Surgical Antibiotic Prophylaxis - Pediatric

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. Local microbiology and susceptibility/resistance patterns should be taken into consideration when selecting antibiotics. This algorithm should not be used to treat pregnant women.*

Patients scheduled for surgery should have the following antibiotics administered prior to their procedure:

- Vancomycin, ciprofloxacin and gentamicin are to be initiated 60 to 120 minutes prior to incision and all other antibiotics are to be initiated within 60 minutes of incision
- Please carefully evaluate allergy histories before using alternative agents-the majority of patients with listed penicillin allergies can safely be given cephalosporins or carbapenems
- If the patient has multiple known antibiotic drug allergies, is colonized with or has a history of a recent multi-drug resistant infection, please administer antibiotics as indicated or consider an Infectious Diseases consultation
- Vancomycin prophylaxis 15 mg/kg IV (maximum 2,000 mg/dose) should be considered for patients with known methicillin-resistant *Staphylococcus aureus* (MRSA) colonization or at high risk for MRSA colonization in the absence of surveillance data (*e.g.*, patients with recent hospitalization, hemodialysis patients)
- Clindamycin is no longer recommended as an alternative for patients with beta-lactam allergies due to increasing rates of resistance observed in *Staphylococcus* species
- Discontinue all antibiotics within 24 hours of first dose except for: 1) Treatment of established infection, 2) Prophylaxis of prosthesis in the setting of postoperative co-located percutaneous drains, 3) Intraoperative findings that raise the wound classification above 2 (*e.g.*, spillage of enteric contents, purulent fluid, etc.). All of these require appropriate documentation.
- See Appendix A for intraoperative re-dosing recommendations
- Doses listed are based on actual body weight

Disease Site	No Penicillin Allergy	Patients with Penicillin Allergy
Cardiac and Vascular Thoracic	Cefazolin 30 mg/kg IV (maximum 2,000 mg for patients < 120 kg, and 3,000 mg for patients ≥ 120 kg)	Vancomycin 15 mg/kg IV (max 2,000 mg)
Head & Neck (ENT - Clean)	Cefazolin 30 mg/kg IV (maximum 2,000 mg for patients < 120 kg, and 3,000 mg for patients ≥ 120 kg)	Vancomycin 15 mg/kg IV (max 2,000 mg)
Head & Neck (ENT – Clean Contaminated)	Ampicillin/sulbactam 50 mg/kg IV (maximum 2,000 mg; dose based on ampicillin component)	• Vancomycin 15 mg/kg IV (max 2,000 mg) **and** • Metronidazole 15 mg/kg IV (max 500 mg)
Neurosurgery	Cefazolin 30 mg/kg IV (maximum 2,000 mg for patients < 120 kg, and 3,000 mg for patients ≥ 120 kg)	Vancomycin 15 mg/kg IV (max 2,000 mg)
General Surgery (Clean)	No preoperative antibiotics	No preoperative antibiotics
General Surgery (Upper Gastrointestinal[1])	Cefazolin 30 mg/kg IV (maximum 2,000 mg for patients < 120 kg, and 3,000 mg for patients ≥ 120 kg)	Vancomycin 15 mg/kg IV (max 2,000 mg)
General Surgery (Lower Gastrointestinal[2])	• Cefoxitin 40 mg/kg IV (maximum 2,000 mg) preferred regimen **or** • Cefazolin 30 mg/kg IV (maximum 2,000 mg for patients < 120 kg, and 3,000 mg for patients ≥ 120 kg) **and** metronidazole 15 mg/kg IV (maximum 500 mg)	• Vancomycin 15 mg/kg IV (max 2,000 mg) **and** • Ciprofloxacin 10 mg/kg IV (max 400 mg) **and** • Metronidazole 15 mg/kg IV (max 500 mg)

[1] Upper gastrointestinal disease site is defined as esophagus through duodenum
[2] Lower gastrointestinal disease site is defined as jejunum through colon

Copyright 2025 The University of Texas MD Anderson Cancer Center

Department of Clinical Effectiveness V7
Approved by The Executive Committee of the Medical Staff 06/17/2025

Surgical Antibiotic Prophylaxis - Pediatric

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. Local microbiology and susceptibility/resistance patterns should be taken into consideration when selecting antibiotics. This algorithm should not be used to treat pregnant women.*

Patients scheduled for surgery should have the following antibiotics administered prior to their procedure:

- Vancomycin, ciprofloxacin and gentamicin are to be initiated 60 to 120 minutes prior to incision and all other antibiotics are to be initiated within 60 minutes of incision
- Please carefully evaluate allergy histories before using alternative agents-the majority of patients with listed penicillin allergies can safely be given cephalosporins or carbapenems
- If the patient has multiple known antibiotic drug allergies, is colonized with or has a history of a recent multi-drug resistant infection, please administer antibiotics as indicated or consider an Infectious Diseases consultation
- Vancomycin prophylaxis 15 mg/kg IV (maximum 2,000 mg/dose) should be considered for patients with known methicillin-resistant *Staphylococcus aureus* (MRSA) colonization or at high risk for MRSA colonization in the absence of surveillance data (*e.g.*, patients with recent hospitalization, hemodialysis patients)
- Clindamycin is no longer recommended as an alternative for patients with beta-lactam allergies due to increasing rates of resistance observed in *Staphylococcus* species
- Discontinue all antibiotics within 24 hours of first dose except for: 1) Treatment of established infection, 2) Prophylaxis of prosthesis in the setting of postoperative co-located percutaneous drains, 3) Intraoperative findings that raise the wound classification above 2 (*e.g.*, spillage of enteric contents, purulent fluid, etc.). All of these require appropriate documentation.
- See Appendix A for intraoperative re-dosing recommendations
- Doses listed are based on actual body weight

Disease Site	No Penicillin Allergy	Patients with Penicillin Allergy
Ophthalmology (Enucleation and plaque insertion)	Cefazolin 30 mg/kg IV (maximum 2,000 mg for patients < 120 kg and 3,000 mg for patients ≥ 120 kg)	Vancomycin 15 mg/kg IV (max 2,000 mg)
Ophthalmology (All Others)	Povidone-iodine 5% ophthalmic topical prep solution to area	Povidone-iodine 5% ophthalmic topical prep solution to area
Orthopedic (Pelvic Surgery)	Ceftriaxone 50 mg/kg IV (maximum 2,000 mg) **followed by** cefazolin 30 mg/kg IV (maximum 3,000 mg/dose) during draping every 4 hours if significant blood loss occurs	• Vancomycin 15 mg/kg IV (max 2,000 mg) **and** • Ciprofloxacin 10 mg/kg IV (max 400 mg)
Orthopedic (Implanted Orthopedic Prosthesis)	Cefazolin 30 mg/kg IV (maximum 3,000 mg/dose) **and** gentamicin 2.5 mg/kg IV (maximum 80 mg)	Vancomycin 15 mg/kg IV (max 2,000 mg)
Orthopedic (All Others)	Cefazolin 30 mg/kg IV (maximum 2,000 mg for patients < 120 kg, and 3,000 mg for patients ≥ 120 kg)	Vancomycin 15 mg/kg IV (max 2,000 mg)
Plastic Surgery (Clean)	No preoperative antibiotics	No preoperative antibiotics
Plastic Surgery (Clean Contaminated: through oral cavity)	Ampicillin/sulbactam 50 mg/kg IV (maximum 2,000 mg; dose based on ampicillin component)	• Vancomycin 15 mg/kg IV (max 2,000 mg) **and** • Metronidazole 15 mg/kg IV (max 500 mg)
Plastic Surgery (Orthopedic)	Refer to Orthopedic	Refer to Orthopedic

Copyright 2025 The University of Texas MD Anderson Cancer Center

Department of Clinical Effectiveness V7
Approved by The Executive Committee of the Medical Staff 06/17/2025

Surgical Antibiotic Prophylaxis - Pediatric

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. Local microbiology and susceptibility/resistance patterns should be taken into consideration when selecting antibiotics. This algorithm should not be used to treat pregnant women.*

APPENDIX A: Recommended Intraoperative Re-dosing Intervals for Commonly Used Antimicrobials for Surgical Prophylaxis for Patients with Normal Renal Function[1]

Antimicrobial	Recommended re-dosing interval hour[2] (from initiation of preoperative dose)				Additional considerations	Standard therapeutic dosing (outside of the operative setting) for CrCl > 50 mL/minute[3]
	CrCl > 50 mL/minute (hours)	CrCl 30-50 mL/minute (hours)	CrCl 10-29 mL/minute (hours)	CrCl < 10 mL/minute (hours)		
Ampicillin-sulbactam	2	4	8	N/A	• Consider re-dosing if there is excessive blood loss • Consider utilizing standard, renally adjusted dosing intervals after patients have received 3 prophylactic antibiotic doses (1 preoperative and 2 intraoperative)[4]	50 mg/kg every 6 hours
Cefazolin	4	8	12	N/A		30 mg/kg every 8 hours
Cefoxitin	2	4	8	N/A		40 mg/kg every 6 hours
Ciprofloxacin[5]	N/A	N/A	N/A	N/A		10 mg/kg every 12 hours
Gentamicin[6]	N/A	N/A	N/A	N/A		2.5 mg/kg every 8 hours
Metronidazole	N/A	N/A	N/A	N/A		15 mg/kg every 8 hours
Vancomycin[7]	N/A	N/A	N/A	N/A		15 mg/kg every 6-8 hours

CrCl = creatinine clearance

[1] Patients with impaired renal function need individualized initial and secondary antibiotic dosing based on creatinine clearance (CrCl) and case type

[2] Re-dosing intervals are based on extrapolations made from adult data in addition to available data on normal dosing intervals in renal dysfunction. For antimicrobials with a short half-life (*e.g.*, ampicillin-sulbactam, cefoxitin) used before long procedures, re-dosing in the operating room is recommended at an interval of approximately two times the half-life of the agent in patients with normal renal function and is at the discretion of the surgeon based on the clinical scenario. Recommended re-dosing intervals marked as "not applicable" (N/A) are based on typical case length; for unusually long procedures, re-dosing may be needed.

[3] Refer to the institutional renal dosing guide (internal only) or tertiary dosing references (*e.g.*, Lexicomp) for standard dosing interval renal dysfunction adjustments outside of the operative setting

[4] Society guidelines (*e.g., ASHP Clinical Practice Guidelines for Antimicrobial Prophylaxis in Surgery) do not address this situation. These recommendations are based on internal expert opinion.*

[5] While fluoroquinolones have been associated with an increased risk of tendinitis/tendon rupture in all ages, use of these agents for single-dose prophylaxis is generally safe

[6] In general, gentamicin for surgical antibiotic prophylaxis should be limited to a single dose given preoperatively. Dosing is based on the patient's actual body weight.

[7] Vancomycin prophylaxis should be considered for patients with known MRSA colonization or at high risk for MRSA colonization in the absence of surveillance data (*e.g.*, patients with recent hospitalization, hemodialysis patients)

Copyright 2025 The University of Texas MD Anderson Cancer Center

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. Local microbiology and susceptibility/resistance patterns should be taken into consideration when selecting antibiotics. This algorithm should not be used to treat pregnant women.*

SUGGESTED READINGS

Bratzler, D. W., Dellinger, E. P., Olsen, K. M., Perl, T. M., Auwaerter, P. G., Bolon, M. K., . . . Weinstein, R. A. (2013). Clinical practice guidelines for antimicrobial prophylaxis in surgery. *American Journal of Health-System Pharmacy, 70*(3), 195-283. https://doi.org/10.2146/ajhp120568

Kimberlin, D. W., Banerjee, R., Barnett, E. D., Lynfield, R., & Sawyer, M. H. (Eds.). (2024). *Red Book: 2024-2027 Report of the Committee on Infectious Diseases*. American Academy of Pediatrics.

Copyright 2025 The University of Texas MD Anderson Cancer Center

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. Local microbiology and susceptibility/resistance patterns should be taken into consideration when selecting antibiotics. This algorithm should not be used to treat pregnant women.*

DEVELOPMENT CREDITS

This practice consensus statement is based on majority opinion of the Pediatric Surgical Antibiotic Prophylaxis experts at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

Core Development Team Leads

Antimicrobial Stewardship Team
Mary Austin, MD, MPH (Surgical Oncology)

Workgroup Members

Wendy Garcia, BS♦
Dan Gombos, MD (Ophthalmology)
Techecia Idowu, MD (Anesthesiology & PeriOperative Medicine)
Thoa Kazantsev, MSN, RN, OCN♦
Valerae Lewis, MD (Orthopaedic Oncology)
Lauren Mayon, MS, PA-C, (Surgical Oncology)
Acsa Zavala, MD (Anesthesiology & PeriOperative Medicine)

♦Clinical Effectiveness Development Team

Copyright 2025 The University of Texas MD Anderson Cancer Center