



Adult Surgical Antibiotic Prophylaxis Protocol (≥18 years)

AUTHORIZATION IS GRANTED TO DISPENSE AND ADMINISTER AN ALTERNATE DRUG PRODUCT ACCEPTABLE TO THE MEDICAL STAFF'S PHARMACY COMMITTEE UNLESS THE DRUG PRODUCT IS SPECIFICALLY CIRCLED.

- This protocol is used when provider orders surgical antibiotic prophylaxis per protocol. A provider can order antibiotics off of the protocol by specifying the antibiotic and dose on the boarding sheet.
- **When cefazolin is the preferred antibiotic based on the surgery, the alternative antibiotic should only be chosen for one of the following reasons:**
 - Patient has an allergy listed to cefazolin, Ancef, or Kefzol.
 - Patient has any Beta-lactam allergy classified as Toxic epidermal necrolysis (TEN) or Stevens-Johnson syndrome (SJS) (Type IV - delayed, cell-mediated)
 - **Common Beta-lactams:**
 - Penicillin (Pen G, Pen VK)
 - Amoxicillin/clavulanate (Augmentin)
 - Cephalexin (Keflex)
 - Cefdinir (Omnicef)
 - Cefaclor
 - Amoxicillin
 - Ampicillin/sulbactam (Unasyn)
 - Ceftriaxone (Rocephin)
 - Cefepime (Maxipime)
 - Meropenem (Merrem)
- Timing of the first dose: Initial antibiotic dose for all drugs must be started within 60 minutes prior to incision except Vancomycin AND Fluoroquinolones, which must be started within 120 minutes prior to incision because of the prolonged infusion time required for these drugs.
- For patients currently receiving intravenous antibiotics for a remote infection prior to surgery: If the intravenous antibiotic is appropriate for the type of procedure and the time of surgery is known, the dose may be rescheduled to within the appropriate time frame prior to surgery if feasible. Otherwise, the preferred pre-op antibiotic prophylactic agent should be given within the appropriate timeframe prior to surgery unless the patient is currently receiving a fluoroquinolone, aminoglycoside, or vancomycin and an agent in the same class is preferred (in this case, an additional dose of a fluoroquinolone, aminoglycoside, or vancomycin should not be given). No post-operative antibiotics are indicated if all suspected pathogens are targeted by the scheduled antibiotic. See policy 061.033 for more information.
- Duration of surgical antimicrobial prophylaxis: In clean and clean-contaminated procedures, the CDC does not recommend prophylactic antibiotics after the surgical incision is closed in the operating room, even in the presence of a drain (Category IA—strong recommendation; high-quality evidence - Berrios-Torres 2017)¹. If antibiotics are continued post-operatively, they should be discontinued after 24 hours even in the presence of a drain, and the post-op antibiotic should match the pre-op antibiotic.²
- Intra-operative redosing: Recommended if duration of procedure exceeds 2 half-lives of the antimicrobial OR if there is excessive blood loss (>1500 mL).
- See Pharmacy Website for Pediatric and Interventional Radiology Pre-Op/Pre-Procedure Antibiotic Dosing Protocol
- For patients with prosthetic joints in which the procedure listed below states "no antibiotic required", the surgeon may wish to consider antibiotic prophylaxis based on AAOS recommendations and individual patient risk factors. In these cases the surgeon should order the specific antibiotic desired.

Antibiotic Dosing Considerations:

- Cefazolin: 2 gm for patients less than 120 kg (ABW), 3 gm for patients greater than or equal to 120 kg (ABW)
- Vancomycin: Dosing based on Actual Body Weight (ABW). Round to the nearest 250 mg. Maximum dose is 2.5 gm. Infuse no faster than 1 gram/hour.
- Gentamicin: Dosing based on ABW (use DW if ABW is >30% IBW). Normal dosing = 5 mg/kg. For patients with CrCl < 20 mL/min, consider 2 mg/kg. Round to the nearest 20 mg. Maximum dose is 700 mg.

Type of Procedure	Preferred First Line		Alternative if allergy to preferred antibiotic	
	Pre-OP	Intra-op Re-dosing	Pre-OP	Intra-op Re-dosing
Cardiac / Thoracic:				
<ul style="list-style-type: none"> • Open-heart surgery including mediastinal re-exploration • Collis Nissen • Non Cardiac Thoracotomy Procedures (Lobectomy / biopsy) 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Vancomycin 15mg/kg IVPB & Gentamicin 5mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> • TAVR or TAVI 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> • Pacemaker or defibrillator implant • Esophagectomy • Watchman device • MitraClip • Mediastinoscopy 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Vancomycin 15mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> • Temporary LVAD 	Cefepime 2 gm IVPB & Vancomycin 15mg/kg	Cefepime 2 mg IVPB q 4 hrs	Vancomycin 15mg/kg IVPB & Gentamicin 5mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> • EP studies (afib ablation, ASD closures, perivalvular leak closures) 	No antibiotics required			

Adult Surgical Antibiotic Prophylaxis Protocol (≥18 years)

Vascular:				
<ul style="list-style-type: none"> • AAA Procedure • Arterial surgery involving a prosthesis • Vein ligation • LE Bypass procedure or amputation • AV fistula – any surgical or radiologic manipulation • Dialysis Cath removal • Carotid endarterectomy • Embolectomy • Carotid Stent • Transcarotid artery revascularization (TCAR) 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> • Angiography procedure including stenting • Angioplasty • Aortogram 	No antibiotics required			
Gastrointestinal / Intra-Abdominal / General Surgery:				
<ul style="list-style-type: none"> • For major intra-abdominal surgery not listed below • Small bowel surgery with obstruction (laparoscopic or open) • Colorectal procedures (i.e. colostomy, colectomy, low anterior resection) • Appendectomy • Rectopex • I&D Perirectal abscess 	Cefazolin 2 gm IVP & Metronidazole 500mg IVPB	Cefazolin 2 gm IVP q 4 hrs	Metronidazole 500mg IVPB & Gentamicin 5mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> • Esophageal procedure • Gastroduodenal procedures • Ileostomy • Hernia, Laparotomy • Enterolysis • Lysis of Adhesions • Percutaneous G-tube placement • Mastectomy, Sentinal Node Biopsy • Partial Mastectomy • Simple Mastectomy • Central venous access port placement and removal (i.e. Infusaport) • Bariatric (Banding, bypass, sleeve gastrectomy) 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> • ERCP with obstruction 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Vancomycin 15mg/kg IVPB & Gentamicin 5mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> • ERCP without obstruction 	No antibiotics required			
<ul style="list-style-type: none"> • Nissen Fundoplication • Open cholecystectomy • Laparoscopic cholecystectomy • Laparoscopic Splenectomy • Adrenalectomy 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB + Gentamicin 5mg/kg IVPB	Clindamycin 900mg IVPB q 6 hrs
General Surgery / Other:				
<ul style="list-style-type: none"> • Laparoscopy (other, not described above) • Thyroidectomy • Parathyroidectomy • Wire Loc Breast Biopsy • Breast Radar Guided Biopsy via Savi Scout • Lumpectomy • Hemorrhoidectomy • Pilonidal cyst removal • Anal dilation • Incision & Drainage (Up to surgeon's discretion to order pre-op abx) • Wound vac application 	No antibiotics required			
Genitourinary:* (see Appendix 1 below for MMC OR pharmacy process for selecting pre-op antibiotic based on recent urine culture)				
<ul style="list-style-type: none"> • Laparoscopic Procedures <ul style="list-style-type: none"> ○ Robotic Prostatectomy ○ Nephroureterectomy 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB & Gentamicin 5mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> • Perineal Prostatectomy • Procedures involving bowel • Cystectomy 	Cefazolin 2 gm IVP & Metronidazole 500mg IVPB	Cefazolin 2 gm IVP q 4 hrs	Metronidazole 500mg IVPB & Gentamicin 5mg/kg IVPB	Not Recommended

<ul style="list-style-type: none"> Prosthetic implants (penile, sphincter, etc.) 	Cefazolin 2 gm IVP & Gentamicin 5mg/kg IVPB	Cefazolin 2 gm IVP q 4 hrs	Vancomycin 15mg/kg IVPB & Gentamicin 5mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> Nephrostolithotomy Percutaneous nephrostomy 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB & Gentamicin 5mg/kg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> Nephrectomy Brachytherapy Scrotal procedures <ul style="list-style-type: none"> Hydrocele Spermatocele Variocele Epididymal cystectomy Vasectomy Penile procedures (non-implants) 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> Cystoscopy Bladder Biopsy Retrograde pyelogram Hydrodistension TURP, TURBT Prostate Vaporization Ureteroscopy Lithotripsy 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Ciprofloxacin 400mg IVPB	Not Recommended
<ul style="list-style-type: none"> Transrectal Prostate Biopsy³ 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Ciprofloxacin 400mg IVPB	Not recommended
<ul style="list-style-type: none"> Bladder sling – see under Gynecologic AND Obstetric 	See under Gynecologic / Obstetric			
Gynecologic / Obstetric:⁴				
<ul style="list-style-type: none"> Myomectomy Colporrhaphy C-Section Bladder sling Radical vulvectomy or radical vulvar excision Fibroid removal Vaginal wall repair Pelvic mass removal 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB & Gentamicin 5mg/kg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> Hysterectomy Trachelectomy 	Cefazolin 2 gm IVP & Metronidazole 500mg IVPB	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB & Gentamicin 5mg/kg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> Dilation & Curettage (D&C) with suction Induced abortion / Dilatation & evacuation (D&E) 	Doxycycline 200 mg IVPB, or Doxycycline 200 mg PO x 1	None	Metronidazole 500 mg IVPB	None
<ul style="list-style-type: none"> Tubal ligation (any) Cervical Cone Procedures Loop Electrosurgical Excision Procedure (LEEP) Laparoscopy (diagnostic, operative, tubal sterilization) Laparotomy (unless vagina or GI tract is entered) D&C without suction Hysteroscopy (diagnostic, operative, essure, endometrial ablation) Simple vulvar excision (radical requires antibiotics) CO₂ Laser Procedures Ring & tandem insertion Salpingectomy Oophorectomy Laposcopic ovarian cystectomy 	No antibiotics required			
Head / Neck Surgery:				
<ul style="list-style-type: none"> Placement of prosthetic material Rhinoplasty Septoplasty Tympanoplasty 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> Dental surgery Incisions through oral or pharyngeal mucosa 	Unasyn 3 gm IVPB	Unasyn 3 gm IVPB q 2 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> Head and neck procedures including: blepharoplasties, Mohs flap reconstruction, lymph node biopsies, tonsillectomy / adenoidectomy 	No antibiotics required			
Neurosurgery:				
<ul style="list-style-type: none"> Cranial / Spinal / CSF shunt procedures 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Vancomycin 15mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> Pain pump implant or spinal cord stimulator Interstim device for Bladder Control 	Cefazolin 2 gm IVP	Not Applicable	Clindamycin 900mg IVPB	Not Applicable
<ul style="list-style-type: none"> Discogram / Kyphoplasty 	Cefazolin 2 gm IVP	Not Applicable	Clindamycin 900mg IVPB	Not Applicable

Orthopedic:				
<ul style="list-style-type: none"> Total Hip & Knee Arthroplasty 	<u>MRSA nasal swab negative:</u> Cefazolin 2 gm IVP <u>MRSA nasal swab positive:</u> Cefazolin 2 gm IVP & Vancomycin 15mg/kg IVPB	Cefazolin 2 gm IVP q 4 hrs	Vancomycin 15mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> Other hip, knee, & long bone procedures 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs		
<ul style="list-style-type: none"> Total Shoulder Arthroplasty Total Elbow Arthroplasty 	<u>MRSA nasal swab negative:</u> Cefazolin 2 gm IVP <u>MRSA nasal swab positive:</u> Vancomycin 15mg/kg IVPB	Cefazolin 2gm IVP q4 hrs	Vancomycin 15mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> Other shoulder procedures (including shoulder arthroscopy) 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Vancomycin 15mg/kg IVPB	Not Recommended
<ul style="list-style-type: none"> Hand & Foot procedures 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB & Gentamicin 5mg/kg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> Orthopedic procedures not using implanted device Arthroscopic Procedures (excluding shoulder) 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
<ul style="list-style-type: none"> Peripheral Nerve Transposition 	No antibiotics required			
<ul style="list-style-type: none"> Hardware Removal 	Follow recommendation for specific joint as below			
Plastic Surgery:				
<ul style="list-style-type: none"> All plastic surgery procedures Breast Reconstruction Surgery with implants 	Cefazolin 2 gm IVP	Cefazolin 2 gm IVP q 4 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
Subacute Bacterial Endocarditis (SBE) Prophylaxis:				
Dental Procedures: Infective endocarditis prophylaxis is reasonable only for patients with underlying cardiac conditions associated with the highest risk of adverse outcomes from infective endocarditis (e.g. prosthetic cardiac valves or prosthetic material used for cardiac valve repair, previous infective endocarditis, congenital heart disease, cardiac transplant recipients with valve regurgitation due to structurally abnormal valve)	Ampicillin 2 gm IVPB	Ampicillin 2 gm IVPB q 2 hrs	Clindamycin 900mg IVPB	Clindamycin 900mg IVPB q 6 hrs
GI/GU Procedures	SBE prophylaxis no longer required			

The physician's full signature is to follow the order- Abbreviations for names are not acceptable.

PROVIDER SIGNATURE

DATE

TIME

References:

- Berríos-Torres SI, Umscheid CA, Bratzler DW, et al; Healthcare Infection Control Practices Advisory Committee. Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017. JAMA Surg. 2017 Aug 1;152(8):784-791.
- Bratzler DW, Dellinger EP, Olsen KM, et al; ASHP.; IDSA.; SIS.; SHEA.. Clinical practice guidelines for antimicrobial prophylaxis in surgery. Am J Health Syst Pharm. 2013 Feb 1;70(3):195-283.
- Zani EL, Clark OA, Rodrigues Netto N Jr. Antibiotic prophylaxis for transrectal prostate biopsy. Cochrane Database Syst Rev. 2011 May 11;(5):CD006576.
- Antibiotic prophylaxis for gynecologic procedures. ACOG Practice Bulletin No. 104. American College of Obstetricians and Gynecologists. Obstet Gynecol 2009;113:1180-9.
- Khan DA, Banerji A, Blumenthal KG, et al. Drug allergy: A 2022 practice parameter update. J Allergy Clin Immunol. 2022 Sep 17:S0091-6749(22)01186-1

Appendix 1: MMC OR Pharmacy process for selecting pre-op antibiotics for Genitourinary procedures

Approved by MMC Urology section (1.18.2024)

Last updated (5.1.24)

At MMC, Pre-op Antibiotics will be ordered by the Urologist in 1 of the following ways:

1. Prior to surgery, as “pharmacy to dose pre-op abx”
2. Prior to surgery, as a specific antibiotic & dose
3. Day-of surgery, as a specific antibiotic & dose

If ordered as “Pharmacy to dose pre-op abx,” the OR pharmacist will perform the following process:

1. Assess patient allergies
2. Assess the most recent urine cultures in the previous 3 months.
3. If there are no urine cultures in the previous 3 months, the pharmacist will enter **Cefazolin 2gm IVPB**.
4. If there are urine culture results in the previous 3 months, the OR pharmacist will base the pre-op antibiotic on the most recent urine culture. If this is negative, the pharmacist will enter **Cefazolin 2gm IVPB**. If multiple organisms are present in the most urine culture. The OR pharmacist will enter one (or two) of the following pre-op antibiotics in this order listed below based on urine culture susceptibility. **Of NOTE:** up to two pre-op antibiotics may be required:
 - a. Cefazolin 2gm IVPB
 - b. Ceftriaxone 2gm IVP
 - c. Cefepime 2gm IVPB
 - d. Ampicillin/sulbactam 3gm IVPB
 - e. Levofloxacin 750 mg IVPB, or Ciprofloxacin 400 mg IVPB
 - f. Piperacillin/tazobactam 4.5 gm IVPB
 - g. Ertapenem 1gm IVPB
 - h. Meropenem 1gm IVPB
 - i. Vancomycin 15mg/kg (max 1500 mg) IVPB
 - j. Daptomycin 6mg/kg IVP
5. If none of the antibiotics above are appropriate based on the previous urine cultures in the last 3 months, the OR pharmacist will page the Urologist with this information, and consult the ID pharmacist or ID physician for recommendations.