

## Pediatric Antibiotic Prophylaxis for Surgical Procedures

### Cardinal Glennon Children's Hospital

\*\*The following guideline refers to surgical prophylaxis and does not apply specifically to treatment.

	Operation/Type of Procedure	Recommended Antibiotic	Alternative for Allergies
<b>Cardiothoracic</b>	CT surgery/procedure excluding cardiac catheterization	Cefazolin (Vancomycin if MRSA)	Clindamycin or vancomycin
<b>Gastrointestinal</b>	<b>Esophageal, gastroduodenal</b>	Cefazolin	Clindamycin or Vancomycin PLUS gentamicin
	<b>Biliary tract</b> Open procedure	Cefazolin	Clindamycin or vancomycin PLUS gentamicin
	Laparoscopic procedure --low risk --high risk – (non-functioning gall bladder, obstructive jaundice.) ^If cholangitis or cholecystitis, treat as infection <u>not</u> prophylaxis	None Cefazolin	None Clindamycin or vancomycin PLUS gentamicin
	<b>Appendectomy</b> Non-perforated, non-infected	Piperacillin/tazobactam – can consider ceftriaxone plus metronidazole (discuss with surgery attending)	Ciprofloxacin + metronidazole
	Suspected perforation	Piperacillin/tazobactam	Ciprofloxacin + metronidazole
	<b>Small intestine</b> Non-obstructed	Cefazolin	Clindamycin + gentamicin
	Obstructed	Piperacillin/tazobactam – can consider ceftriaxone plus metronidazole (discuss with surgery attending)	
	<b>Colorectal</b>	Cefazolin + metronidazole	Clindamycin + gentamicin
<b>Head and Neck</b>	Hardware placement	Cefazolin	Clindamycin
	Clean-contaminated/cancer surgery	Cefazolin + metronidazole	Clindamycin + gentamicin
	Clean-contaminated involving sinuses or naso/oropharynx	Clindamycin	Ampicillin/sulbactam
<b>Neurosurgery</b>	Elective craniotomy, CSF shunting, or intrathecal pump placement	Cefazolin (Vancomycin if MRSA)	Clindamycin or Vancomycin
<b>Orthopedic</b>		Cefazolin (Vancomycin if MRSA)	Clindamycin or vancomycin
<b>Urologic</b>	Routine cystoscopy	None - if urine is sterile	
	Other urologic procedures	Cefazolin +/- gentamicin <sup>@</sup>	Ciprofloxacin
	Urologic procedures involving bowel	Cefoxitin or Cefazolin plus metronidazole	Ciprofloxacin + metronidazole
<b>Transplant</b>	Heart	Cefazolin	Clindamycin or vancomycin
	Liver	Piperacillin/tazobactam	Clindamycin or vancomycin PLUS gentamicin
	Pancreas, pancreas-kidney	Cefazolin +/- fluconazole (for high risk i.e. enteric drainage of pancreas)	Clindamycin or vancomycin PLUS gentamicin

<sup>@</sup>Add aminoglycoside if inserting prosthetic material

## Neonatal Antibiotic Prophylaxis for Surgical Procedures

Check patient medication profile for previous administrations of antibiotics prior to administering pre-op dose

	Operation Type of Procedure	Recommended Antibiotic
<u>Neonatal</u>	≤ 72h of age >72 h of age	Ampicillin + gentamicin Target to operative site, nosocomial or colonizing organisms
	Esophageal/gastroduodenal/jejunal Gastroschisis abdominal closure Ileal/colorectal NEC	Cefazolin Cefazolin Ampicillin/gentamicin/metronidazole Ampicillin/gentamicin/metronidazole

### Dosing Schedule for Pre-Operative Antibiotics

Administer within 60 minutes prior to surgical incision. For vancomycin or fluoroquinolones, administer within 120 minutes of incision. Re-dose antibiotics after specified time period in table below for patient with **normal renal function**. Consider re-dosing if excessive or prolonged bleeding occurs.

Antimicrobial Agent	Pediatric to adult IV Dose	Infusion time	Re-dosing Schedule*	Neonatal Dose	Re-dosing Schedule*
Cefazolin	30 mg/kg (max 2g; 3g for pts ≥120kg)	3-5 min	4 hr	25 mg/kg	12hr or 8h if >3kg and >7d
Clindamycin	10 mg/kg (max 900 mg)	30 min	6 hr	7.5 mg/kg	12hr or 8h if >3kg and >7d
Vancomycin	15 mg/kg (max 1500 mg)	60 min	NA	10 mg/kg	12 hr
Metronidazole	15 mg/kg (max 500 mg)	30 min	NA	<1.2 kg: 7.5 mg/kg ≥1.2 kg: 15 mg/kg	NA
Cefoxitin	40 mg/kg (max 2g)	3-5 min	2 hr	40 mg/kg	
Piperacillin/tazobactam (based on piperacillin component)	2-9 months: 80 mg/kg >9 mo and ≤40 kg: 100 mg/kg (max 3g) >40 kg: 3 g	30 min	2 hr	PNA<7d: 100 mg/kg PNA 8-28d: 80mg/kg	12hr or 8h if >3kg and >7d
Ciprofloxacin	10 mg/kg (max 400 mg)	60 min	NA	10 mg/kg	12h
Gentamicin	2.5 mg/kg Adults: 5 mg/kg --use dosing weight if obese <sup>1</sup>	30 min	NA	≤29wks GA: 5 mg/kg >30 wks GA: 4 mg/kg	NA
Fluconazole	6 mg/kg (max 400 mg)	120min <sup>#</sup>	NA	6 mg/kg	NA

<b>Ampicillin</b>	50 mg/kg (max 2000mg)	15 min	2hr	50 mg/kg	12hr or 8h if >3kg and >7d
<b>Ampicillin/sulbactam</b>	50 mg ampicillin/kg (max 2000mg)	15 min	2hr	50 mg ampicillin/kg	12hr or 8h if >3kg and >7d

\* From Initial Pre-Op dose. For patients with Normal Renal Function  
min if dose is  $\leq 200$ mg

#May infuse over 60

<sup>1</sup> Dosing weight= IBW + 0.4 (actual BW – IBW); IBW male = 50kg + 2.3 (Height" - 60"); IBW female = 45.5kg + 2.3(Height" - 60")

**Surgeries that do not require prophylaxis:** tonsillectomy, endoscopic sinus procedures, tympanostomy tube placement, Ortho – clean operations without implantation of foreign materials in hand, knee, or foot. Clean head/neck procedures. Routine hernia procedure without use of mesh.

### References:

American Academy of Pediatrics. [Antimicrobial Prophylaxis in Pediatric Surgical Patients.] In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *RedBook: 2015 Report of the Committee on Infectious Diseases*. 30<sup>th</sup> ed. Elk Grove Village, IL: American Academy of Pediatrics; 2015:[959-969]

Gilbert, David N et al. *The Sanford Guide To Antimicrobial Therapy 2016*. 46th ed. Sperryville: Antimicrobial Therapy, Inc., 2016. Print.

Bratzler DW, Patchen Dellinger E, Olsen KM, et al. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Am J Health-Syst Pharm*. 2013; 70:195-283.

Jeanine Cain, PharmD

Aaron Miller, MD

April 25,2017