**Antibiotic Prophylaxis in Gynecological Surgery**

Translated from the original French version published November 2005

This guide was developed in collaboration with professional corporations (CMQ, OPQ), the federations (FMOQ, FMSQ) and Quebec associations of pharmacists and physicians.

**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 (cefotaxim) 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 ß-lactams in patients:
      - having shown signs of anaphylaxis, urticaria or rash, within 72 hours of administering a ß-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.

**REFERENCES**

Antibiotic prophylaxis in gynecological surgery

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Prophylaxis is generally NOT RECOMMENDED.

RECOMMENDED antibiotic prophylaxis (exceptional situations)

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 cesarean sections 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, gonorrhea, 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**

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.

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- **Induced abortion in first trimester**
  - Dose: 100 mg PO 60 min before surgery and 200 mg PO 30 min after surgery
  - 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).
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- **Induced abortion in second trimester**

Antibiotics

- **Cefazolin** (Ancef®)
  - 1 g IV at induction
  - N.B. a single dose of 2 g IV at induction may be used in patients >100 kg according to certain authors
  - May be used in patients >80 kg according to certain authors
- **Clindamycin** (Dalacin®)
  - 900 mg IV at induction
- **Doxycycline**
  - 100 mg PO 60 min before surgery and 200 mg PO 30 min after surgery
- **Gentamicin** (Garamycin®)
  - 500 mg IV AND Gentamicin (Garamycin®) 2 mg/kg IV at induction
  - 2 mg/kg IV at induction
  - 2 mg/kg IV at induction
- **Metronidazole**
  - IV infusion over 30 minutes
- **Penicillin G sodium**
  - IV infusion over 30 minutes
  - OR IV infusion over 15–30 minutes

Antibiotic regimens

- **Second-line Antibiotic Prophylaxis**
  - 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, WHEN RECOMMENDED**

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>First-line Therapy *‡ Cost per dose†I I</th>
<th>Second-line Therapy * Cost per dose†I I</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hysterectomy</strong></td>
<td>Cefazolin (Ancef®) 1 g IV at induction</td>
<td>Metronidazole (Flagyl®) 500 mg IV AND Gentamicin (Garamycin®) 2 mg/kg IV at induction</td>
</tr>
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<td><strong>High-risk Cesarean section</strong></td>
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<td><strong>High-risk Induced abortion in the first trimester</strong></td>
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<td><strong>Induced abortion in second trimester</strong></td>
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* 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 Quebec (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.
I I 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).
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This guide is provided for information purposes and is not a substitute for clinical judgment.

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