

## ADULT ANTIMICROBIAL SURGICAL PROPHYLAXIS GUIDELINES-UCSF HEALTH

### INTRODUCTION

The antimicrobial surgical prophylaxis guideline establishes evidence-based standards for surgical prophylaxis at UCSF Health. The protocol has been adapted from published consensus guidelines from the American Society of Health-System Pharmacists (ASHP), Society for Healthcare Epidemiology of America (SHEA), the Infectious Diseases Society of America (IDSA), Centers for Disease Control and Prevention (CDC), and the Surgical Infection Society (SIS) for use at UCSF with input from the Antimicrobial Stewardship Program, the Infectious Diseases Management Program, the Department of Anesthesiology, Allergy and Immunology, and the Surgical departments.

### PRINCIPLES OF ANTIMICROBIAL SURGICAL PROPHYLAXIS

- This guideline is focused on clean and clean-contaminated surgeries
- Prophylaxis should target the most likely pathogens, taking into consideration type of surgery and local epidemiology
- Administer correctly—goal is for adequate tissue concentration at the time of infection risk
  - Administer within 60 minutes before the incision
  - For vancomycin and fluoroquinolones, start infusion 60-120 minutes prior to incision
- Give dose before the tourniquet goes up, if applicable
- Confirm timing of antibiotics with the surgeon at the Time-out or earlier since occasionally antibiotics need to be delayed until after culture
- In clean and clean-contaminated surgeries, discontinue antibiotics after the surgical incision is closed unless the patient has a documented or suspected infection. In pancreatic transplantation, continuation of antibiotics until duodenal cultures result is an exception.

### Patients with existing infections

- The appropriate antibiotic to treat the underlying infection should be chosen on a case-by-case basis
- Continue the antibiotic to treat infection
- If spectrum of activity does not cover the usual organisms covered by routine prophylaxis for that type of case, add the routine prophylactic agent (discuss with ASP or infectious diseases if unclear)
- Ensure dose is given at appropriate time to achieve maximal tissue levels at time of incision (see above)
- Duration should be determined by the duration for the existing infection

### Patients known to be colonized with methicillin-resistant *Staphylococcus aureus* (MRSA)

- Can consider addition of vancomycin to prophylaxis, especially if implant is being placed. Standard prophylaxis (e.g. cefazolin) should still be provided as this affords superior surgical site infection prevention for methicillin-sensitive *Staphylococcus aureus* (MSSA).
- If patients have a true contraindication to vancomycin (i.e. DRESS/SJS, anaphylaxis; these are very rare) can consider use of clindamycin in situations where vancomycin is indicated.

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- Data are limited
- Take into account:
  - Timing of infection
  - Location of infection
  - Prior treatment
  - Planned procedure
  - Organism

**Patients with antibiotic allergy**

- Take an antibiotic allergy history
  - Exact details of reaction, description of rash (if present)
  - Timing of reaction
  - Reason for antibiotic prescription
  - Other antibiotics received since then (also review the EMR to see whether the patient has received other antibiotics)
- Penicillin allergy: Patients with immediate type hypersensitivity to penicillins (including anaphylaxis, angioedema) can safely receive cefazolin and ceftriaxone. See [beta-lactam allergy guidance](#) for further details
  - Immediate-type hypersensitivity: Hives, angioedema, wheezing, anaphylaxis
    - Patients with immediate type hypersensitivity to penicillins, including anaphylaxis, can safely receive cefazolin and ceftriaxone (column 2)
  - Late reactions: Hemolytic anemia, thrombocytopenia, serum sickness, drug reaction with eosinophilia, Stevens Johnson syndrome (SJS)/Toxic epidermal necrolysis (TEN)
    - All beta-lactams should still be avoided, see alternative drugs (column 3)
- Cephalosporin allergy: consider allergy history to determine if rechallenge safe. See [beta-lactam allergy guidance](#) for further details.
  - If true cephalosporin allergy, use alternative drugs (column 3)
- When re-challenge or use of alternative  $\beta$ -lactam are likely safe:
  - Okay if patient had history of maculopapular rash (no hives, wheezing, anaphylaxis)
  - Okay if history of other drug intolerances like nausea

**DOSING AND RE-DOSING INTERVALS**

- In addition to the re-dosing intervals suggested below, consider immediate re-dosing in patients who have > 1.5 L of blood loss (>25ml/kg or > 30% blood volume loss for patients < 40kg) within a short time frame and those with severe burns.
  - Restart the re-dosing clock if this is done
  - Do not re-dose vancomycin or gentamicin for blood loss

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## COMMONLY USED IV DRUG DOSING AND ADMINISTRATION

| ADULTS                              | Ampicillin-sulbactam <sup>#</sup>                             | Cefazolin                                                     | Ceftriaxone                                                                                                                             | Clindamycin   | Gentamicin                                                                          | Levofloxacin                                                                      | Metronidazole                                                                     | Piperacillin-tazobactam <sup>#</sup>                                           | Vancomycin                       |
|-------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------|
| Initial dose                        |                                                               |                                                               |                                                                                                                                         |               |                                                                                     |                                                                                   |                                                                                   |                                                                                |                                  |
| ≥ 40 kg                             | 3 g                                                           | 40-120 kg: 2 g<br>> 120 kg: 3 g                               | 2 g                                                                                                                                     | 900 mg        | 5 mg/kg*                                                                            | 500 mg                                                                            | 500 mg                                                                            | Standard: 3.375 g<br>P aeruginosa: 4.5 g                                       | 40-80 kg: 1 g<br>≥ 80 kg: 1.5 g  |
| < 40 kg adult                       | 1.5 g                                                         | 1 g                                                           | 1 g                                                                                                                                     | 600 mg        | 2.5 mg/kg*                                                                          | 500 mg                                                                            | 500 mg                                                                            | Standard: 3.375 g<br>P aeruginosa: 4.5 g                                       | 750 mg                           |
| Admin                               | 15 min IVPB                                                   | IVP over 3-5 mins                                             | IVP over 3-5 mins                                                                                                                       | 15 min IVPB   | 30 min IVPB<br>Or 10 min IVPB                                                       | 60 min IVPB                                                                       | 30 min IVPB                                                                       | 30 min IVPB                                                                    | 60 min/1 g IVPB                  |
| Intraoperative redosing interval, h | CrCl (>30): 2<br>CrCl (10-30): 6<br>CrCl (<10): Do not redose | CrCl (>30): 4<br>CrCl (10-30): 6<br>CrCl (<10): Do not redose | 12                                                                                                                                      | 6             | None                                                                                | None                                                                              | 12                                                                                | 2                                                                              | CrCl > 30: 12<br>CrCl ≤ 30: None |
| When to start standard dosing       | After 3 doses                                                 | After 3 doses                                                 | After 2 doses                                                                                                                           | After 3 doses | Already standard                                                                    | Already standard                                                                  | Already standard                                                                  | After 3 doses                                                                  | Already standard                 |
| Standard dosing interval            | q6h                                                           | q8h                                                           | q24h                                                                                                                                    | q8h           | q24h                                                                                | q24h                                                                              | Q12h                                                                              | q8h                                                                            | q12h                             |
| Compatibility issues                | No                                                            | No                                                            | Ca++ containing solutions (incl LR) → possible precipitation<br>1. No Y-site<br>2. Flush line with normal saline<br>or use alt solution | No            | Propofol → Δ emulsion integrity<br>1. No Y-site<br>2. Flush line with normal saline | Propofol → free oil formation<br>1. No Y-site<br>2. Flush line with normal saline | Propofol → Δ fat globule size<br>1. No Y-site<br>2. Flush line with normal saline | Vecuronium → precipitation<br>1. No Y-site<br>2. Flush line with normal saline | No                               |

<sup>#</sup>Note: Adult dosing is based on *total* drug product e.g. 3 g ampicillin-sulbactam = 2 g ampicillin + 1 g sulbactam

\*Use ideal body weight, max dose = 400 mg

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**APPENDIX A. RECOMMENDED PROPHYLAXIS AGENTS BY ADULT OR PROCEDURE**

|                                                 | Recommended Agents                                                                                                                                          | Immediate reactions to penicillin (including anaphylaxis, hives, angioedema)                                                                                | Cephalosporin allergy or delayed severe penicillin reactions (Type II-IV: SJS/TEN, DRESS, serum sickness) |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>CARDIAC</b>                                  |                                                                                                                                                             |                                                                                                                                                             |                                                                                                           |
| CABG                                            | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Vancomycin                                                                                                |
| Cardiac Device Insertion (pacemaker) and valves | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Vancomycin                                                                                                |
| Ventricular Assist Device                       | MRSA nares (-): Cefazolin<br>MRSA nares (+): Cefazolin + Vancomycin                                                                                         | MRSA nares (-): Cefazolin<br>MRSA nares (+): Cefazolin + Vancomycin                                                                                         | Vancomycin                                                                                                |
| <b>THORACIC</b>                                 |                                                                                                                                                             |                                                                                                                                                             |                                                                                                           |
| Thoracotomy, Pneumonectomy, Lobectomy           | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Vancomycin                                                                                                |
| VATS                                            | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Vancomycin                                                                                                |
| <b>GENERAL SURGERY</b>                          |                                                                                                                                                             |                                                                                                                                                             |                                                                                                           |
| <b>GASTRODUODENAL—No suspected infection</b>    |                                                                                                                                                             |                                                                                                                                                             |                                                                                                           |
| Entry into lumen of GI tract (bariatric)        | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Vancomycin + levofloxacin                                                                                 |
| Pancreatoduodenectomy (with or without stent)   | Piperacillin/tazobactam                                                                                                                                     | Ceftriaxone + metronidazole                                                                                                                                 | Levofloxacin + metronidazole                                                                              |
| Without entry into GI tract (anti-reflux)       | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Vancomycin + levofloxacin                                                                                 |
| <b>BILIARY—No suspected infection</b>           |                                                                                                                                                             |                                                                                                                                                             |                                                                                                           |
| Open-Biliary (no infection)                     | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Levofloxacin + metronidazole                                                                              |
| Laparoscopic- Biliary                           |                                                                                                                                                             |                                                                                                                                                             |                                                                                                           |
| -Low Risk                                       | None                                                                                                                                                        | None                                                                                                                                                        | None                                                                                                      |
| -High Risk (no infection)                       | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Levofloxacin + metronidazole                                                                              |
| <b>INTESTINE—No suspected infection</b>         |                                                                                                                                                             |                                                                                                                                                             |                                                                                                           |
| Appendectomy (uncomplicated)                    | Cefazolin if > 8h from ceftriaxone; give metronidazole if not administered in the ED                                                                        | Cefazolin if > 8h from ceftriaxone; give metronidazole if not administered in the ED                                                                        | Levofloxacin + metronidazole                                                                              |
| Nonobstructed small intestine                   | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Clindamycin + levofloxacin                                                                                |
| Hernia Repair                                   | Cefazolin                                                                                                                                                   | Cefazolin                                                                                                                                                   | Vancomycin                                                                                                |
| Colorectal                                      | Preop mechanical bowel prep + neomycin/metronidazole PO x 3 doses<br>(metronidazole allergy: substitute erythromycin)<br>Periop ceftriaxone + metronidazole | Preop mechanical bowel prep + neomycin/metronidazole PO x 3 doses<br>(metronidazole allergy: substitute erythromycin)<br>Periop ceftriaxone + metronidazole | Preop mechanical bowel prep + neomycin/metronidazole PO x 3 doses<br>Periop levofloxacin + metronidazole  |

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|                                                                                           | Recommended Agents                                                           | Immediate reactions to penicillin (including anaphylaxis, hives, angioedema) | Cephalosporin allergy or delayed severe penicillin reactions (Type II-IV: SJS/TEN, DRESS, serum sickness) |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>HEAD &amp; NECK</b>                                                                    |                                                                              |                                                                              |                                                                                                           |
| Clean, including tympanostomy tube placement                                              | None                                                                         | None                                                                         | None                                                                                                      |
| Clean, neck dissection or prosthesis placement (except tympanostomy tube)                 | Cefazolin                                                                    | Cefazolin                                                                    | Clindamycin                                                                                               |
| FESS                                                                                      | Cefazolin                                                                    | Cefazolin                                                                    | Clindamycin                                                                                               |
| Tonsillectomy                                                                             | None                                                                         | None                                                                         | None                                                                                                      |
| Clean-contaminated except FESS and tonsillectomy                                          | Ampicillin/sulbactam                                                         | Cefazolin + metronidazole                                                    | Clindamycin/levofloxacin                                                                                  |
| <b>NEUROSURGERY</b>                                                                       |                                                                              |                                                                              |                                                                                                           |
| Elective craniotomy & CSF Shunting-Primary                                                | Cefazolin                                                                    | Cefazolin                                                                    | Vancomycin                                                                                                |
| Implantation of Intrathecal Pumps-Primary                                                 | Cefazolin                                                                    | Cefazolin                                                                    | Vancomycin                                                                                                |
| Revision craniotomy                                                                       | Cefazolin + Vancomycin                                                       | Cefazolin + vancomycin                                                       | Vancomycin                                                                                                |
| Skull base with dural resection                                                           | Ceftriaxone (2 g IV q12H) + metronidazole (q8h)                              | Ceftriaxone (2g IV q12H) + metronidazole (q8h)                               | Aztreonam 2 g + metronidazole + vancomycin                                                                |
| <b>ORTHOPEDIC and SPINE</b>                                                               |                                                                              |                                                                              |                                                                                                           |
| Clean operations of hand, knee, foot (without implantation of foreign material), ≤ 30 min | None                                                                         | None                                                                         | None                                                                                                      |
| Clean operations of hand, knee, or foot (with foreign material), > 30 min                 | Cefazolin                                                                    | Cefazolin                                                                    | Vancomycin                                                                                                |
| Laminectomy or MIS primary spinal fusion                                                  | Cefazolin                                                                    | Cefazolin                                                                    | Vancomycin                                                                                                |
| Spinal fusion (primary): cervical or thoracic levels only                                 | Cefazolin                                                                    | Cefazolin                                                                    | Vancomycin                                                                                                |
| Spinal fusion (primary): lumbar or sacral level involved                                  | Cefazolin + gentamicin                                                       | Cefazolin + gentamicin                                                       | Vancomycin + gentamicin                                                                                   |
| Spinal fusion (revision): cervical or thoracic levels only                                | Cefazolin + vancomycin                                                       | Cefazolin                                                                    | Vancomycin                                                                                                |
| Spinal fusion (revision): lumbar or sacral level involved                                 | Cefazolin + vancomycin + gentamicin                                          | Cefazolin + vancomycin + gentamicin                                          | Vancomycin + gentamicin                                                                                   |
| Arthroplasty for femoral neck fracture                                                    | Cefazolin<br>+ (vancomycin if deemed high risk for drug-resistant organisms) | Cefazolin<br>+ (vancomycin if deemed high risk for drug-resistant organisms) | Vancomycin                                                                                                |
| Implantation of internal fixation devices (nails, screws, wires)                          | Cefazolin                                                                    | Cefazolin                                                                    | Vancomycin                                                                                                |
| Total joint replacement                                                                   | Cefazolin                                                                    | Cefazolin                                                                    | Vancomycin                                                                                                |
| Total joint replacement- Revision                                                         | Cefazolin + vancomycin (cefazolin + clindamycin for a vancomycin allergy)    | Cefazolin + vancomycin (cefazolin + clindamycin for a vancomycin allergy)    | Vancomycin                                                                                                |

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|                                                                                                                                                          | Recommended Agents                                                     | Immediate reactions to penicillin<br>(including anaphylaxis, hives, angioedema) | Cephalosporin allergy or delayed severe penicillin reactions (Type II-IV: SJS/TEN, DRESS, serum sickness) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>PLASTIC SURGERY</b>                                                                                                                                   |                                                                        |                                                                                 |                                                                                                           |
| <b>Routine prophylaxis</b>                                                                                                                               | Cefazolin                                                              | Cefazolin                                                                       | Clindamycin                                                                                               |
| <b>Approach through oral cavity</b>                                                                                                                      | Ampicillin/sulbactam                                                   | Cefazolin + metronidazole                                                       | Clindamycin                                                                                               |
| <b>TRANSPLANTATION</b>                                                                                                                                   |                                                                        |                                                                                 |                                                                                                           |
| <b>Heart</b>                                                                                                                                             | Cefazolin                                                              | Cefazolin                                                                       | Vancomycin                                                                                                |
| <b>Heart with MRSA Risk Factors:</b><br>Inpatient hospitalization >72 hrs in past 6 months<br>Use of antibiotics in prior 48 hrs<br>Open chest out of OR | Cefazolin + vancomycin                                                 | Cefazolin + vancomycin                                                          | Vancomycin + levofloxacin                                                                                 |
| <b>Lung, Heart-Lung</b>                                                                                                                                  | Vancomycin + ceftriaxone                                               | Vancomycin + ceftriaxone                                                        | Clindamycin                                                                                               |
| <b>Kidney</b>                                                                                                                                            | Cefazolin                                                              | Cefazolin                                                                       | Clindamycin                                                                                               |
| <b>Liver</b>                                                                                                                                             | Piperacillin-tazobactam                                                | Vancomycin + ceftriaxone                                                        | Vancomycin + Aztreonam                                                                                    |
| <b>Pancreas &amp; Kidney-Pancreas</b>                                                                                                                    | Cefazolin +/- fluconazole (if high risk of fungal infection)           | Cefazolin +/- fluconazole (if high risk of fungal infection)                    | Vancomycin + levofloxacin +/- fluconazole (if high risk of fungal infections)                             |
| <b>UROLOGY</b>                                                                                                                                           |                                                                        |                                                                                 |                                                                                                           |
| <b>Lower tract instrumentation with risk of infection (incl TURP)</b>                                                                                    | Cephalexin<br>(cefazolin if PO dose not given in preop)                | Trimethoprim-sulfamethoxazole                                                   | Trimethoprim-sulfamethoxazole                                                                             |
| <b>Clean without entry into urinary tract</b>                                                                                                            | Cefazolin                                                              | Cefazolin                                                                       | Clindamycin                                                                                               |
| <b>Clean without entry into urinary tract + prosthesis</b>                                                                                               | Cefazolin + gentamicin                                                 | Cefazolin + gentamicin                                                          | Vancomycin + gentamicin                                                                                   |
| <b>Clean with entry into urinary tract</b>                                                                                                               | Cefazolin                                                              | Cefazolin                                                                       | Clindamycin + gentamicin                                                                                  |
| <b>Clean-contaminated</b>                                                                                                                                | Ceftriaxone + metronidazole                                            | Ceftriaxone + metronidazole                                                     | Levofloxacin + metronidazole                                                                              |
| <b>Complex stones/stents/upper tract instrumentation</b>                                                                                                 | Treat based on clinical judgement and culture data                     |                                                                                 |                                                                                                           |
| <b>Upper tract instrumentation</b>                                                                                                                       | Cephalexin<br>(cefazolin if PO dose not given in preop)                | Trimethoprim-sulfamethoxazole                                                   | Trimethoprim-sulfamethoxazole                                                                             |
| <b>Vaginal surgery</b>                                                                                                                                   | Cefazolin                                                              | Cefazolin                                                                       | Clindamycin + gentamicin                                                                                  |
| <b>VASCULAR</b>                                                                                                                                          | Cefazolin (+ vancomycin if MRSA colonization or graft/wound infection) | Cefazolin (+ vancomycin if MRSA colonization or graft/wound infection)          | Vancomycin                                                                                                |

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## APPENDIX B. RECOMMENDED PROPHYLAXIS AGENTS BY OB/GYN PROCEDURE

| OB-GYN                                                                                           | Recommended Agents                                                                                                                                                                                                                                                        | Immediate reactions to penicillin (including anaphylaxis, hives, angioedema) | Cephalosporin allergy or delayed severe penicillin reactions (Type II-IV: SJS/TEN, DRESS, serum sickness) |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Vaginal Delivery w/ manual placenta removal                                                      | Cefoxitin                                                                                                                                                                                                                                                                 | Cefazolin + metronidazole                                                    | Clindamycin                                                                                               |
| Cesarean Delivery                                                                                | Cefazolin                                                                                                                                                                                                                                                                 | Cefazolin                                                                    | Clindamycin + gentamicin                                                                                  |
| Caesarean Delivery contingencies                                                                 | MRSA colonized: consider vancomycin x 1, in addition to above<br><u>Ruptured membranes or labor at time of C-section</u> : Add Azithromycin 500 mg IV x 1<br><u>Vaginal hand</u> : Standard prophylaxis as above<br><u>Stat C-section</u> : Standard prophylaxis as above |                                                                              |                                                                                                           |
| Vaginal packing                                                                                  | No targeted prophylaxis unless another indication for prophylaxis exists                                                                                                                                                                                                  |                                                                              |                                                                                                           |
| Uterine balloon                                                                                  | Cefoxitin                                                                                                                                                                                                                                                                 | Cefazolin + metronidazole                                                    | Clindamycin                                                                                               |
| Laceration repair (3 <sup>rd</sup> or 4 <sup>th</sup> degree only)                               | Cefoxitin 2g IV                                                                                                                                                                                                                                                           | Cefazolin + metronidazole                                                    | Clindamycin                                                                                               |
| Hysterectomy (vaginal or abdominal), urogynecology procedures (+/- mesh)                         | Cefazolin +/- metronidazole                                                                                                                                                                                                                                               | Cefazolin +/- metronidazole                                                  | Clindamycin + gentamicin                                                                                  |
| Hysteroscopy, laparoscopy, laparotomy                                                            | None                                                                                                                                                                                                                                                                      |                                                                              |                                                                                                           |
| Hysterosalpingogram, endometrial biopsy                                                          | Doxycycline 100 mg po twice daily x 5 days if hx of PID or dilated fallopian tubes                                                                                                                                                                                        |                                                                              |                                                                                                           |
| Medical abortion                                                                                 | None                                                                                                                                                                                                                                                                      |                                                                              |                                                                                                           |
| Induced abortion/D+E/<br>D+C/manual uterine inspection<br>(including Laminaria placement)        | Doxycycline 200 mg po prior to procedure                                                                                                                                                                                                                                  |                                                                              |                                                                                                           |
| With fetal demise (any gest age)                                                                 | Add metronidazole 500 mg q8H x 2 doses                                                                                                                                                                                                                                    |                                                                              |                                                                                                           |
| Ultrasound (USIC), history-indicated cerclage (HIC), or laparoscopic-assisted abdominal cerclage | None                                                                                                                                                                                                                                                                      |                                                                              |                                                                                                           |
| Physical exam-indicated cerclage (PEIC)                                                          | Consider cefazolin + indomethacin                                                                                                                                                                                                                                         | Consider cefazolin + indomethacin                                            | Consider clindamycin + indomethacin                                                                       |
| Transabdominal cerclage (TAC)                                                                    | Cefazolin                                                                                                                                                                                                                                                                 | Cefazolin                                                                    | Clindamycin                                                                                               |
|                                                                                                  | <u>Low risk</u> : no antibiotics required                                                                                                                                                                                                                                 |                                                                              |                                                                                                           |

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| OB-GYN                                                                                                                                                                                   | Recommended Agents                                                                                                    | Immediate reactions to penicillin (including anaphylaxis, hives, angioedema)                                          | Cephalosporin allergy or delayed severe penicillin reactions (Type II-IV: SJS/TEN, DRESS, serum sickness)              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Cystoscopy alone                                                                                                                                                                         | <u>High risk:</u> TMP/SMX 160/800 DS (+ urine culture, pre-op catheter, prosthetic material)                          |                                                                                                                       |                                                                                                                        |
| Cystoscopy with manipulation or upper tract instrumentation (e.g. ureteroscopy)                                                                                                          | TMP/SMX 160/800 DS x1                                                                                                 |                                                                                                                       |                                                                                                                        |
| Cystoscopy with open surgery                                                                                                                                                             | Cefazolin                                                                                                             | Cefazolin                                                                                                             | Clindamycin + gentamicin                                                                                               |
| Risk of colorectal injuries                                                                                                                                                              | Preoperative mechanical bowel prep + neomycin/metronidazole PO x 3 doses<br>Perioperative ceftriaxone + metronidazole | Preoperative mechanical bowel prep + neomycin/metronidazole PO x 3 doses<br>Perioperative ceftriaxone + metronidazole | Preoperative mechanical bowel prep + neomycin/metronidazole PO x 3 doses<br>Perioperative levofloxacin + metronidazole |
| PUBS/IUT/RFA/Thoracoamniotic shunt/vesicoamniotic shunt/amnioreduction/ECV/laser ablation in TTTS, FETO (fetal endoscopic balloon occlusion), myelomeningocele repair/open fetal surgery | Cefazolin                                                                                                             | Cefazolin                                                                                                             | Clindamycin                                                                                                            |



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|                                                                                                                                                                     | <b>Recommended agent</b>                                                                                                                                                                      | <b>Immediate reactions to penicillin<br/>(including anaphylaxis, hives, angioedema)</b> | <b>Cephalosporin allergy or delayed severe penicillin reactions (Type II-IV: SJS/TEN, DRESS, serum sickness)</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Angiography, angioplasty, thrombolysis, arterial closure device placement, stent placement, superficial venous insufficiency treatment, IVC filter placement</b> | None                                                                                                                                                                                          | None                                                                                    | N/A                                                                                                              |
| <b>Central venous access</b>                                                                                                                                        | None                                                                                                                                                                                          | None                                                                                    | None                                                                                                             |
| <b>Chemoembolization, ablation, embolization, or radioembolization where sphincter of Oddi is not intact (eg, history of biliary reconstructive surgery)</b>        | Moxifloxacin 400 mg daily x 3 days prior and 11 days post-procedure                                                                                                                           |                                                                                         |                                                                                                                  |
| <b>Embolization, ablation, radioembolization, and chemoembolization of liver (if intent to create infarction or high likelihood of infarction)</b>                  | Ampicillin/sulbactam                                                                                                                                                                          | Cefazolin + metronidazole                                                               | Levofloxacin                                                                                                     |
| <b>Endograft placement</b>                                                                                                                                          | None                                                                                                                                                                                          | None                                                                                    | None                                                                                                             |
| <b>Gastrostomy tube placement</b>                                                                                                                                   | Cefazolin                                                                                                                                                                                     | Cefazolin                                                                               | Levofloxacin                                                                                                     |
| <b>Percutaneous abscess drainage, on antibiotics</b>                                                                                                                | Continue directed therapy for the existing infection<br>Discuss with primary service whether antibiotics should be given (if active signs of infection) or held until after cultures obtained |                                                                                         |                                                                                                                  |
| <b>Percutaneous abscess drainage, not on antibiotics</b>                                                                                                            |                                                                                                                                                                                               |                                                                                         |                                                                                                                  |
| <b>Percutaneous nephrostomy tube placement or change</b>                                                                                                            | Cefazolin                                                                                                                                                                                     | Cefazolin                                                                               | Levofloxacin                                                                                                     |
| <b>Renal ablation, embolization</b>                                                                                                                                 | Cefazolin                                                                                                                                                                                     | Cefazolin                                                                               | Levofloxacin                                                                                                     |
| <b>Uterine Artery Embolization (UAE)</b>                                                                                                                            | Cefazolin                                                                                                                                                                                     | Cefazolin                                                                               | Levofloxacin                                                                                                     |
| <b>TIPS creation</b>                                                                                                                                                | Cefazolin                                                                                                                                                                                     | Cefazolin                                                                               | Levofloxacin                                                                                                     |
| <b>Tube check/change (hepatic, biliary)</b>                                                                                                                         | Cefazolin                                                                                                                                                                                     | Cefazolin                                                                               | Levofloxacin                                                                                                     |

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