

## The Credit Valley Hospital – CLINICAL PRACTICE GUIDELINES

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### **Title: Antimicrobial Prophylaxis in Surgical-Gynaecologic Procedures CPG**

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#### **PURPOSE**

To provide guidelines for the selection and management of patients for which it is appropriate to administer antimicrobial prophylaxis. Antimicrobial prophylaxis in surgery refers to the preoperative administration of antimicrobial agents for the prevention or reduction of post-operative wound infections.

#### **SELECTION CRITERIA**

The guidelines are based on the following principles:

##### Indication For Prophylaxis:

Antimicrobial prophylaxis is recommended for the following procedures:

- High anticipated infection rates
- Procedures for which the consequence of infection are especially serious (e.g. prosthesis insertions, grafts)

Antimicrobial prophylaxis recommendations for prevention of wound infection and sepsis in surgical patients are listed in **Table I: Antimicrobial Agents for Surgical/Gynaecologic Prophylaxis.**

##### Choice of an Agent for Surgical Prophylaxis:

1. The antimicrobial agent selected should be directed against the common pathogens responsible for wound infection at the particular surgical site. The aim of chemoprophylaxis is to reduce the number of bacterial organisms known to cause infection at the particular site. It is not intended to totally eradicate all potential bacterial pathogens.
2. For most procedures, a first generation cephalosporin (cefazolin) is usually preferred due to the long half-life and established efficacy in peer-reviewed published studies.
3. Routine use of vancomycin is discouraged due to promotion of vancomycin-resistant enterococcus.
4. For emergency colorectal surgery and appendectomy, a cephamycin (Cefoxitin) or combination therapy with an aminoglycoside and metronidazole are preferred because of enhanced activity against anaerobes, including *Bacteroides fragilis*.

##### Timing of Administration:

1. A **single dose** immediately before the incision is made is all that is usually required. Administration of antimicrobial prophylaxis for surgical wounds beyond 24 hours after the completion of a procedure is rarely, if ever, beneficial.

2. Antibiotic prophylaxis should be administered so that the antibiotic is present in the tissues of the wound in inhibitory concentrations beginning just before the initial incision and lasting at least through the duration of the operation.
  - To be given prior to skin preparation, preferably 30-60 minutes pre-operatively.
  - Give additional intra-operative doses; if the procedure is prolonged (> 4 hours), or if associated with large blood losses, or the drug has a short half-life (e.g. cefoxitin/penicillin G Na).
3. The use of antimicrobial agents in contaminated or septic surgery is considered empiric therapy rather than prophylaxis, and should be continued post-operatively.

Clinical Considerations:

1. Patients with prosthetic joints - patients with indwelling joints generally do not require antimicrobial prophylaxis when undergoing dental, gastrointestinal or genitourinary procedures. For prolonged procedures, surgery in an infected area (including periodontal disease) or other procedures with high risk of bacteremia, and possibly for selected patients at high risk for infection, prophylaxis may be advisable.
2. Common procedures **not** requiring antimicrobial prophylaxis:
  - Laparotomy without GI tract surgery
  - Hernia repair
  - Nissen fundoplication
  - Varicose vein surgery
  - Most dermatologic surgery
  - Most plastic surgery
  - Tonsillectomy +/- Adenoidectomy
  - Rhinoplasty
  - Gastrointestinal endoscopy
3. Prophylaxis is **controversial** in the following procedures:
  - ERCP
  - Breast surgery
  - Arthroscopy orthopedic surgery

**Table I:**

<b>ANTIMICROBIAL AGENTS FOR SURGICAL/GYNAECOLOGIC PROPHYLAXIS</b>			
<b>TYPE OF SURGERY</b>	<b>PREFERRED</b>	<b>ALTERNATIVE</b>	<b>COMMENTS</b>
<b>GASTROINTESTINAL</b>			
Esophageal, gastroduodenal	Cefazolin 1 g IV	Cefoxitin 1 g IV	(5)
Biliary tract	Cefazolin 1 g IV	Cefoxitin 1 g IV	(5)
Colorectal	Cefoxitin 1 g IV	Gentamicin 2 mg/kg/IV plus Metronidazole 500 mg IV	After appropriate diet and catharsis +/- oral antibiotics (1)
Appendectomy non-perforated (Adult)	Cefoxitin 1 g IV	Gentamicin 2 mg/kg/IV plus Metronidazole 500 mg IV	
Appendectomy non-perforated (Paed)	Cefoxitin 25 mg/kg x 1 dose, max dose 2 g	Metronidazole 10 mg/kg IV x 1 dose, max 500 mg plus Gentamicin 2.5 mg/kg IV x 1 dose, max 120 mg	
<b>GENITOURINARY</b>			
	High Risk only (2): Ciprofloxacin 500 mg po 1 hour pre-op	Ciprofloxacin 400 mg IV <b>OR</b> Gentamicin 2 mg/kg IV +/- Ampicillin 1 g IV	Cefazolin 1 g IV sometimes advocated for Open Prostatectomy
<b>GYNAECOLOGIC</b>			
Vaginal or abdominal hysterectomy	Cefazolin 1 g IV	Cefoxitin 1 g IV	(5)
Abortion	First trimester, high risk only (3): Penicillin G Na 2 MU IV	Doxycycline 300 mg po divided into 100 mg one hour before the abortion and 200 mg one half hour after	
	Second trimester: Cefazolin 1 g IV	Doxycycline 300 mg po divided into 100 mg one hour before the abortion and 200 mg one half hour after	
<b>HEAD &amp; NECK</b>			
Entering oral cavity or pharynx	Cefazolin 1 g IV	Clindamycin 600 mg IV +/- Gentamicin 2 mg/kg IV	Thyroidectomy (if high infection rate anticipated) Cefazolin 1 g IV may be used
<b>ORAL-MAXILLOFACIAL</b>			
	Cefazolin 1 g IV	Clindamycin 600 mg IV	
<b>OPHTHALMIC</b>			
	Gentamicin 0.3% multiple drops topically over 2 to 24 hours	Ofloxacin 0.3% multiple drops topically over 2 to 24 hours	
<b>ORTHOPAEDIC</b>			
Total joint replacement	Cefazolin 1 g IV	Vancomycin 1 g IV (4)	Post operative doses x 48 hours as directed by physician
ORIF of fracture (Adult)	Cefazolin 1 g IV	Vancomycin 1 g IV (4)	
ORIF of fracture (Paed)	Cefazolin 40 mg/kg/dose IV, max 2 g	Vancomycin 15 mg/kg/dose IV, max 1 g/dose (4)	
<b>THORACIC (Non-cardiac)</b>			
	Cefazolin 1 g IV	Cefuroxime 1-2 g IV <b>OR</b> Vancomycin 1 g IV (4)	Optimal duration is unknown
<b>VASCULAR</b>			
Arterial surgery involving the abdominal aorta, a prosthesis, or a groin incision	Cefazolin 1 g IV	Vancomycin 1 g IV (4)	
Lower extremity amputation for ischemia	Cefazolin 1 g IV	Vancomycin 1 g IV (4)	

1. Metronidazole 500 mg and Erythromycin 1 g (19, 18 + 11 hours pre-op).
2. Urine culture positive or unavailable, pre-operative catheter.  
Antimicrobials not recommended in patients with negative pre-op urine cultures.
3. Patients with previous pelvic inflammatory disease, previous gonorrhoea or multiple sex partners.
4. For patients with immediate type 1 hypersensitivity to penicillins or cephalosporins.
5. For patients with immediate type 1 hypersensitivity to penicillins or cephalosporins, use vancomycin 1 g IV

## **EVALUATION**

SSI surveillance  
High risk review  
Pathway variance reports and focused review

## **APPROVAL**

MAC: January 2004

## **REFERENCES**

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5. The Hospital for Sick Children's Formulary 2002-2003