

Surgical Antibiotic Prophylaxis Guidelines

Gastrointestinal Surgery

Pre-Operative Considerations

Consider individual risk factors for every patient – need for prophylaxis, drug choice or dose may alter (e.g. immune suppression, presence of prostheses, allergies, renal function, obesity, diabetes, remote infection, available pathology or malignancy).

Pre-existing infections (known or suspected) – if present, use appropriate treatment regimen instead of prophylactic regimen for procedure. Doses should be scheduled to allow for re-dosing just prior to skin incision.

Practice Points

Drug administration

- > IV bolus – should be administered no more than 60 minutes before skin incision (optimal 15 to 30 minutes). Commencing administration of any antibiotic after skin incision or completing administration of antibiotics more than 60 minutes before incision reduces effectiveness.
- > IV infusion – should be commenced 30-60 minutes prior to incision (e.g. metronidazole). See below for vancomycin administration.

MRSA risk (defined as history of MRSA colonisation or infection OR frequent stays or a current prolonged stay in a hospital with a high prevalence of MRSA OR residence in an area or aged care facility with high prevalence of MRSA)

- > Add vancomycin (see vancomycin administration below)

Vancomycin administration

- > For adult patients, give vancomycin 1g (1.5g for patients >80kg actual body weight) started 30 to 120 minutes before surgical incision and given at a recommended rate of 1g per hour (1.5g over 90 minutes). Note: infusion can be completed after skin incision.

Gentamicin administration

- > Dosing should be based on ideal body weight, provided ideal body weight is less than actual body weight. If the patient is obese (for adults, body mass index 30 kg/m² or more), use adjusted body weight to calculate the gentamicin dose.

Repeat doses

A single pre-operative dose is sufficient for most procedures, however repeat intra-operative 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), OR
- > if major blood loss occurs (e.g. more than 1500mL in adults), following fluid resuscitation

Patients receiving antibiotic treatment for established infection prior to surgery

- > It is not necessary to give additional antibiotic prophylaxis, provided the treatment regimen has activity against the organism(s) most likely to cause postoperative infection. However, 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.

Obese patients

- > Consider increased dose of cefazolin (**3g**) if patient obese (more than 120kg). Consult ID/AMS team for advice.

Recommended Prophylaxis

Surgery	Recommended Prophylaxis	High Risk Penicillin / Cephalosporin allergy*
Gastroduodenal and oesophageal Non-endoscopic procedures that enter the GI tract lumen or Non-endoscopic procedures that do not enter the GI lumen but the patient has risk factors for post-op infection (morbid obesity, gastric outlet obstruction, reduced gastric acidity/motility, GI bleeding, malignancy or perforation) i.e. gastric bypass, resection, ulcer oversew, oesophagectomy	cefazolin 2g IV (child: 30mg/kg up to 2g) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)	gentamicin 2mg/kg IV PLUS vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)
Biliary (including laparoscopic procedures) Open cholecystectomy or laparoscopic surgery where the patient has risk factors for postoperative infection (e.g. older than 70 years, diabetes, obstructive jaundice, common bile duct stones, acute cholecystitis, non-functioning gallbladder)	cefazolin 2g IV (child: 30mg/kg up to 2g) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)	gentamicin 2mg/kg IV PLUS vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)
Small intestinal Nonendoscopic small intestinal procedures	cefazolin 2g IV (child: 30mg/kg up to 2g) <u>If the small intestine is obstructed:</u> ADD metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)	gentamicin 2mg/kg IV PLUS metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body wt) (child: 30mg/kg up to 1.5g)

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Stoma	cefazolin 2g IV (child: 30mg/kg up to 2g) PLUS metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)	gentamicin 2mg/kg IV PLUS metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body wt) (child: 30mg/kg up to 1.5g)
Colorectal Nonendoscopic colorectal procedures i.e. colon resection, revision of anastomosis etc. Pancreatic Whipple's procedure, pancreatic necrosectomy Liver resection Exploratory laparotomy/division of adhesions	cefazolin 2g IV (child: 30mg/kg up to 2g) PLUS metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)	gentamicin 2mg/kg IV PLUS metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body wt) (child: 30mg/kg up to 1.5g)
Appendicectomy All appendicectomy procedures, including laparoscopic appendicectomy	cefazolin 2g IV (child: 30mg/kg up to 2g) PLUS metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)	gentamicin 2mg/kg IV PLUS metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA :</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body wt) (child: 30mg/kg up to 1.5g)
Hernia repair with or without mesh insertion	cefazolin 2g IV (child: 30mg/kg up to 2g) <u>If entry into the bowel lumen is expected:</u> ADD metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) <u>High risk of MRSA:</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g)	vancomycin 1g IV (1.5g for patients more than 80kg actual body weight) (child: 30mg/kg up to 1.5g) OR <u>If entry into the bowel lumen is expected give INSTEAD:</u> metronidazole 500mg IV infusion (child: 12.5mg/kg up to 500mg) PLUS gentamicin 2mg/kg IV <u>High risk of MRSA:</u> ADD vancomycin 1g IV infusion (1.5g for patients more than 80kg actual body wt) (child: 30mg/kg up to 1.5g)

* High risk penicillin/cephalosporin allergy as suggested by history of anaphylaxis, angioedema, bronchospasm, urticaria, DRESS/SJS/TEN.

Post-Operative Care

Except where included above, post-operative 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 accordingly to clinical condition and microbiological results.

Definitions / Acronyms

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

References

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- Jafrri, NS., Mahid, SS, Minor, KS, et al. (2007). "Meta-analysis: antibiotic prophylaxis to prevent peristomal infection following percutaneous endoscopic gastrostomy". Aliment Pharmacol Ther 25 (6): 647.
- Tacconelli, E., et al. (2009). "Antibiotic usage and risk of colonisation and infection with antibiotic-resistant bacteria: A hospital population-based study." Antimicrob Agents Chemother 53(10): 4264-4269.
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