

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.

Investigate patients for sexually transmitted infections (STIs) if they have symptoms of an STI or before insertion of an intrauterine device or before a transcervical procedure (including surgical termination of pregnancy and hysteroscopy). If the results of investigations are positive, provide appropriate treatment for the STI to reduce the risk of postprocedural infective complications. Ideally treatment should be completed before the procedure.

Prophylaxis against enterococcal endocarditis is indicated for patients with specific cardiac conditions undergoing gynaecological surgery. 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 **amoxicillin + clavulanate** can be given over 3 to 4 minutes.
- > IV **cefazolin** can be given over 5 minutes and should be administered no more than 60 minutes before skin incision.
- > IV **gentamicin** can be given over 3 to 5 minutes and should be administered within 120 minutes before surgical 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.
- > **Gentamicin:** For adult patients with a [body mass index](#) 30 kg/m² or more, use [adjusted body weight](#) (up to a maximum of 100kg) to calculate the gentamicin dose.
- > **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.

Pregnancy

There is a lack of evidence to guide optimal gentamicin dosing in pregnancy; altered blood volume and renal function may impact plasma concentrations. It is recommended to use doses as for other patients, except if the patient is obese (pre-pregnancy BMI > 25kg/m²) where adjusted body weight should be used.

Recommended Prophylaxis

Procedure	Recommended Prophylaxis	High Risk Penicillin / Cephalosporin Allergy*
Gynaecological Surgery / Procedures		
<p>Laparoscopic procedures that do not enter the bowel or vagina (diagnostic, tubal sterilisation, operative (except for hysterectomy))</p> <p>Other transcervical procedures (cystoscopy, hysteroscopy (diagnostic or operative), intrauterine device insertion, endometrial biopsy, oocyte retrieval, dilation and curettage for non-pregnancy indication, autologous mid-urethral sling, cervical tissue biopsy including LLETZ or endocervical curettage) (LLETZ = large loop excision of the transformation zone)</p>	Prophylaxis NOT recommended	

Recommended Prophylaxis

Procedure	Recommended Prophylaxis	High Risk Penicillin / Cephalosporin Allergy*
Hysterectomy Gynaecological-oncological procedures Gynaecological laparotomy procedures (omentectomy, oophorectomy) Pelvic organ prolapse procedures Synthetic mid-urethral sling procedures Vaginal repair	cefazolin 2g IV PLUS metronidazole 500mg IV infusion <u>High risk of MRSA infection:</u> Add vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)	clindamycin 600mg IV infusion PLUS gentamicin 2 mg/kg IV <u>High risk of MRSA infection:</u> Replace clindamycin with vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)
Obstetric Procedures		
Minor procedures (e.g. endoscopic procedures)	Prophylaxis NOT recommended	
Caesarean section (elective and nonelective)	cefazolin 2g IV <u>High risk of MRSA infection:</u> Add vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)	clindamycin 600mg IV infusion PLUS gentamicin 2mg/kg IV <u>High risk of MRSA:</u> Replace clindamycin with vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)
Assisted vaginal delivery	amoxicillin+clavulanate 1+0.2 g IV (as a single dose as soon as possible after assisted vaginal delivery, ideally within 6 hours) # Moderate risk penicillin allergy: cefazolin 2g IV (as a single dose as soon as possible after assisted vaginal delivery, ideally within 6 hours) PLUS metronidazole 500mg IV (as a single dose as soon as possible after assisted vaginal delivery, ideally within 6 hours)	clindamycin 600mg IV infusion PLUS gentamicin 2mg/kg IV
Prophylaxis for repair of obstetric anal sphincter injuries (including third- or fourth-degree perineal tears)	cefazolin 2g IV (as early as possible) PLUS metronidazole 500mg IV infusion (as early as possible) <u>High risk of MRSA:</u> Add vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight)	clindamycin 600mg IV infusion (as early as possible)
Post-operative antibiotic therapy is recommended		
Surgical termination of pregnancy (surgical antibiotic prophylaxis is not required if the patient has been investigated and treated for STIs before the procedure)	doxycycline 400mg PO as a single dose (1 hour prior to procedure) [^] OR azithromycin 1g PO (within 120 minutes before the procedure)	
Later term termination	As for hysterectomy (see above)	

#Moderate risk penicillin allergy: History suggestive of moderate risk (e.g. delayed rash which is NOT urticarial or DRESS/SJS/TEN)

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

[^]Nausea is common with this regimen, consider concurrent use with an antiemetic drug

Postoperative Care

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.

Additional notes

Caesarean section: Administer prophylactic antibiotics preoperatively prior to skin incision. In the past, administration of antibiotics after the cord is clamped was common practice to avoid exposing the neonate to antibiotics. However, studies have shown lower surgical site infection rates, without compromising neonatal outcome, if prophylaxis is administered before skin incision.

Definitions / Acronyms

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

References

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