

10 practical, evidence-based recommendations for perioperative antibiotic prophylaxis

Your surgical outcomes will improve by following these evidence- and policy-backed strategies

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Antibiotic prophylaxis for gynecologic surgery has become a widely accepted practice to reduce post-surgical infections, which can lengthen hospital stay, worsen pain, prolong recovery, and lead to other complications. Recommendations for using antibiotic prophylaxis have been developed by many hospitals, accrediting bodies, and national organizations. Patients are becoming increasingly aware of postoperative infections and their consequences, and some complications, including urinary tract infection, are being evaluated as quality markers and qualifiers for payment by insurers and governmental agencies. Hospital-specific infection information is available in some regions through a simple Internet search. Still, compliance with national guidelines is variable and may be influenced by local hospital policies.¹ While prophylaxis generally is

thought to be safe, unnecessary administration of antibiotics is undesirable; more doses or more powerful antibiotics are not always better. An appreciation of some of the nuances of prophylaxis is desirable to improve patient care and safety.

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Cephalosporins can be safe to use with penicillin allergies
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Stop antibiotics after the operating room unless you are treating an actual infection
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1 Know what to use and when to use it

Follow ACOG and/or SCIP guidelines

ACOG Committee on Practice Bulletins—Gynecology. ACOG practice bulletin No. 104: antibiotic prophylaxis for gynecologic procedures. Obstet Gynecol. 2009;113(5):1180–1189.

Bratzler DW, Hynt DR. The surgical infection prevention and surgical care improvements projects: national initiatives to improve outcomes for patients having surgery. Clin Infect Dis. 2006;43(3):322–330.

No prophylaxis is needed for laparoscopy (without hysterectomy), laparotomy (without hysterectomy), hysteroscopy, intrauterine device insertion, endometrial biopsy, or urodynamics. Antibiotic agents recommended for prophylaxis for hysterectomy performed via any route include cefazolin (supported by ACOG) and cefotetan, cefoxitin, cefuroxime, or ampicillin/sulbactam (recommended by Surgical Care Improvement Project guidelines) (TABLE).



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Alternative agents are available for patients with a true penicillin allergy.

2 Increase the dose when needed

Double the antibiotic dose for patients weighing more than 220 lb or with a body mass index greater than 35 kg/m²

Forse RA, Karam B, MacLean LD, Christou NV.

Antibiotic prophylaxis for surgery in morbidly obese patients. Surgery. 1989;106(4):750–756.

In a study of morbidly obese patients undergoing gastroplasty, 2 g of cefazolin administered intravenously at the start of surgery was shown to reduce the risk of infection more than a 1-g dose. For true penicillin-allergic patients, weight-based gentamicin dosing (1.5 mg/kg) should provide adequate serum levels of the drug.

3 Repeat the dose when needed

Repeat the dose if surgery is long or involves a significant blood loss

ACOG Committee on Practice Bulletins—Gynecology.

ACOG practice bulletin No. 104: antibiotic prophylaxis for gynecologic procedures. Obstet Gynecol. 2009;113(5):1180–1189.

Ho VP, Nicolau DP, Dakin GF, et al. *Cefazolin dosing for surgical prophylaxis in morbidly obese patients. Surg Infect (Larchmt). 2012;13(1):33–37.*

Give the first dose of antibiotic within an hour of the start of surgery, such as at the time of anesthesia induction. To maintain adequate levels throughout surgery, repeat dosing about 3 hours later for cefazolin or 2 hours after cefoxitin (1 to 2 times the half-life of the drug). Gentamicin likely does not need redosing for length of surgery, and clindamycin should be repeated at about 6 hours. If blood loss exceeds 1500 mL, redosing of the antibiotic will maintain adequate serum levels. As blood transfusion has been associated with surgical site infections, meticulous hemostasis is paramount.

Antibiotic prophylaxis recommendations for hysterectomy

ACOG	1. Cefazolin* If history of immediate hypersensitivity to penicillin: 2. Clindamycin + gentamicin or quinolone [†] or aztreonam 3. Metronidazole + gentamicin or quinolone [†]
SCIP	1. Cefotetan, cefazolin, cefoxitin, cefuroxime, or ampicillin/sulbactam If allergy: 2. Clindamycin + aminoglycoside or quinolone or aztreonam 3. Metronidazole + aminoglycoside or quinolone

SCIP = Surgical Care Improvement Project

*Acceptable alternatives include cefotetan, cefoxitin, cefuroxime, or ampicillin/sulbactam

[†]Ciprofloxacin or levofloxacin or moxifloxacin

4 Get the Foley catheter out ASAP

Remove it even in the operating room, to decrease the risk of UTI

Alessandri F, Mistrangelo E, Lijoi D, Ferrero S, Ragni N. *A prospective, randomized trial comparing immediate versus delayed catheter removal following hysterectomy. Acta Obstet Gynecol Scand. 2006;85(6):716–720.*

While there is a risk of recatheterization, removal of the catheter in the operating room will reduce the risk of postsurgical urinary tract infection.

5 Target the flora

Understand the flora that can cause infections and use a narrow-spectrum antibiotic

ACOG Committee on Practice Bulletins—Gynecology.

ACOG practice bulletin No. 104: antibiotic prophylaxis for gynecologic procedures. Obstet Gynecol. 2009;113(5):1180–1189.

For procedures involving the vagina, either directly or following removal of the uterus, possible organisms include aerobic Gram-positive cocci (staphylococci), fecal flora (anaerobic bacteria or Gram-negative aerobes), and other flora that can result in bacterial vaginosis. For surgeries where the vagina is not involved, such as laparotomy or laparoscopy, the concern mainly is related to skin flora. Cephalosporins are effective



Decrease the risk of UTI by removing the Foley catheter as soon as possible postsurgery

against these organisms and have a low rate of adverse reactions.

6 Understand your patient's penicillin allergy

Cephalosporins typically are safe in patients with a penicillin allergy unless a history of anaphylaxis is documented

Campagna JD, Bond MC, Schabelman E, Hayes BD. The use of cephalosporins in penicillin-allergic patients: a literature review. J Emerg Med. 2011 Jul 8. [Epub ahead of print]

The rate of cross-reactivity may be as low as 1% between the two classes of drugs, and second- and third-generation cephalosporins have negligible risk due to substantial chemical structural differences from penicillins. Consider cefoxitin in these patients in place of cefazolin.

7 No infection? No antibiotics. Stop antibiotics after the operating room unless infection is present

Van Eyk N, van Schalkwyk J. Antibiotic prophylaxis in gynaecologic procedures. J Obstet Gynaecol Can. 2012;34(4):382-391.

There are no data to support additional dosing after the operating room, even for 24 hours, to prevent infection. Hospitals and accrediting bodies are examining overuse of antibiotics, including extending prophylactic antibiotics outside the operating room, and surgeons can be cited for this practice.

8 Encourage open disclosure Communicate with your residents/fellows and anesthesia team about antibiotic choice, dose, and redosing

Altpeter T, Luckhardt K, Lewis JN, Harken AH, Polk HC Jr. Expanded surgical time out: a key to real-time data collection and quality improvement. J Am Coll Surg. 2007;204(4):527-532.

Discuss the length of the procedure and the time required for the antibiotic to take effect. Make sure that the antibiotic(s) you've ordered actually are what is being given and resolve any differences of opinion by consensus. This is often done during a "time out" but may need to be done earlier depending on when antibiotics are started.

9 Know the rules

Become familiar with hospital, state, and other local policies about antibiotic use

To reduce antimicrobial resistance, many hospitals have restrictions on the use of some medications, such as vancomycin. Vancomycin is not recommended for antibiotic prophylaxis for any gynecologic procedure; alternative agents should be chosen. Clinicians can be cited for use of a restricted medication when the use of other agents is possible. Understand if postoperative infections are reportable infections and if reporting to patients is mandatory.

10 Narrow your spectrum of endocarditis concerns

There is no need to change your prophylaxis based on endocarditis risk for genitourinary procedures

Wilson W, Taubert KA, Gewitz M, et al. Prevention of infective endocarditis: guidelines from the American Heart Association. [published correction appears in: Circulation. 2007;116(15):e376-377]. Circulation. 2007;116(15):1736-1754.

Infectious endocarditis prophylaxis is now only recommended for patients with a prosthetic valve, history of endocarditis, congenital heart disease, or those who have undergone cardiac transplantation. 🚫

Reference

1. Schimpf MO, Morrill MY, Margulies RU, Ward RM, Carberry CL, Sung VW. Surgeon practice patterns for antibiotic prophylaxis in benign gynecologic surgery. Paper presented at: 38th Scientific Meeting of the Society for Gynecologic Surgeons; April 13, 2012; Baltimore, MD. Oral poster #3.



Surgeons can be cited for using antibiotics after surgery without infection present or for using an antimicrobial that is restricted according to hospital policy

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