1. Purpose
The purpose of this guideline is to optimise the use of antibiotic prophylaxis for surgical procedures at the Women’s Parkville and Sandringham.

Surgical site infections (SSIs) are a common adverse event in hospitalised patients; 8-10% of gynaecological surgery patients undergoing an operative procedure will develop an SSI. SSIs have been shown to increase mortality, readmission rate and length of hospital stay. Appropriate and timely antibiotic prophylaxis has been shown to be highly effective in reducing the incidence of SSI. The need for surgical antibiotic prophylaxis varies according to the type of procedure and its associated risk of SSI.

A number of studies across a range of surgical procedures have shown that there is a narrow window of opportunity for the administration of effective antimicrobial prophylaxis. Antibiotics need to be present in the tissue at the time of incision in order to be effective.

Ideally prophylactic antibiotics should cover the narrowest spectrum of organisms possible in order to minimise the development of bacterial resistance. For this reason it is important to consider the likely source of pathogens in each type of surgery. For most infections that occur after obstetric or gynaecological surgery, the source of pathogens is the endogenous flora of the patient’s vagina or skin. The endogenous flora of the genital tract is polymicrobial, consisting of anaerobes, Gram negative aerobes and Gram positive cocci. In contrast, laparoscopic procedures that do not breach any mucosal surfaces are more commonly contaminated with skin organisms only (usually Gram positive organisms such as Staphylococci).

Where processes differ between campuses, those that refer to the Sandringham campus are differentiated by pink text or have the heading Sandringham campus.

2. Definitions
Surgical site infection is an infection that occurs after surgery in the part of the body where the surgery took place.

Antibiotic prophylaxis is the use of antibiotics before, during, or after a diagnostic, therapeutic, or surgical procedure to prevent infectious complications. For surgical prophylaxis, these can generally be given prior to surgical incision.

3. Responsibilities
Surgeons are responsible for requesting the timely administration of appropriate antibiotic prophylaxis for their surgical patients.

Anaesthetists are responsible for liaison with surgeons and the provision of appropriate and timely antibiotic prophylaxis.

Pharmacists are responsible for ensuring prompt availability of required antibiotics. They are also responsible for provision of information to medical and nursing staff regarding doses of antibiotics and administration.

4. Guideline
Table 1 outlines recommended timing and choice of prophylactic antibiotics for surgical procedures at the Women’s.

An alternative choice of antibiotic is provided where appropriate (e.g. for a patient with penicillin allergy).

The National Health and Medical Research Council (NHMRC) level of evidence for each recommendation is included in the Table. For some procedures, such as Caesarean section and hysterectomy, antibiotic prophylaxis is clearly indicated. For other procedures, such as insertion of an intra-uterine device, medical termination of pregnancy and diagnostic laparoscopy, antibiotic prophylaxis is usually not required. For other procedures, the evidence is less clear and recommendations are based upon expert agreement until further research evidence becomes Table 1: Antibiotics for surgical prophylaxis.

Patients with immediate hypersensitivity reactions (e.g. urticaria, angio-oedema, bronchospasm, anaphylaxis) to...
penicillins, avoid use of penicillins and cephalosporins.

Patients allergic to penicillins (excluding immediate hypersensitivity reactions eg. urticaria, angio-oedema, bronchospasm and anaphylaxis), use of cephalosporins can be considered.

<table>
<thead>
<tr>
<th>Surgery</th>
<th>1st line</th>
<th>Level of evidence</th>
<th>Alternative</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstetric</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caesarean section¹⁰⁻¹³</td>
<td>Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before skin incision.</td>
<td>I</td>
<td>Clindamycin 600 mg IV over at least 20 minutes, within 60 minutes (ideally 15-30 minutes) before surgical incision or Vancomycin 25 mg/kg IV (maximum 2g)</td>
<td></td>
</tr>
<tr>
<td>Note: Antibiotics prior to skin incision reduce maternal infection rate in emergency caesarean section.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Termination of pregnancy (surgical)¹³⁻¹⁶</td>
<td>Screen patient for STIs: <em>C. trachomatis, N. gonorrhoeae, M. genitalium</em> and bacterial vaginosis. Treat the woman and her partner(s) prior to ToP¹⁷.</td>
<td>Consensus</td>
<td>If STI screening <strong>not</strong> performed or results unavailable: Azithromycin 1 g oral stat</td>
<td></td>
</tr>
<tr>
<td>Termination of pregnancy (medical)¹³</td>
<td>Not indicated</td>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual removal of placenta¹⁸⁻¹⁹</td>
<td>Cefazolin (cephazolin) 2 g IV, at the time of induction + Metronidazole 500 mg IV, ending the infusion at the time of induction</td>
<td>III-3</td>
<td>Clindamycin 600 mg IV + Gentamicin 2 mg/kg IV (maximum 560 mg)</td>
<td></td>
</tr>
<tr>
<td>3rd and 4th degree vaginal tears¹³⁻²⁴</td>
<td>Cefazolin (cephazolin) 2 g IV within 60 minutes (ideally 15-30 minutes) before the repair + Metronidazole 500 mg IV within 60 minutes (ideally 15-30 minutes) before the repair Followed by amoxicillin/clavulanic acid 875/125 orally BD for 7 days (Cefalexin [cephalexin])</td>
<td>Consensus</td>
<td>Clindamycin 600 mg IV + Gentamicin 2 mg/kg IV (maximum 560 mg) within 60 minutes (ideally 15-30 minutes) before the repair Followed by trimethoprim/sulfamethoxazole 160/800 orally BD + metronidazole 400mg orally BD for 7 days</td>
<td></td>
</tr>
</tbody>
</table>
## Surgical Antibiotic Prophylaxis Guideline

### Gynaecological

**Note:** Prophylactic antibiotics for vaginal packs can be administered for the duration of vaginal pack use which is usually 24-48 hours.\(^{33}\)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Antibiotic Regimen</th>
<th>Strength</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hysterectomy (vaginal)</strong>(^{13,25})</td>
<td>Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before surgical incision (repeat dose if procedure &gt; 3 hours) + Metronidazole 500 mg IV, within 60 minutes (ideally 15-30 minutes) before surgical incision</td>
<td>I</td>
<td>Clindamycin 600mg IV + Gentamicin 2mg/kg IV (maximum 560 mg) Patients should be screened and treated for bacterial vaginosis before hysterectomy(^{27})</td>
</tr>
<tr>
<td><strong>Hysterectomy (abdominal)</strong>(^{13,26})</td>
<td>Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before surgical incision (repeat dose if procedure &gt; 3 hours)</td>
<td>I</td>
<td>Clindamycin 600mg IV over at least 20 minutes, within 60 minutes (ideally 15-30 minutes) before surgical incision or Vancomycin 25 mg/kg IV (maximum 2g)</td>
</tr>
<tr>
<td><strong>Urogynaecological procedures (mid-urethral sling/TVT, colposuspension, vaginal prolapse surgery +/- mesh/SSF)</strong>(^{28})</td>
<td>Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before surgical incision (repeat dose if procedure &gt; 3 hours) + Metronidazole 500 mg IV, within 60 minutes (ideally 15-30 minutes) before surgical incision</td>
<td>III-3 Consensus</td>
<td>Clindamycin 600mg IV + Gentamicin 2mg/kg IV (maximum 560 mg)</td>
</tr>
<tr>
<td><strong>Hysterosalpingography or Hysteroscopy or Chromotubation for patients with dilated tubes or a history of</strong></td>
<td>Azithromycin 1 g oral stat</td>
<td>Consensus</td>
<td></td>
</tr>
</tbody>
</table>

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Page 3 of 7
### Surgical Antibiotic Prophylaxis Guideline

<table>
<thead>
<tr>
<th>Indication</th>
<th>Antimicrobial Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>PID or tubal damage&lt;sup&gt;28&lt;/sup&gt;</td>
<td>Not indicated</td>
</tr>
<tr>
<td>Hysterosalpingography or Hysteroscopy or Chromotubation with NO history of PID and normal tubes on visualisation&lt;sup&gt;29&lt;/sup&gt;</td>
<td>Not indicated</td>
</tr>
<tr>
<td>IUD insertion&lt;sup&gt;30&lt;/sup&gt;</td>
<td>Not indicated</td>
</tr>
<tr>
<td>Endometrial biopsy&lt;sup&gt;31&lt;/sup&gt;</td>
<td>Not indicated</td>
</tr>
<tr>
<td>Laparoscopy*&lt;sup&gt;32&lt;/sup&gt; (diagnostic or laparoscopy without breaching bowel/uterine/vaginal cavity)</td>
<td>Not indicated</td>
</tr>
<tr>
<td>Laparoscopy (breach of bowel/uterine/vaginal cavity or conversion to operative laparotomy)</td>
<td>Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before surgical incision (repeat dose if procedure &gt; 3 hours) + Metronidazole 500 mg IV, within 60 minutes (ideally 15-30 minutes) before surgical incision</td>
</tr>
</tbody>
</table>

**Patients should be screened and treated for STIs prior to insertion: C. trachomatis, N. gonorrhoeae, M. genitalium and bacterial vaginosis.**

<table>
<thead>
<tr>
<th>NHMRC Levels of Evidence&lt;sup&gt;9&lt;/sup&gt;:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I: A systematic review of level II studies</td>
</tr>
<tr>
<td>Level II: A randomised controlled trial</td>
</tr>
<tr>
<td>Level III-1: A pseudo-randomised controlled trial</td>
</tr>
<tr>
<td>Level III-2: A comparative study with concurrent controls</td>
</tr>
<tr>
<td>Level III-3: A comparative study without concurrent controls</td>
</tr>
<tr>
<td>Level IV: A case series with either post-test outcomes or pre-test/ post-test outcomes</td>
</tr>
</tbody>
</table>

<sup>9</sup> NHMRC: National Health and Medical Research Council
5. Evaluation, monitoring and reporting of compliance to this guideline

Compliance to this guideline or procedure will be monitored, evaluated and reported through:

1. Review of hysterectomy and caesarean surgical site infection rate
2. Spot audits of practice under the Quality Use of Medicines program
3. Laboratory review of infection clusters and antimicrobial resistance

6. References

9. National Health and Medical Research Council. NHMRC levels of evidence and grades for recommendations for developers of guidelines: National Health and Medical Research Council; 2009.
17. Cameron ST, Sutherland S. Universal prophylaxis compared with screen-and-treat for Chlamydia


7. Legislation/Regulations related to this guideline

C. trachomatis and N. gonorrhoeae infection are Department of Health notifiable conditions. Forms for notification can be found at http://ideas.health.vic.gov.au/notifying/what-to-notify.asp.

8. Appendices

Not applicable.
Guideline

Surgical Antibiotic Prophylaxis Guideline

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