Antimicrobial prophylaxis for surgical procedures

Table III: Altemeier classification of surgical wounds

Class I: Clean SSI risk < 1%	Sterile area of body. Skin intact before surgical incision. Surgery does not involve opening of gastrointestinal, respiratory, genito-urinary or oropharyngeal tracts.
Class II: Clean contaminated SSI risk 2–5%	Opening of body cavities: gastrointestinal tract, respiratory tract, genito-urinary tract or oro-pharyngeal tracts in the absence of gross contamination.
Class III: Contaminated SSI risk 5–10%	Massive surgical soiling by gastrointestinal contents or opening of genito-urinary or biliary tracks in patients with tract infections. Recent open traumatic wounds.
Class IV: Dirty SSI risk > 10%	Body site that contains pus, foreign body or faeces. Traumatic open wounds > 4 hours.

SSI – Surgical site infection

There are four considerations to keep in mind when prescribing antibiotic prophylaxis:

1. Who needs antibiotic prophylaxis?
2. What are the factors that influence the antibiotic choice?
3. Timing.
4. Duration of antibiotic prophylaxis.

Procedures that need antibiotic prophylaxis

- Class I surgery involving the placement of prosthesis or implants.
- Class II surgery.
- Class III and IV should be on curative antibiotics.

In procedures where antibiotic prophylaxis would not normally be used, it should be considered in patients with an increased risk for surgical site infections (SSIs) or where infection will be catastrophic. Patients at increased risk for infection include geriatric and oncology patients, those with diabetes, HIV, obesity, transplant patients, etc.

Do not give antibiotic prophylaxis for clean, non-prosthetic uncomplicated surgery.

Choice of prophylactic antibiotics

- Use an antibiotic that is safe, inexpensive, and a bactericidal with an in vitro spectrum that covers the most probable intraoperative contaminants for the operation. Other factors that may influence the choice of antibiotics are, amongst others, renal function, other comorbidities, recent antimicrobial use, institutionalised patients, known colonisation with a drug-resistant organism as well as immunocompetency.
- Use your local antibiotic formulary, and always consider potential adverse effects when giving antibiotics for prophylaxis.
- For a detailed table of surgical procedure and the best choice of prophylactic antibiotics, see Appendix A.

Timing of prophylactic antibiotics

- Give a single dose of antibiotic prophylaxis intravenously 30 minutes before skin incision, but not more than one hour before. Vancomycin should not be used as a first-line prophylactic antibiotic. When it is used, it should be given as an infusion that ends 30 minutes prior to skin incision.
- Give antibiotic prophylaxis earlier for operations in which a tourniquet is used.
- With regards to Caesarean delivery, antibiotic prophylaxis should not be delayed to the clamping of the cord.
- A second dose of an antibiotic with a relatively short half-life, e.g. cephazolin, is often recommended for prolonged procedures or procedures with massive blood loss.

Duration of prophylactic antibiotic therapy

Antibiotic prophylaxis should be brief and limited to the surgical time. It is sometimes used up to 24 hours and, under very exceptional circumstances, up to 48 hours. Prophylaxis should never continue for more than 48 hours.