

UCSF Benioff Children's Hospitals
Antimicrobial Dosing Guideline for Infants and Children > 1 Month of Age
Approved by Pharmacy and Therapeutics Committee (11/98) Last Update 4/2025

Antimicrobial Stewardship Program (ASP)	M-F 8:00 am to 4:30 pm for focused questions on antimicrobial selection, dose, monitoring, duration of therapy and for approvals (Voalte: Pediatric Antimicrobial Stewardship Team - ID/ASP Pharmacist or Provider)	Oak/SF: Contact via Voalte
Pediatric ID Consult Service	For cases requiring in depth review and physician consultation	
Online Resources	Pediatric Empiric Antimicrobial Therapy Guidelines , Clinical Pathways, Detailed Guidelines, Antimicrobial Susceptibility Profiles	idmp.ucsf.edu
Shaded boxes indicate ID-Restricted agents (ID-R). Other restricted agents are noted in APeX. An approving clinician's ID number is needed to order a restricted agent. To obtain approval for a restricted agent, call Pediatric ASP between 8:30 am to 5:00 pm M-F. For off-hours approval (until 9:00 pm) contact the Pediatric ID Consult Service. From 9:00 pm to 8:00 am, use approval ID# 11111 for release of a single dose, then contact ASP for approval of subsequent doses.		

For infants with renal dysfunction please use the [neonatal antibiotic renal dosing](#) reference

Dosing recommendations are for usual doses to treat the most common conditions.
For additional indication-specific dosing, or agents not included below, refer to the [Pediatric Empiric Antimicrobial Therapy Guidelines \(EATG\)](#) (idmp.ucsf.edu), or **Lexi-Comp**.
Consult pharmacist or [Lexidrug](#) for renal dose adjustment.
[For dosing in patients with Cystic Fibrosis \(CF\)](#)
[CKD EPI calculator](#) [CKiD U25 calculator](#)

Drug	Usual Dose	Dose Adjustment	Maximum Dose
Acyclovir IV Note: Use adjusted body weight for dosing in patients with obesity	Mucocutaneous HSV Infection Immunocompetent Host ≥ 3 mo 5 mg/kg/dose q8h CNS HSV Infection ≥ 3 mo to < 12 yo 15 mg/kg/dose q8h CNS HSV ≥ 12 yo, HSV in Immunocompromised Host, or VZV Infection 10 mg/kg/dose q8h HSV Infection < 3 mo 20 mg/kg/dose q8h	Adjust for CrCl < 50 ml/min/1.73m ²	Usual Max 1000 mg/dose
	Acyclovir PO preferred for non-invasive infection in immunocompetent host > 3 months old – refer to Pediatric EATG or Lexi-Comp for dose		
Amphotericin B Liposomal IV ID-R (Ambisome®)	5 mg/kg/dose q24h	No recommended dose adjustment for renal dysfunction, but drug should be used with caution due to nephrotoxicity risk	None
Ampicillin IV	50 mg/kg/dose q6h Endocarditis, Meningitis: 400 mg/kg/day divided q4h to q6h	Adjust for CrCl < 50 ml/min/1.73m ²	2000 mg/dose
Ampicillin-sulbactam IV (Unasyn®)	50 mg ampicillin/kg/dose q6h	Adjust for CrCl < 30 ml/min/1.73m ²	Usual Max 2000 mg ampicillin/dose
Amoxicillin PO	22.5 mg/kg/dose bid High Dose (Pneumococcal) 45 mg/kg/dose bid Strep pharyngitis: 50 mg/kg/dose qday	Adjust for CrCl < 30 ml/min/1.73m ²	Usual Max 1000 mg/dose
Amoxicillin-clavulanate PO (Augmentin®)	< 3 mo: 15 mg amox/kg/dose bid (Use 250 mg/5 mL suspension) Standard Dose ≥ 3 mo 22.5 mg amox/kg/dose bid High Dose (Pneumococcal) ≥ 3 mo 45 mg amox/kg/dose bid	Adjust for CrCl < 30 ml/min/1.73m ²	Usual Max Susp: 840 mg/dose or 880 mg/dose depending on concentration Tablet: 875 mg/dose bid
Cefazolin IV	Mild-Moderate Infection 25 mg/kg/dose q8h	Adjust for CrCl < 50 ml/min/1.73m ²	Mild-Moderate 1000 mg/dose
	Severe Infection 50 mg/kg/dose q8h		Severe 2000 mg/dose
Cephalexin PO	Mild-Moderate Infection 25 mg/kg/dose tid Severe Infection e.g. osteomyelitis/pyelonephritis 50 mg/kg/dose tid	Adjust for CrCl < 50 ml/min/1.73m ²	Mild-Moderate 500 mg/dose Severe 1000 mg/dose

Cefepime IV	50 mg/kg/dose q8h	Adjust for CrCl < 60 ml/min/1.73m ²	2000 mg/dose
Ceftazidime IV	50 mg/kg/dose q8h	Adjust for CrCl < 50 ml/min/1.73m ²	2000 mg/dose
Ceftriaxone IV	50 mg/kg/dose q24h Meningitis 50 mg/kg/dose q12h	No adjustment	2000 mg/dose
Ciprofloxacin IV/PO	Enteral: 15 mg/kg/dose enterally bid IV: 10 mg/kg/dose IV q8h	Adjust for CrCl < 30 ml/min/1.73m ²	750 mg enterally bid 400 mg IV q8h
Clindamycin IV/PO	10 mg/kg/dose q8h Bone/Joint Infection 13 mg/kg/dose q8h	No adjustment	Usual max Enteral: 600 mg/dose IV: 600 mg dose IV necrotizing fasciitis: 900 mg/dose
Fluconazole IV/PO	Invasive Candidiasis 12 mg/kg/dose q24h	Adjust for CrCl < 50 ml/min/1.73m ²	Usual max 800 mg q24h Varies by site and severity
Gentamicin IV Note: Use adjusted body weight for dosing in patients with obesity Monitoring: Oak: contact pharm for dosing adjustments SF: dosing per pharm	Synergy: 3 mg/kg/dose IV q24h Treatment < 3 mo OR < 52 weeks PMA: 5 mg/kg/dose IV q24h Treatment >= 3 mo AND >= 52 weeks PMA: 7 mg/kg/dose IV q24h	Adjust for CrCl < 50 ml/min/1.73m ²	Usual Max 1000 mg/dose
Levofloxacin IV/PO	6 mo to < 5 yo: 10 mg/kg/dose q12h >= 5 yo: 10 mg/kg/dose q24h	Adjust for CrCl < 30 ml/min/1.73m ²	750 mg/dose
Meropenem IV	20 mg/kg/dose q8h Meningitis 40 mg/kg/dose q8h	Adjust for CrCl < 50 ml/min/1.73m ²	2000 mg/dose
Metronidazole IV/PO	10 mg/kg/dose q8h Appendicitis 30 mg/kg/dose q24h	Adjust for CrCl < 10 ml/min/1.73m ²	500 mg/dose Appendicitis 1500 mg/dose
Nafcillin or Oxacillin IV	50 mg/kg/dose q6h	Adjust for concurrent hepatic and renal dysfunction	Individual Dose 2000 mg/DOSE Daily Dose 12,000 mg/DAY
Penicillin G IV (aqueous)	Mild-Moderate Infection 200,000 units/kg/day divided q4h Severe Infection eg endocarditis, meningitis 400,000 units/kg/day divided q4h	Adjust for CrCl < 10 ml/min/1.73m ²	4 million units/dose
Piperacillin/ Tazobactam IV (Zosyn®)	100 mg piperacillin/kg/dose q6h	Adjust for CrCl < 40 ml/min/1.73m ²	4000 mg piperacillin/dose

Tobramycin IV Note: Use adjusted body weight for dosing in patients with obesity Monitoring: Oak: contact pharm for dosing adjustments SF: dosing per pharm	Treatment < 3 mo OR < 52 weeks PMA: 5 mg/kg/dose IV q24h Treatment >= 3 mo AND >= 52 weeks PMA: 7 mg/kg/dose IV q24h	Adjust for CrCl < 50 ml/min/1.73m ²	None
TMP/SMX IV/PO (Bactrim®, Septra®)	Mild to Moderate Infection 5 mg/kg/dose TMP bid Serious Infection/PCP 5 mg/kg/dose TMP q6h to q8h	Adjust for CrCl < 30 ml/min/1.73m ²	Mild-Moderate 160 mg TMP/dose Severe Enteral: 320 mg TMP/dose IV: 480 mg TMP/dose
Vancomycin IV Oak: contact pharm for dosing adjustments SF: dosing per pharm	< 1 mo: Refer to Neonatal Dosing Guidelines 1 mo to < 3 mo (PMA 45 weeks to <= 52 weeks): 15 mg/kg/dose IV q8h >= 3 mo to < 12 yo: 17.5 mg/kg/dose IV q6h >= 12 yo to < 15 yo: 15 mg/kg/dose IV q6h >= 15 yo: 15 mg/kg/dose IV q8h	CICU/cardiac dysfunction initial dosing: < 6 months: q12h; >= 6 months: q8h	Initial Max 1000 mg/dose
Voriconazole IV/PO ID-R	Empiric dosing if unknown pharmacogenomics (PGx): < 12 yo 10 mg/kg/dose enterally/IV bid >= 12 yo 6 mg/kg/dose enterally/IV bid Empiric dosing if known PGx	No adjustment for renal dysfunction but avoid IV formulation if CrCl < 50 ml/min/1.73m ² Avoid if severe hepatic dysfunction	Initial Max: 400 mg/dose

Antibiotics in patients with Cystic Fibrosis (CF)

(If patient not responding on appropriate therapy, consider consulting ASP)

Drug	Suggested Dose	Usual Max Dose	Other Information
<i>Pseudomonas</i> (usually 2 antipseudomonal agents): Tobramycin + Ceftazidime			
<i>Pseudomonas</i> + MSSA : Tobramycin + Cefepime			
Amikacin	30 mg/kg/dose IV q24h	Consider avoiding doses > 35 mg/kg/day	Requires Therapeutic Drug Monitoring Peak range: 35 to 45 mcg/mL Trough: < 5 mcg/mL
Aztreonam	50 mg/kg/dose IV q6h	2000 mg IV q6h	
Cefepime	50 mg/kg/dose IV q8h	2000 mg IV q8h	
Ceftazidime	50 mg/kg/dose IV q8h	2000 mg IV q8h	
Ciprofloxacin	10 mg/kg/dose IV q8h	400 mg IV q8h	
Piperacillin/Tazobactam (Zosyn®)	100 mg/kg/dose (piperacillin component) IV q6h	4000 mg (piperacillin component) IV q6h	
Meropenem	40 mg/kg/dose IV q8h	2000 mg IV q8h	
Tobramycin	10 mg/kg/dose IV q24h	Consider avoiding doses >15 mg/kg/dose	Requires Therapeutic Drug Monitoring Peak range: 20 to 35 mcg/mL Trough: < 1 mcg/mL
<i>Stenotrophomonas maltophilia</i>:			
TMP/SMX IV/PO (Bactrim®, Septra®)	5 mg/kg/dose (TMP component) IV/PO tid/q8h	Enteral: 320 mg TMP/dose IV: 480 mg TMP/dose	Oral route preferred, if possible
<i>Staphylococcus aureus</i>: The role of staph including MRSA is difficult to assess when a patient is also infected with <i>pseudomonas</i> , but it is often treated if present on recent or current cultures.			
Cefazolin	50 mg/kg/dose IV q8h	2000 mg IV q8h	
Doxycycline	5 mg/kg/day IV/PO bid/q12h	200 mg IV/PO bid/q12h	Oral route preferred, if possible
TMP/SMX IV/PO (Bactrim®, Septra®)	5 mg/kg/dose (TMP component) IV/PO tid/q8h	Enteral: 320 mg TMP/dose IV: 480 mg TMP/dose	Oral route preferred, if possible
Vancomycin (Reserved for MRSA)	3 mo to < 12 yo: 17.5 mg/kg/dose IV q6h	Initial Max 1000 mg/dose	Requires Therapeutic Drug Monitoring
Oak: contact pharm for dosing adjustments	>= 12 yo to < 15 yo: 15 mg/kg/dose IV q6h		
SF: dosing per pharm	>= 15 yo: 15 mg/kg/dose IV q8h		

G.) *Antibiotic Therapeutic Drug Monitoring:*
Tobramycin

Extended-interval Dosing: Obtain post dose serum concentrations after the 1st dose

Renal Function	When to obtain level	After which dose?
CrCl > 50 or CRRT	Post dose levels 2 and 6 hours after end of infusion	1 st dose
CrCl < 50	Post dose levels 2 and 12 hours after end of infusion	1 st dose
HD or PD	Level obtained prior to the hemodialysis treatment is recommended to guide dosing	1 st dose