

# Antibiotic Prophylaxis in Gynecological Surgery

Translated from the original French version published November 2005

This guide is provided for information purposes and is not a substitute for clinical judgment.

## GENERAL

- Appropriate antibiotic prophylaxis should ensure coverage against Gram-positive cocci and non-nosocomial Gram-negative bacilli (or enterobacteriaceae).

## TREATMENT GUIDELINES

- Antibiotic prophylaxis must be adapted to specific resistance patterns of each hospital environment.
- Appropriate antibiotic prophylaxis is recommended for patients with cardiac defects who are at risk for developing bacterial endocarditis following gynecological surgery. (Please refer to the card focusing on the prophylaxis of bacterial endocarditis.)
- **Timing of preoperative antibiotic administration**
  - At induction of anesthesia
  - Variable, depending on the recommended agent
  - Cesarean delivery: after clamping of the umbilical cord, in order to prevent the drug from reaching the neonate.
- When antibiotic prophylaxis is recommended, a single dose is sufficient except in circumstances where therapy should usually be continued for 5 days.
  - ⇒ However, if procedure lasts over 3 hours or if there is excessive blood loss (>1500 mL in adult patients), the dose should be repeated as needed (at appropriate intervals, on the basis of the half-life of the antibiotic in order to ensure minimum antimicrobial levels from the time of the incision to wound closure).

### Antibiotic Prophylaxis

#### • First-line antibiotic prophylaxis

⇒ Cefazolin® is preferred.

- ↳ Some second-generation cephalosporins (cefoxitin) are often considered appropriate first-line choices for prophylaxis in hysterectomies. However, because of their broad spectrum, these cephalosporins have often been associated with the development of *Clostridium difficile* colitis and bacterial resistance.

#### • •Second-line antibiotic prophylaxis

⇒ Indications

- **Documented** allergy to  $\beta$ -lactams in patients:
  - having shown signs of anaphylaxis, urticaria or rash, within 72 hours of administering a  $\beta$ -lactam antimicrobial or having had a serious adverse reaction such as, drug fever or toxic epidermal necrolysis.
- Patients colonized with methicillin-resistant *Staphylococcus aureus* (MRSA) or with methicillin-resistant coagulase-negative staphylococci.

- **Second-line Antibiotic Prophylaxis (continued)**

- ⇒ **An acceptable documented second-line regimen without clindamycin is preferred** unless the activity spectrum of clindamycin is more appropriate than other regimens against the pathogens encountered (clindamycin has been extensively associated with *C. difficile* colitis, occasionally with just a single dose). In gynecological surgery, the spectrum of clindamycin is more adequate than that of Vancomycin, which is preferred in other types of surgery.
- ⇒ **Second-line regimens with gentamicin are preferred to regimens with ciprofloxacin**, since certain data seems to link the use of quinolones with the emergence of *C. difficile* colitis. This information is to be interpreted in view of each hospital setting.
- ⇒ For first trimester high-risk induced abortions and second trimester induced abortions: **no second-line prophylaxis is recommended for most patients, since postoperative infection rates are relatively low. When prophylaxis is needed, metronidazole may be used.** (No second-line antibiotic prophylactic regimen has been well described in guidelines consulted).

### **Antibiotic prophylaxis in gynecological surgery**

Prophylaxis is generally **NOT RECOMMENDED**.

**RECOMMENDED antibiotic prophylaxis (exceptional situations)**

#### **Contaminated surgery**

##### **Clean-contaminated surgery**

- **Hysterectomy**  
Prophylaxis is recommended for all types of total hysterectomy whether abdominal, vaginal or laparoscopically assisted. For subtotal hysterectomy, prophylaxis is probably not required.
- **High-risk cesarean section**  
Following premature membrane rupture, active labor or emergency cesarean section;  
Prophylaxis is controversial in uncomplicated cesarean sections and fallopian tube occlusions. Certain authors also recommend prophylaxis in low-risk cesareans even if benefits are lesser than in high-risk cesarean sections (Cochrane Review includes in this last category, patients with premature rupture of the membranes usually considered high-risk). However, it is necessary to consider the risks of developing *C. difficile* colitis with just a single dose of antibiotic.
- **High-risk induced abortion in the first trimester**  
Patients with a history of pelvic inflammatory disease, gonorrhoea, multiple sexual partners. Certain authors have shown the benefit of prophylaxis in all patients undergoing induced abortion. However, it is necessary to consider the risks of developing *C. difficile* colitis with just a single dose of antibiotic.
- **Induced abortion in second trimester**

### **Antibiotic administration**

Cefazolin	direct IV over 3-5 minutes OR IV infusion over 15–30 minutes
Clindamycin	IV infusion over 30-60 minutes (maximum 30 mg/minute in adults)
Gentamicin	IV infusion over 15-30 minutes
Metronidazole	IV infusion over 30 minutes
Penicillin G sodium	IV infusion over 30 minutes

## THERAPY

### ANTIBIOTIC PROPHYLAXIS IN GYNECOLOGICAL SURGERY, WHEN RECOMMENDED

Type of surgery	Adults and adolescents			
	First-line therapy**	Cost per dose † <sup>  </sup>	Second-line therapy *	Cost per dose † <sup>  </sup>
Hysterectomy	Cefazolin (Ancef <sup>®</sup> ) 1 g IV at induction  <i>N.B. a single dose of 2 g IV at induction may be used in patients &gt;80 kg according to certain authors</i>	\$1	Metronidazole (Flagyl <sup>®</sup> ) 500 mg IV	\$1
			AND Gentamicin (Garamycin <sup>®</sup> ) 2 mg/kg IV at induction	\$3 (60 kg)
			Clindamycin <sup>§</sup> (Dalacin <sup>®</sup> ) 900 mg IV at induction	\$3
			AND Gentamicin (Garamycin <sup>®</sup> ) 2 mg/kg IV at induction	\$3 (60 kg)
High-risk Cesarean section	Cefazolin (Ancef <sup>®</sup> ) 1-2 g IV after clamping of umbilical cord	\$1	Metronidazole (Flagyl <sup>®</sup> ) 500 mg IV	\$1
			AND Gentamicin (Garamycin <sup>®</sup> ) 2 mg/kg IV at induction	\$3 (60 kg)
			Clindamycin <sup>§</sup> (Dalacin <sup>®</sup> ) 900 mg IV at induction	\$3
			AND Gentamicin (Garamycin <sup>®</sup> ) 2 mg/kg IV at induction	\$3 (60 kg)
High-risk induced abortion in first trimester	Doxycycline 100 mg PO 60 min before surgery and 200 mg PO 30 min after surgery	\$2	Metronidazole (Flagyl <sup>®</sup> ) 1 g PO before procedure AND 500 mg PO q6 hours in 3 doses	\$0,30 <sup>§</sup>
Induced abortion in second trimester	Cefazolin (Ancef <sup>®</sup> ) 1 g IV at induction	\$1	Metronidazole (Flagyl <sup>®</sup> ) 1 g PO before procedure AND 500 mg PO q6 hours in 3 doses	\$0,30 <sup>§</sup>

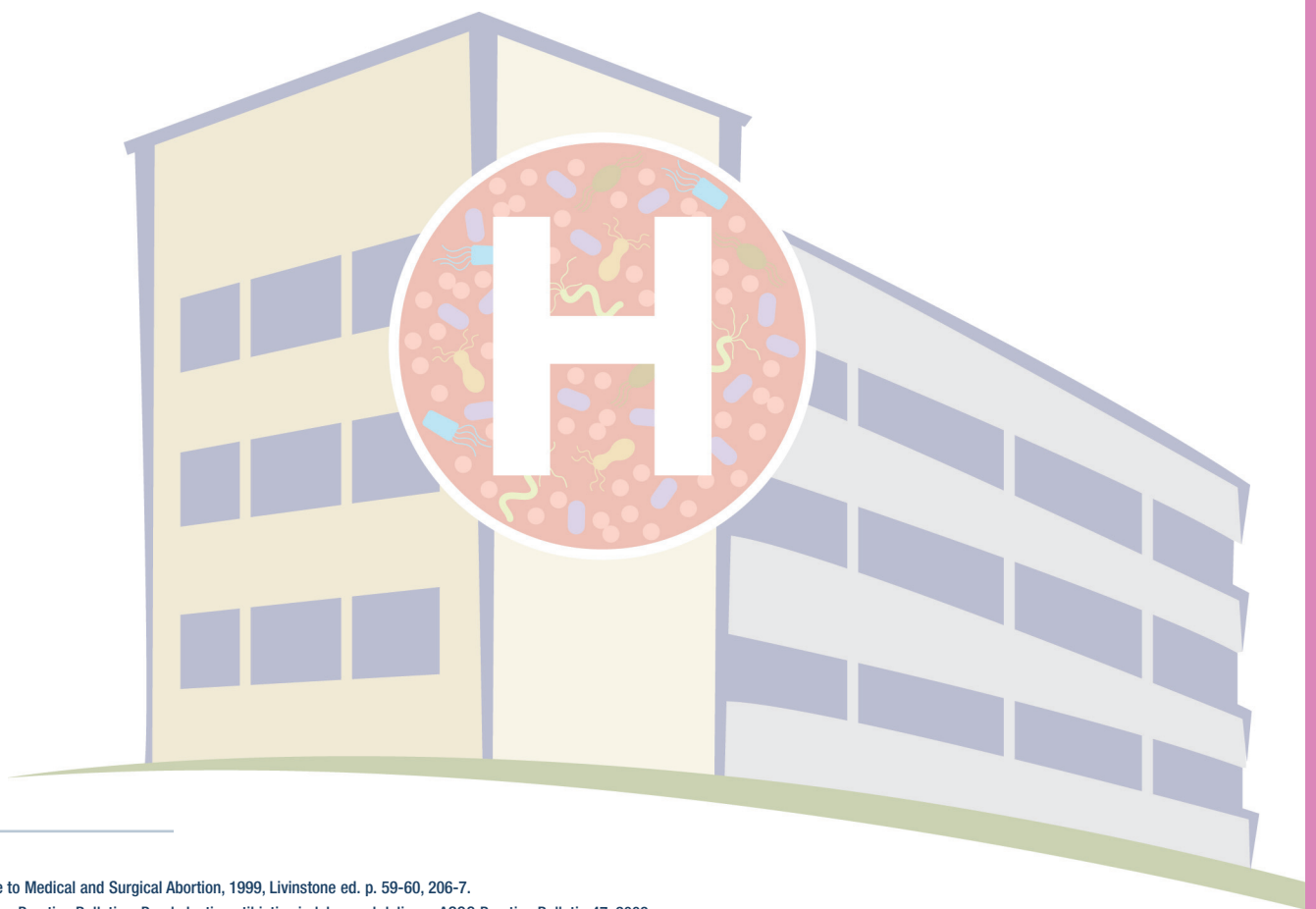
\* Only one brand name product is listed although several manufacturers may market other brand names.

† Approximate cost negotiated for the healthcare facilities of the region of Québec (June 2005). Cost may vary with the region.

‡ Cefazolin: repeat dose during procedure if it lasts >3 hours or if blood loss exceeds 1500 mL.

§ Select regimens with clindamycin as a last resort in order to decrease the risk of *C. difficile* colitis.

|| Approximate cost based on price listed for oral presentations in the *Liste de médicaments* published by the Régie de l'assurance maladie du Québec (RAMQ) (February 2005).



## REFERENCES

- A Clinician's Guide to Medical and Surgical Abortion, 1999, Livinstone ed. p. 59-60, 206-7.
- ACOG Committee on Practice Bulletins. Prophylactic antibiotics in labor and delivery. ACOG Practice Bulletin 47, 2003.
- ACOG Committee on Practice Bulletins. Antibiotic prophylaxis for gynecologic procedures. ACOG Practice Bulletin 23, 2001.
- American Society of Health-System Pharmacists. ASHP therapeutic guidelines on antimicrobial prophylaxis in surgery. American Journal of Health-System Pharmacy 1999, 56: 1839-88.
- Bratzler DW, Houck PM. Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project. Clinical Infectious Diseases 2004, 38: 1706-15.
- Comité sur les infections nosocomiales du Québec, Institut National de Santé Publique du Québec. Prévention et contrôle de la diarrhée nosocomiale associée au *Clostridium difficile* au Québec: lignes directrices intérimaires pour les centres hospitaliers. 2<sup>e</sup> ed., 2004.
- Gyssens IC. Preventing postoperative infections: current treatment recommendations. Drugs 1999, 57(2): 175-85.
- Mandell G, Bennett J, Dolin R. Principles and practice of infectious diseases. 6 ed. New York: Churchill Livingstone. 2005.
- Scottish Intercollegiate Guidelines Network (SIGN). Antibiotic prophylaxis in surgery: a national clinical guideline. 2000 (45): 1-36.
- Smaill F, Hofmeyr G. Antibiotic prophylaxis for cesarean section. The Cochrane Database of Systematic Reviews 2002 (3).
- The Medical Letter. Antimicrobial prophylaxis in surgery. The Medical Letter on Drugs and Therapeutics 2001, 43: 92-8.
- The Medical Letter. Antimicrobial prophylaxis for surgery. Treatment Guidelines from The Medical Letter 2004, 2(20): 27-32.