BENEFITS AND RISKS OF ANTIBIOTIC PROPHYLAXIS

- The final decision regarding the benefits and risks of prophylaxis for an individual patient will depend on:
  - the patient’s risk of surgical site infection (SSI)
  - the potential severity of the consequences of SSI
  - the effectiveness of prophylaxis in that operation
  - the consequences of prophylaxis for that patient (e.g. increased risk of colitis).

PRINCIPLES OF PROPHYLAXIS

- The single dose of antibiotic for prophylactic use is, in most circumstances, the same as would be used therapeutically.
- Prophylaxis should be started preoperatively (in most circumstances), ideally within 30 minutes of the induction of anaesthesia.
- Prophylaxis should be administered immediately before or during a procedure.

ADMINISTERING INTRAVENOUS PROPHYLACTIC ANTIBIOTICS

- The antibiotics selected for prophylaxis must cover the common pathogens.
- Patients with a history of anaphylaxis or urticaria or rash occurring immediately after penicillin therapy are at increased risk of immediate hypersensitivity to penicillins and should not receive prophylaxis with a beta-lactam antibiotic.
- Patients with a history of minor rash or rash occurring more than 72h after administration of penicillin are probably not allergic to penicillin.
- An additional dose of prophylactic agent is not indicated in adults, unless there is blood loss of up to 1500 ml during surgery or haemodilution up to 15 ml/kg.
- Fluid replacement bags should not be primed with prophylactic antibiotics because of the potential risk of contamination and calculation errors.

ECONOMIC EVALUATION OF SURGICAL ANTIBIOTIC PROPHYLAXIS

- Use NNTs to compare when the consumption of prophylactic antibiotics would be lower than the consumption of therapeutic antibiotics.

IMPLEMENTING THE GUIDELINE

- Inappropriate prolongation of surgical prophylaxis can be reduced by use of specific order forms for surgical prophylaxis, or recording of prophylaxis in single dose sections of existing drug prescription charts.
- Recording the minimum dataset in the case notes and drug prescription chart will facilitate audit of the appropriateness of surgical antibiotic prophylaxis.

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Derived from the national clinical guideline recommended for use in Scotland by the Scottish Intercollegiate Guidelines Network (SIGN), Royal College of Physicians of Edinburgh, 9 Queen Street, Edinburgh EH2 1JQ

Available on the SIGN website: www.sign.ac.uk

This guideline was issued in July 2000 and will be reviewed in 2002
## Indications for Antibiotic Prophylaxis

**Cardiothoracic Surgery**
- **A** Cardiac pacemaker insertion: **recommended**
- **B** Open heart surgery, including:
  - **Coronary artery bypass grafting**
  - **Prosthetic valve surgery**
- **A** Pulmonary resection: **recommended**

**General Surgery**
- **A** Colorectal surgery: **highly recommended**
- **A** Appendicectomy: **recommended**
- **A** Biliary surgery (open): **recommended**
- **C** Breast surgery: **recommended**
- **C** Clean-contaminated procedures (extrapolated from specific clean-contaminated procedures): **recommended**
- **A** Endoscopic gastrostomy: **recommended**
- **A** Gastroduodenal surgery: **recommended**
- **C** Oesophageal surgery: **recommended**
- **C** Small bowel surgery: **recommended**
- **C** Laparoscopic or non-laparoscopic hernia repair
  - with mesh: **recommended**
  - without mesh: **not recommended**
- **A** Laparoscopic cholecystectomy: **not recommended**

**Neurosurgery**
- **A** Craniotomy: **recommended**
- **A** CSF shunt: **recommended**
- **A** Hysterectomy (abdominal or vaginal): **recommended**
- **A** Induced abortion: **recommended**

**Obstetrics and Gynaecology**
- **A** Caesarean section: **recommended**
- **A** Hysterectomy (abdominal or vaginal): **recommended**
- **A** Induced abortion: **recommended**

**ENT Surgery**
- **A** Head and neck surgery (contaminated/clean-contaminated): **recommended**
- **A** Ear surgery (clean): **not recommended**
- **C** Head and neck surgery (clean): **not recommended**
- **C** Nose or sinus surgery: **not recommended**
- **C** Tonsillectomy: **not recommended**

**Ophthalmology**
- **A** Cataract surgery: **recommended**

**Orthopaedic Surgery**
- **A** Total hip replacement: **highly recommended**
- **B** Prosthetic knee joint replacement: **highly recommended** (regardless of use of antibiotic cement)
- **A** Closed fracture fixation: **recommended**
- **A** Hip fracture repair: **recommended**
- **A** Spinal surgery: **recommended**
- **C** Insertion of prosthetic device (extrapolated from trials of specific devices): **recommended**
- **C** Orthopaedic surgery without prosthetic device (elective): **not recommended**

**Urology**
- **A** Transrectal prostate biopsy: **recommended**
- **A** Shock-wave lithotripsy: **recommended**
- **A** Transurethral resection of the prostate: **recommended**
- **C** Transurethral resection of bladder tumours: **not recommended**

**Vascular Surgery**
- **A** Lower limb amputation: **recommended**
- **A** Vascular surgery (abdominal & lower limb): **recommended**

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*Local policy makers may identify exceptions*

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**Note:** Four different types of recommendations have been made, depending on the nature of the supporting evidence on clinical and cost-effectiveness. However, the grade of recommendation relates to the strength of evidence on clinical effectiveness alone.

- **Highly recommended** — prophylaxis unequivocally reduces major morbidity, reduces hospital costs and is likely to decrease overall consumption of antibiotics
- **Recommended** — prophylaxis reduces short-term morbidity, is highly likely to reduce major morbidity, reduce hospital costs and may decrease overall consumption of antibiotics
- **Recommended but local policy makers may identify exceptions** — although prophylaxis is recommended for all patients, it may not reduce hospital costs and could increase consumption of antibiotics, especially if given to patients at low risk of infection.
- **Not recommended** — prophylaxis has not been proven to be clinically effective and as the consequences of infection are short-term morbidity, is likely to increase hospital antibiotic consumption for little clinical benefit.