

Surgical Antibiotic Prophylaxis Guideline



1. Purpose

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

Surgical site infections (SSIs) are a common adverse event in hospitalised patients¹; 8-10% of gynaecological surgery patients undergoing an operative procedure will develop an SSI². SSIs have been shown to increase mortality, readmission rate and length of hospital stay^{3,4}. Appropriate and timely antibiotic prophylaxis has been shown to be highly effective in reducing the incidence of SSI⁵. 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 prophylaxis⁶. Antibiotics need to be present in the tissue at the time of incision in order to be effective⁷.

Ideally prophylactic antibiotics should cover the narrowest spectrum of organisms possible in order to minimise the development of bacterial resistance⁸. 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).

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 available.

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Table 1: Antibiotics for surgical prophylaxis

Patients with immediate hypersensitivity reactions (eg. 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.

Surgery	1 st line	Level of evidence ⁹	Alternative	Comments
Obstetric				
Caesarean section ¹⁰⁻¹³	Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before skin incision.	I	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)	Antibiotics prior to skin incision reduce maternal infection rate in emergency caesarean section.
Termination of pregnancy (surgical) ¹³⁻¹⁶	Screen patient for STIs: <i>C. trachomatis</i> , <i>N. gonorrhoeae</i> , <i>M. genitalium</i> and bacterial vaginosis. Treat the woman and her partner(s) prior to ToP ¹⁷ .	Consensus	If STI screening not performed or results unavailable: Azithromycin 1 g oral stat	
Termination of pregnancy (medical) ¹³	Not indicated	I		
Manual removal of placenta ¹⁸⁻¹⁹	Cefazolin (cephazolin) 2 g IV, at the time of induction + Metronidazole 500 mg IV, ending the infusion at the time of induction	III-3	Clindamycin 600 mg IV + Gentamicin 2 mg/kg IV (maximum 560 mg)	
3 rd and 4 th degree vaginal tears ^{13,20-24}	Cefazolin (cephazolin) 2 g IV within 60 minutes (ideally 15-30 minutes) before the repair + Metronidazole 500 mg IV within 60 minutes (ideally 15-	Consensus	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 +	

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	<p>30 minutes) before the repair</p> <p>Followed by amoxicillin/clavulanic acid 875/125 orally BD for 7 days</p> <p>Cefalexin (cephalexin) 500mg orally QID + metronidazole 400mg orally BD can be used as an alternative regimen)</p>		metronidazole 400mg orally BD for 7 days	
<u>Gynaecological</u>				
Note: Prophylactic antibiotics for vaginal packs can be administered for the duration of vaginal pack use which is usually 24-48 hours. ³³				
Hysterectomy (vaginal) ^{13,25}	<p>Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before surgical incision (repeat dose if procedure > 3 hours)</p> <p>+</p> <p>Metronidazole 500 mg IV, within 60 minutes (ideally 15-30 minutes) before surgical incision</p>	I	Clindamycin 600mg IV + Gentamicin 2mg/kg IV (maximum 560 mg)	Patients should be screened and treated for bacterial vaginosis before hysterectomy ²⁷
Hysterectomy (abdominal) ^{13,26}	<p>Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before surgical incision (repeat dose if procedure > 3 hours)</p>	I	<p>Clindamycin 600mg IV over at least 20 minutes, within 60 minutes (ideally 15-30 minutes) before surgical incision</p> <p>or</p> <p>Vancomycin 25 mg/kg IV (maximum 2g)</p>	
Urogynaecological procedures (mid-urethral sling/TVT, colposuspension, vaginal prolapse surgery +/- mesh/SSF) ²⁸	<p>Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before surgical incision (repeat dose if procedure > 3 hours)</p>	III-3 Consensus	Clindamycin 600mg IV + Gentamicin 2mg/kg IV (maximum 560 mg)	

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	+ Metronidazole 500 mg IV, within 60 minutes (ideally 15-30 minutes) before surgical incision			
Hysterosalpingography or Hysteroscopy or Chromotubation for patients with dilated tubes or a history of PID or tubal damage ²⁸	Azithromycin 1 g oral stat	Consensus		
Hysterosalpingography or Hysteroscopy or Chromotubation with NO history of PID and normal tubes on visualisation ²⁹	Not indicated	IV		
IUD insertion ³⁰	Not indicated	I		Patients should be screened and treated for STIs prior to insertion: <i>C. trachomatis</i> , <i>N. gonorrhoeae</i> , <i>M. genitalium</i> and bacterial vaginosis.
Endometrial biopsy ³¹	Not indicated	IV		
Laparoscopy ³² (diagnostic or laparoscopy without breaching bowel/uterine/vaginal cavity)	Not indicated	II		
Laparoscopy (breach of bowel/uterine/vaginal cavity or conversion to operative laparotomy)	Cefazolin (cephazolin) 2 g IV, within 60 minutes (ideally 15-30 minutes) before surgical incision (repeat dose if procedure > 3 hours) + Metronidazole 500 mg IV, within 60 minutes (ideally 15-	Consensus	Clindamycin 600 mg IV + Gentamicin 2 mg/kg IV (maximum 560mg)	

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	30 minutes) before surgical incision			
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NHMRC Levels of Evidence⁹:

Level I: A systematic review of level II studies

Level II: A randomised controlled trial

Level III-1: A pseudo-randomised controlled trial

Level III-2: A comparative study with concurrent controls

Level III-3: A comparative study without concurrent controls

Level IV: A case series with either post-test outcomes or pre-test/ post-test outcomes

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

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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>.

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