Pediatric IV Antimicrobial Renal Dosing Recommendations (NOT Neonates)

Creatinine Clearance (CrCl) for pediatrics 1-18yo (Schwartz Equation): $CrCl = 0.413 * ht_{(cm)} / S_{Cr}$ (ml/min/1.73m^2)

Creatinine Clearance (CrCl) for adults (CKD-Epi 2021): $CrCl = 142 \times \min(Scr/\kappa, 1)^{\alpha} \times \max(Scr/\kappa, 1)^{-1.200} \times 0.9938^{Age} \times 1.012$ [if female]

See "Estimating Renal Function in Pediatric and Adult Patients in the Housestaff Manual"

IV Medication	CrCl >50mL/min/1.73m^2 OR renal function > 50% normal OR CKRT	CrCl 10-50mL/ min/1.73m^2 OR renal function 10-50% of normal	CrCl <10mL/ min/1.73m^2 OR renal function < 10% of normal OR ESRD	iHD (give dose post-HD) OR PD	Maximum single dose
Acyclovir ≥3mo non-CNS infect	5-10mg/kg q8h CVVH: 10 mg/kg q12-24h	CrCl 25-49: q12h CrCl 10-24: q24	50% dose q24h	5mg/kg q24h	N/A
Acyclovir ≥3mo with encephalitis OR immune-compromised	10–15mg/kg or 250-500mg/m2 q8h CVVH: 10-15mg/kg q12-24h	CrCl 25-49: q12h CrCl 10-24: q24	50% dose q24h	5mg/kg q24h	800 mg
Acyclovir <3mo	20mg/kg q8h CVVH: 10-15 mg/kg q12-24h	CrCl 25-49: q12h CrCl 10-24: q24	10mg/kg q24		N/A
Amikacin	High-dose extended interval: 15-30mg/kg q24h CF: 15-40mg/kg q24h Conventional dosing: 7.5mg/kg q8h (q12h for CKRT)	Conventional dosing: CrCl 30-50: q12h CrCl 10-29: q24h	q48-72h	5mg/kg per level	Conventional dosing: 500 mg High-dose extended interval: 1500 mg
Amphotericin B liposomal*	3-5mg/kg q24h	No dose adjustment necessary. Poorly dialyzable			N/A
Ampicillin	50mg/kg q6h Meningitis/endocarditis: 50-100mg/kg q4-6h	CrCl 10-29: q8-12h	q12h		2000 mg
Ampicillin/sulbactam	50mg/kg (2g ampicillin) q6h	CrCl 15-29: q12h	CrCl 5-14: q24h	q12-24h	2000 mg ampicillin
Azithromycin	10mg/kg x1, then 5mg/kg q24h x 4 days	No adjustment necessary			500 mg
Aztreonam	30mg/kg q6-8h	CrCl 10-29: 15mg/kg q6h	7.5mg/kg q6h		2000 mg
Caspofungin	<3mo: 25mg/m^2 q24h ≥3mo: 70mg/m^2 LD, then 50mg/m^2 q24h	No adjustment necessary. Poorly dialyzable			70 mg LD, 50 mg MD
Cefazolin	16.5-50mg/kg q8h	CrCl 30 – 49: q12h CrCl 10-19: 50% q12h	50% q24h, max 1000 mg	Post-HD	2000 mg
Cefepime	50mg/kg q8h Extended infusion: 50 mg/kg over 4 hours q8h	CrCl 30-60: q12-24h CrCl 11-29: q24h	q24h, max 1000 mg	iHD: q24h, max 1000 mg PD: q24-48h, max 2000 mg	2000 mg
Ceftazidime	50mg/kg q8h Extended infusion: 50 mg/kg over 4 hours q8h Continuous infusion: 150 mg/kg/day over 24 hours	CrCl 30-50: q12h CrCl 10-29: q24h	q48h	q24-48h, max 1000 mg PD: q24h	6000 mg/day
Ceftazidime-avibactam*	50mg/kg ceftazidime q8h	CrCl 31-50: 25mg/kg q8h, max 1000 mg CrCl 16-30: 19mg/kg q12h, max 750 mg	19mg/kg q24h (q48h if CrCl ≤ 5), max 750 mg	19mg/kg q24-48h depending on residual kidney function	2000 mg
Ceftriaxone	50mg/kg q24h Meningitis: 50mg/kg q12h	No adjustment necessary			2000 mg
Ciprofloxacin	10-15mg/kg q12h or 10mg/kg q8h CKRT: 10-15 mg/kg q12h	CrCl 10-29: q24h	q24h	q24h	400 mg

Developed by: J. Moss, PharmD, B. Lee, PharmD, H. Schwenk, MD, Scott Sutherland, MD; Original Date: 05/17/2016
Reviewed/Revised: L. Bio, PharmD, J. Patel, PharmD (1/2024); L. Bio, PharmD, L. Puckett, PharmD, J. Moss, PharmD, J. Yeung, PharmD (10/2021, 7/2022, 11/2023)

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Cidofovir*	1 mg/kg TIW or 1-5 mg/kg every 7 days CKRT: 2 mg/kg IV weekly	ID consult recommended for CrCl <75 ml/min			N/A
Clindamycin	7-13mg/kg q8h	No adjustment necessary			900 mg
Fluconazole	3-12mg/kg q24h	50% q24h		100% after HD, 50% on non-HD days PD: 50% q48h	800 mg
Foscarnet induction*	90mg/kg Q12h CKRT: 60mg/kg q24h	No pediatric specific dosage adjustments available; consider adjustment based on adult recommendations			N/A
Ganciclovir MD (higher doses for induction; see transplant protocols)	CrCl >70: 5mg/kg q24h CrCl 50-69: 2.5mg/kg q24h CKRT: 1.25 mg/kg q24h	CrCl 25-49: 1.25mg/kg q24h CrCl 10-24: 0.625mg/kg q24h	0.625 mg/kg TIW	0.625 mg/kg TIW after HD	N/A
Gentamicin	High-dose extended interval: 5-7 mg/kg/dose q24h Conventional dosing: 2-2.5mg/kg q8h Synergy dosing: 1mg/kg q8h or 3 mg/kg q24h	Adjust based on serum concentration; Conventional dosing and targets may be necessary	Conventional dosing: q48-72h	Conventional dosing: 2mg/kg per serum concentration	N/A
Isavuconazonium*	10mg/kg IV q8h x 6 doses, followed by 10mg/kg q24h	No dosage adjustment necessary			372 mg
Levofloxacin	<5yo: 8-10mg/kg q12h (CKRT: q12-24h) ≥5yo: 10mg/kg q24h	CrCl 10-29: 5-10mg/kg q24h	5-10mg/kg q48h	5-10mg/kg q48h	750 mg
Linezolid*	<12yo: 10mg/kg q8h ≥12yo: 10mg/kg q12h	No adjustment necessary			600 mg
Meropenem	20mg/kg q8h [Meningitis: 40mg/kg q8h] Extended infusion (3 hr): same dose and frequency	CrCl 30-50: q12h CrCl 10-29: 50% of dose q12h	50% of dose q24h (max dose of 500mg standard and 1000 mg meningitis)		1000 mg [Meningitis: 2000 mg]
Metronidazole	10 mg/kg q8h Appendicitis: 30 mg/kg q24h	No adjustment necessary	No adjustment per manufacturer. Consider alternative dosing or antibiotic if >1-2 weeks	Consider alternative dosing or antibiotic if >1-2 weeks	500 mg Appi: 1000 mg, unless >80 kg, then 1500 mg
		Consider 50% decrease with moderate to severe hepatic impairment			
Nafcillin	33-50mg/kg q4-6h Continuous infusion: load 33mg/kg over 30 min once, then 200mg/kg over 24 hr q24h	No adjustments necessary. Consider 50% decrease in dose if severe concomitant hepatic and renal impairment			2000 mg/dose 12000 mg/DAY
Piperacillin/ tazobactam	2-8mo: 80-100mg/kg q8h ≥9mo: 100mg/kg q8h [pneumonia, pseudomonas infection: 100mg/kg q6h] Extended infusion: 80-130 mg/kg (refer to LPCHS guidelines) infuse dose over 3 hours (q6h) or 4 hours (q8h)	CrCl 30 - 50: 75% CrCl <30: 50% q8h		q12h	3000 mg [4000 mg for pneumonia, pseudomonas]

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Posaconazole*	6-10mg/kg q12h for 2 doses, followed by 6-10mg/kg q24h	No dosage adjustment necessary			300 mg
Remdesivir*	5mg/kg x1, then 2.5mg/kg q24h, up to 10 days	No dosage adjustment necessary for any degree of kidney impairment Use caution in patients with eGFR <30 mL/minute due to cyclodextrin excipient and accumulation potential			200mg load, 100mg maintenance
Rifampin	5-10 mg/kg q8-24h	No adjustment necessary			600 mg
Sulfamethoxazole/ trimethoprim (TMP)	3-6mg/kg TMP q12h Serious infection/PJP: 5mg/kg TMP q6-8h	CrCl 15-30: decrease dose 50%	Not recommended	Not recommended	320 mg TMP
Tobramycin In obese patient, use adjusted body weight	High-dose extended interval: 5-7.5mg/kg q24h CF: 12-15mg/kg q24h Conventional dosing: 2.5mg/kg q8h	High-dose and synergy: Dose adjust based on serum concentration Conventional dosing: CrCl 30-50: q12-18h CrCl 10 to 29: q18-24h	Conventional dosing: q48-72h	Conventional dosing: 2mg/kg per serum concentration	N/A
Vancomycin	15mg/kg q6-8h LPCH Vancomycin per Pharmacy is strongly recommended for all patients	10mg/kg q12-24h	5-10mg/kg per level	5-10mg/kg per levels	3600 mg/day
Voriconazole	2-12yo: 9mg/kg q12h >12yo: 6mg/kg q12h x2, then 4mg/kg q12h	No adjustment necessary. Use caution in patients with eGFR <30 mL/minute due to cyclodextrin excipient and accumulation potential; switch to enteral route when possible.			400 mg

BIW = twice weekly; CrCl = creatinine clearance; CKRT = continuous kidney replacement therapy; ID = infectious diseases; iHD = intermittent hemodialysis; LD = loading dose; MD = maintenance dose; PD = peritoneal dialysis; PJP = *Pneumocystis jirovecii* pneumonia; qOD = Every other day; SCr = serum creatinine;

*LPCH Antimicrobial Stewardship Program Restrictions – must be approved by ID fellow/attending prior to initiation of therapy

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