

**ANTIBIOTIC TIMING:** Antibiotics should be given within the one (1) hour preceding surgical incision. 2 hours are permitted for vancomycin and ciprofloxacin due to longer infusion times.

**ANTIBIOTIC DISCONTINUATION:** Continuing antibiotic prophylaxis after closure of incision does not reduce the risk of infection and is unnecessary. Organizations such as SCIP allow prophylactic antibiotics for up to 24 hours after surgery end time (48 hours for cardiac) but these antibiotics are unnecessary.

**\*PATIENTS WITH PENICILLIN/CEPHALOSPORIN (BETA-LACTAM) ALLERGIES:** Alternate regimen (below) recommended for patients with history of confirmed cefazolin allergy, any cephalosporin anaphylaxis, or high-risk PCN/cephalosporin allergy (e.g. severe skin reaction (eg. SJS); history of kidney or liver injury). In patients with history of anaphylaxis to penicillin, a non-cross-reactive cephalosporin (eg. Cefazolin) can be administered routinely without prior testing. Caution with use of non-cefazolin cephalosporin surgical prophylaxis in patients with history of non-anaphylactic IgE-mediated cephalosporin allergy.

**VANCOMYCIN DOCUMENTATION:** Reason for using vancomycin must be documented before surgery starts.

**INTRA-OPERATIVE ANTIBIOTIC REDOSING:** Intra-operative redosing of antibiotics should occur at the intervals provided in increments after the time of the first (pre-op) dose.

	Cefazolin	Cefuroxime	Ceftriaxone	Clindamycin	Ciprofloxacin	Gentamicin	Metronidazole	Vancomycin	Ertapenem	Ampicillin/ subactam	Piperacillin/ tazobactam
Initial Adult Dose	Wt <120 kg: 2g Wt ≥ 120 kg: 3g	1.5g	2g	900mg	400mg	5mg/kg	500mg	Wt <80 kg: 1g Wt 81-119kg: 1.5g Wt >120kg: 2 g	1g	3g	3.375g
Administration	IVP	IVP	30 min infusion	30 min infusion	60 min infusion	30 min infusion	30 min infusion	60 min/g infusion	30 min infusion	30 min infusion	30 min infusion
Redosing Interval During Surgery											
CrCl>50 mL/min	4 hours	4 hours	do not redose	6 hours	8 hours	do not redose	12 hours	12 hours	do not redose	4 hours	4 hours
CrCl 30-50 mL/min	4 hours	4 hours	do not redose	6 hours	8 hours	do not redose	12 hours	do not redose	do not redose	4 hours	4 hours
CrCl 10-30 mL/min	8 hours	8 hours	do not redose	6 hours	do not redose	do not redose	12 hours	do not redose	do not redose	8 hours	8 hours
CrCl<10 mL/min; HD	do not redose	do not redose	do not redose	6 hours	do not redose	do not redose	12 hours	do not redose	do not redose	do not redose	do not redose
MASSIVE BLOOD LOSS (≥ 1500 mL) or BYPASS SURGERY (redose at time of blood loss or post-bypass surgery)											
								do not redose	do not redose		

**IVP** = slow IV push over 3-5 minutes For obese patients (greater than 25% over ideal body weight), gentamicin should be dosed using adjusted body weight, where ABW=[0.4x(total body weight-IBW)+IBW]

PROCEDURE	PROPHYLAXIS RECOMMENDATION	ALTERNATIVE REGIMEN *
<b>GENERAL SURGERY</b>		
PEG or PEG revision	cefazolin	clindamycin + ciprofloxacin
hernia repair	cefazolin	clindamycin
hernia repair with MRSA risk factors	cefazolin + vancomycin	vancomycin
complicated, emergent or repeat inguinal hernia repair	cefazolin + metronidazole	clindamycin + ciprofloxacin
colorectal procedures (ERAS) <i>DUH and DRAH</i>	ertapenem	ciprofloxacin + metronidazole
colorectal procedures <i>DRH</i>	cefazolin + metronidazole or ceftiaxone + metronidazole	ciprofloxacin + metronidazole
penetrating abdominal trauma	cefazolin + metronidazole	ciprofloxacin + metronidazole
appendectomy (if complicated or perforated, treat as secondary peritonitis)	cefazolin + metronidazole	ciprofloxacin + metronidazole
small bowel procedures	cefazolin + metronidazole	ciprofloxacin + metronidazole
distal pancreatectomy (ERAS)	cefazolin	clindamycin + ciprofloxacin
whipple procedures (ERAS)	cefazolin + metronidazole	clindamycin + ciprofloxacin
bariatric surgery	cefazolin	clindamycin + ciprofloxacin
liver resection - clean (ERAS)	cefazolin + metronidazole	clindamycin + ciprofloxacin
liver resection involving biliary tract or other organs (ERAS)	cefazolin	clindamycin + ciprofloxacin
biliary tract procedures (i.e. open cholecystectomy, choledochoenterostomy)	cefazolin + metronidazole	clindamycin + ciprofloxacin
laparoscopic cholecystectomy	cefazolin	clindamycin + ciprofloxacin
procedure involving entry into lumen of upper GI tract, gastric bypass, nissen fundoplication	cefazolin + metronidazole	clindamycin + ciprofloxacin
<b>ORTHOPEDIC SURGERY</b>		
clean operations involving hand, knee, shoulder or foot arthroscopy	prophylaxis is not recommended	prophylaxis is not recommended
total joint replacement	cefazolin	vancomycin + ciprofloxacin
total joint replacement with MRSA risk factors or mega-prosthesis	cefazolin + vancomycin	vancomycin + ciprofloxacin
hip fracture repair	cefazolin	vancomycin + ciprofloxacin
hip fracture repair with MRSA risk factors	cefazolin + vancomycin	vancomycin + ciprofloxacin
open fracture type I and II	cefazolin	clindamycin
open fracture type III	ceferpine	aztreonam + clindamycin
open fracture type III with concern for soil/feces contamination ( <i>Clostridium</i> risk)	pipercillin-tazobactam	ceferpine + metronidazole OR aztreonam + metronidazole + clinda
closed fracture	cefazolin	vancomycin
lower limb amputation	cefazolin	vancomycin + gentamicin
<b>CARDIAC SURGERY</b>		
standard, NO valve/implant surgery	cefuroxime	vancomycin + ciprofloxacin (use vancomycin 20 mg/kg dose)
major aortic/debranching/TEVAR/TAVR	cefuroxime + vancomycin (use vancomycin 20 mg/kg dose)	vancomycin + ciprofloxacin (use vancomycin 20 mg/kg dose)
valve surgery (continuous infusion cefazolin used for intraop redosing)	cefazolin + vancomycin (use vancomycin 20 mg/kg dose)	vancomycin + ciprofloxacin (use vancomycin 20 mg/kg dose)
pacemaker or ICD insertion inc. wire & generator change	cefazolin	vancomycin
pacemaker or ICD insertion with MRSA risk factors	cefazolin + vancomycin	vancomycin
VAD insertion with or without open chest	cefuroxime + vancomycin + fluconazole	vancomycin + ciprofloxacin + fluconazole
<b>THORACIC SURGERY</b>		
lobectomy, pneumonectomy, lung resection, thoracotomy, VATS	cefazolin	clindamycin
esophageal cases	cefazolin + metronidazole	clindamycin + ciprofloxacin
<b>NEUROSURGERY &amp; SPINE SURGERY</b>		
craniotomy, re-do crani, CSF shunting procedure ( <i>DUH ONLY</i> )	cefazolin + vancomycin	vancomycin + ciprofloxacin
laminectomy, spinal fusion ( <i>DUH ONLY</i> )	cefazolin + vancomycin	vancomycin + ciprofloxacin
craniotomy, CSF shunting procedure ( <i>DRH, DRAH</i> )	cefazolin	vancomycin
craniotomy, CSF shunting procedure WITH MRSA colonization/infection ( <i>DRH, DRAH</i> )	cefazolin + vancomycin	vancomycin + ciprofloxacin
re-do crani ( <i>DRH, DRAH</i> )	cefazolin	vancomycin + ciprofloxacin
laminectomy, spinal fusion ( <i>DRH, DRAH</i> )	cefazolin (add vancomycin if MRSA risk factors)	vancomycin + ciprofloxacin
<b>VASCULAR SURGERY</b>		
low risk (upper extremity grafts/procedures with NO MRSA risk factors)	cefazolin	vancomycin
high risk (upper extremity WITH MRSA risk factors, lower extremity procedures, procedures involving groin incision, abdominal aorta repair)	cefazolin + vancomycin	vancomycin + gentamicin
<b>GYNECOLOGIC SURGERY</b>		
cesarean delivery procedures	cefazolin (add azithromycin for nonselective procedure)	clindamycin + gentamicin (add azithromycin for nonselective procedure)
hysterosalpingogram, chromotubation (for patients with history of PID or dilated tubes)	doxycycline	doxycycline
induced abortion/D&E	doxycycline PO 1 hr before procedure, then 200 mg PO after	doxycycline PO 1 hr before procedure, then 200 mg PO after
hysterectomy (any route) or urogyn procedures including those involving mesh	cefazolin	clindamycin or vancomycin PLUS gentamicin 1.5 mg/kg or ciprofloxacin
hysterectomy with procedures involving the colon	ertapenem ( <i>DUH, DRAH</i> ); cefazolin + metronidazole ( <i>DRH</i> )	metronidazole PLUS gentamicin 1.5 mg/kg or ciprofloxacin
cystoscopy	ciprofloxacin	ciprofloxacin
laparoscopy (diagnostic, operative, tubal sterilization)	none indicated	none indicated
hysteroscopy (diagnostic, operative, endometrial ablation, essure)	none indicated	none indicated
IUD insertion	none indicated	none indicated
endometrial biopsy	none indicated	none indicated
<b>UROLOGIC SURGERY/PROCEDURES</b>		
cystoscopy, endoscopy	cefazolin (or gentamicin 80 mg if history of drug resistance)	ciprofloxacin (or gentamicin 80 mg if history of drug resistance)
percutaneous renal surgery	cefazolin + gentamicin	clindamycin + gentamicin
transrectal prostate biopsy based on rectal screen results		n/a
ciprofloxacin susceptible	ciprofloxacin	gentamicin
ciprofloxacin resistant	gentamicin 80mg IM or ceftiaxone 2g IM	clindamycin (add gentamicin if involving entry into urinary tract)
surgery, no bowel involvement	cefazolin	ciprofloxacin + metronidazole
surgery, bowel involvement	cefazolin + metronidazole	clindamycin + gentamicin
pubovaginal sling	cefazolin	vancomycin + gentamicin
AUS/IPP	cefazolin + gentamicin	vancomycin + gentamicin
AUS/IPP redo	vancomycin + gentamicin	vancomycin + gentamicin
<b>PLASTIC SURGERY</b>		
lumpectomy	cefazolin	clindamycin
reduction mammoplasty	cefazolin	clindamycin
mastectomy with or without axillary dissection or reconstruction	cefazolin	clindamycin
partial mastectomy for cancer with or without sentinel lymph node biopsy or axillary dissection	cefazolin	clindamycin
tissue expander insertion/implants/all flaps	cefazolin	clindamycin
other clean with risk factors or clean-contaminated procedures	cefazolin	clindamycin
<b>HEAD AND NECK SURGERY</b>		
clean procedures (e.g. adenoidectomy, parotidectomy, thyroidectomy, tonsillectomy)	prophylaxis is not recommended	prophylaxis is not recommended
clean with prosthesis placement	cefazolin	clindamycin
clean-contaminated procedures (opharyngeal mucosa is compromised)	ampicillin-sulbactam (cefazolin + metronidazole if mild PCN allergy)	clindamycin + gentamicin
<b>TRANSPLANT SURGERY</b>		
kidney, kidney/pancreas, pancreas		
kidney, kidney/pancreas, pancreas with known MRSA colonization/infection		
Kidney donor (ERAS)	cefazolin	clindamycin
liver transplant		
liver transplant with known MRSA colonization/infection		
split liver transplant (SLT) (*duration = 48 hrs post-op)		
small bowel transplant (*duration = 2 weeks post-op)		
heart transplant	cefuroxime + vancomycin	vancomycin + ciprofloxacin
lung transplant	ceferpine extended infusion + vancomycin	vancomycin + aztreonam
<b>INTERVENTIONAL RADIOLOGY</b>		
New and revision implanted ports	cefazolin	clindamycin
New tunneled peritoneal drainage catheter	cefazolin	clindamycin
Bone ablation	cefazolin	clindamycin
Hepatic ablation	cefazolin + metronidazole	clindamycin + ciprofloxacin
new and revision biliary ductal system procedures	cefazolin + metronidazole	clindamycin + ciprofloxacin
Hepatic embolization	cefazolin + metronidazole	clindamycin + ciprofloxacin
New jejunostomy insertion	cefazolin + metronidazole	clindamycin + ciprofloxacin
New and revision renal collecting system procedures	ceftiaxone 1g	clindamycin + ciprofloxacin
Renal ablation	ceftiaxone 1g	clindamycin + ciprofloxacin