

Table 6.2 Antimicrobial prophylaxis in clean operations

Type of operation	Indications	Recommended drugs ¹
Cardiac ²	<ul style="list-style-type: none"> • Prosthetic valve • Coronary artery bypass • Pacemaker implant • Open heart surgery 	<ul style="list-style-type: none"> • I.V. cefazolin 1 g³ then every 4 hours <p>Note: The duration of antimicrobial prophylaxis should <u>not</u> be longer than 48 hours.</p>
Thoracic ²	<ul style="list-style-type: none"> • Pulmonary resection • Closed tube thoracostomy for chest trauma 	<ul style="list-style-type: none"> • I.V. cefazolin 1 g³ OR • I.V. cefuroxime 1.5 g OR • I.V. amoxicillin-clavulanate 1.2 g⁴
Vascular	<ul style="list-style-type: none"> • Abdominal aortic operations • Prosthesis • Groin incision • Lower extremity amputation for ischaemia 	<ul style="list-style-type: none"> • I.V. cefazolin 1 g³ OR • I.V. cefuroxime 1.5 g OR • I.V. amoxicillin-clavulanate 1.2 g⁴
Neurosurgery ²	<ul style="list-style-type: none"> • Craniotomy • Ventriculoperitoneal shunt • Implantation of intrathecal pump (492) • Re-exploration or microsurgery 	<ul style="list-style-type: none"> • I.V. cefazolin 1 g³ OR • I.V. cefuroxime 1.5 g <ul style="list-style-type: none"> • I.V. cefuroxime 1.5 g OR • I.V. amoxicillin-clavulanate 1.2 g⁴

Type of operation	Indications	Recommended drugs ¹
Orthopaedic & Traumatology ²	<ul style="list-style-type: none"> • Total joint replacement with prosthesis • Internal fixation of closed fractures • Prophylactic antibiotic is indicated for all open fractures and should be given as soon as possible⁵ • Wound cultures and sensitivity testing are useful for informing subsequent choice of antimicrobials (493–495) • For Gustilo type III tibial fractures, prophylaxis given within 1 hr was associated with reduced infection risk (496) 	<ul style="list-style-type: none"> • I.V. cefazolin 1 g³ OR • I.V. cefuroxime 1.5 g Note: Antimicrobial agents should be completely infused before inflating the tourniquet if applied. • I.V. amoxicillin-clavulanate ± gentamicin⁵ OR • I.V. ceftriaxone 2 g ± I.V. penicillin G⁵ OR • other third generation cephalosporin ± I.V. penicillin G⁵ Note: The duration of prophylactic antibiotic for open fractures depends on the classification: 24 hr (for Gustilo type I and II open fractures) and up to 72 hr (for Gustilo type III open fractures). Antibiotics should not be given for more than 24 hr after soft tissue coverage of the wound, whichever occurs first.
Thyroid & parathyroid glands		<ul style="list-style-type: none"> • Antimicrobial prophylaxis is not indicated

Footnotes for Tables 6.2–6.4:

¹The dose of antimicrobial agents recommended in the guidelines is based on adult patient with normal renal function. Special attention should be paid to patient with renal impairment, on renal replacement therapy, or if there is potential drug-drug interaction. Consultation to clinical microbiologist, infectious disease physician and clinical pharmacist is required in complicated cases.

²For hospitals or units with a high incidence of postoperative wound infections by MRSA or methicillin-resistant *Staphylococcus epidermidis*, screening for MRSA may be indicated to identify patients for additional preoperative measures such as chlorhexidine bath, 2% mupirocin nasal ointment [Bactroban Nasal] and/or the use of vancomycin as preoperative prophylaxis. Evidence is strongest for cardiothoracic and orthopaedic surgery with implantation (507–508).

³Give cefazolin 2 g for patients with body weight greater than 80 kg. For patients allergic to cefazolin, vancomycin 1 g infused over 1 hour should be given after premedication with an antihistamine. Rapid I.V. administration of vancomycin may cause hypotension, which could be especially dangerous during induction of anaesthesia.

⁴Amoxicillin-clavulanate and ampicillin-sulbactam are similar in spectrum coverage and centres may choose to use ampicillin-sulbactam.

⁵Choice of agent(s) depends on the type of open fractures by the Gustilo classification and the likely organisms contaminating the wound. In general, prophylactic antibiotic should be directed against Gram-positive organisms for Gustilo type I and II open fractures; additional Gram-negative coverage should be added for Gustilo type III open fractures. In the setting of faecal or potential clostrial contamination (e.g. soil exposure), a penicillin should be included in the regimen.

⁶The optimal antibiotic and dosing regimens for abortion are unclear. The antimicrobial prophylaxis for abortion stated in Royal College of Obstetricians and Gynaecologists (United Kingdom) (422) clinical guidelines is Level C recommendations and may be suitable. They include: metronidazole 1 g rectally at the time of abortion plus doxycycline 100 mg orally b.d. for 7 days, commencing on the day of abortion; OR metronidazole 1 g rectally at the time of abortion plus azithromycin 1 g orally on the day of abortion.

⁷For transrectal ultrasound (TRUS)-guided biopsy of the prostate, prophylactic regimen is evolving because of increasing fluoroquinolone resistance in *E. coli*. (509). If a fluoroquinolone is used, administer the drug 1–2 hours before the procedure to allow maximum tissue penetration (510). Ensure adequate drug level in the body by giving a full standard dose (500 mg to 750 mg for levofloxacin and ciprofloxacin). If post-biopsy infection develops, antibiotic treatment regimen should include coverage against ESBL-producing organisms given the high prevalence of this resistance mechanism in Hong Kong (Table 1.3).

⁸Amoxicillin-clavulanate may be used if the operation is such that anaerobic coverage is needed, such as in diabetic foot, hernia repair with bowel strangulation or incarcerated/strangulated hernia or mastectomy with implant or foreign body.

⁹Antimicrobial agents should be considered postoperatively for operations with suppurative, ruptured and gangrenous conditions.