV **benzylpenicillin** can be given over 5 to 10 minutes and should be administered no more than 60 minutes before surgical incision.
- > IV **cefazolin** can be given over 5 minutes and should be administered no more than 60 minutes before skin incision.
- > IV **metronidazole** and IV **clindamycin** infusions can be given over 20 minutes. They should be fully administered within 120 minutes of surgical incision. Maximum plasma and tissue concentrations occur at the conclusion of the infusion.
- > IV **vancomycin** infusion should be given at a rate of 1g over at least 60 minutes and 1.5g over at least 90 minutes. Vancomycin should be timed to begin 15 to 120 minutes before skin incision. This ensures adequate concentration at the time of incision and allows for any potential infusion-related toxicity to be recognised before induction. The infusion can be completed after skin incision.

#### Dosing in patients with obesity

- > **Cefazolin:** Consider increased dose of cefazolin (3g) for adult patients weighing more than 120kg.
- > **Vancomycin:** Consider increased dose of vancomycin (1.5g) for adult patients weighing more than 80kg.

**High MRSA risk** (defined as history of MRSA colonisation or infection OR frequent stays or a current prolonged stay in hospital with a high prevalence of MRSA OR residence in an area or aged care facility with high prevalence of MRSA OR current residence, or residence in the past 12 months, in a correctional facility):

- > Add vancomycin

#### Repeat dosing

A single preoperative dose is sufficient for most procedures; however repeat intraoperative doses are advisable:

- > for prolonged surgery (more than 4 hours from the time of first preoperative dose) when a short-acting agent is used (e.g. cefazolin dose should be repeated after 4 hours and clindamycin after 6 hours), OR
- > if major blood loss occurs (e.g. more than 1500 mL in adults), following fluid resuscitation.

When measuring the time to a second intraoperative dose, measure the interval from the time of the first preoperative dose rather than the surgical incision time.

### Recommended Prophylaxis

| Surgery   | Recommended Prophylaxis  | High Risk Penicillin / Cephalosporin Allergy*   |
|---|--|---|
| <b>Procedures involving insertion of dental implants</b><br><b>Clean or clean-contaminated procedures not listed below</b> (including dentoalveolar surgery (extractions, impactions, exposures); minor pathology (soft tissue, cysts)) | Prophylaxis not recommended  |   |
| <b>Procedures involving incision through the oral mucosa only</b> (e.g. cleft lip and palate repairs)   | <b>benzylpenicillin 1.2g IV</b><br>Repeat dose 1-hourly intra-operatively  | <b>clindamycin 600mg IV infusion</b>  |
| <b>Full dental clearance</b>  | <b>cefazolin 2g IV</b><br>PLUS<br><b>metronidazole 500mg IV infusion</b><br><br><u>High risk of MRSA infection:</u><br><b>ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</b><br><br><u>THEN postoperative if infected:</u><br><b>amoxicillin/clavulanic acid 875mg/125mg PO</b><br>twice daily for 5 days | <b>clindamycin 600mg IV infusion</b><br><br><u>THEN postoperative if infected:</u><br><b>clindamycin 450mg PO three times a day</b><br>for 5 days |

## Recommended Prophylaxis

| Surgery   | Recommended Prophylaxis   | High Risk Penicillin / Cephalosporin Allergy* |
|---|---|---|
| <b>Procedures involving incision through the skin and oral mucosa (oral cavity not involved)</b> <ul style="list-style-type: none"> <li>- Temporomandibular joint (arthrocentesis, reconstruction)</li> <li>- Submandibular gland excision/removal</li> <li>- Mandibular reconstruction (without bone graft)</li> </ul>   | <b>cefazolin 2g IV</b><br><br><u>High risk of MRSA infection:</u><br><b>ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</b>   | <b>clindamycin 600mg IV infusion</b>          |
| <b>Procedures involving incision through the skin and oral mucosa (oral cavity involved)</b> <ul style="list-style-type: none"> <li>- Orthognathic surgery<sup>^</sup> (temporomandibular joint replacement)</li> <li>- Sublingual gland excision and salivary gland procedures</li> <li>- Intraoral bone grafting procedures</li> <li>- Procedures involving insertion of prosthetic material</li> </ul> | <b>cefazolin 2g IV</b><br>PLUS<br><b>metronidazole 500mg IV infusion</b><br><br><u>High risk of MRSA infection:</u><br><b>ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</b> | <b>clindamycin 600mg IV infusion</b>          |
| <b>Open reduction and internal fixation of mandibular fractures or midfacial fractures (e.g. Le Fort or zygomatic)</b>  | <b>cefazolin 2g IV</b><br>PLUS<br><b>metronidazole 500mg IV infusion</b><br><br><u>High risk of MRSA infection:</u><br><b>ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)</b> | <b>clindamycin 600mg IV infusion</b>          |
|   | ^Postoperative doses can be considered following orthognathic surgery but prophylaxis (intravenous or oral) should not continue beyond 24 hours   |   |
| Postoperative doses can be considered for high risk patients (e.g. fracture in tooth-bearing segment of the mandible, prolonged lag time between injury and surgery, a carious or unhealthy tooth left in the fracture line, inability to surgically restore the mucosal barrier, extensive periodontal disease) but prophylaxis (intravenous or oral) should not continue beyond 24 hours                |   |   |

\* High risk penicillin/cephalosporin allergy: History suggestive of high risk (e.g. anaphylaxis, angioedema, bronchospasm, urticaria, DRESS/SJS/TEN)

## Postoperative Care

Except where included above, postoperative antibiotics are NOT indicated unless infection is confirmed or suspected, regardless of the presence of surgical drains. If infection is suspected, consider modification of antibiotic regimen according to clinical condition and microbiological results.

## Definitions / Acronyms

|                  |   |              |   |
|------------------|---|--------------|---|
| <b>AMS</b>       | Antimicrobial Stewardship                             | <b>DRESS</b> | Drug rash with eosinophilia and systemic symptoms |
| <b>ID</b>        | Infectious Diseases                                   | <b>IV</b>    | Intravenous                                       |
| <b>MRSA</b>      | Methicillin-resistant <i>Staphylococcus aureus</i>    | <b>ORIF</b>  | Open reduction and internal fixation              |
| <b>SJS / TEN</b> | Stevens-Johnson syndrome / Toxic epidermal necrolysis |              |   |

## References

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