SHC Antimicrobial Renal Dosing Guidelines in Adults: Intravenous Administration

These are general dosing guidelines for reference only. Doses may vary based on indications, severity, and/or patient factors. Please contact Pharm with questions/concerns

Drugs are typically dosed based on CrCL, which may differ from eGFR. Calculated CrCL takes into patient specific age, weight, etc.

$$\text{CrCL (mL/min)} = \frac{[140 - age] * Wt(kg)}{72 * SCr\ (mg/dL)} * \text{gender factor } \textit{(male=1, female=0.85)}$$

Wt may need to be adjusted for obese patients. SCr may need to be adjusted for special patient populations.

Consider adequate loading doses in patients with moderate-severe renal dysfunction to ensure prompt attainment of steady state drug levels.

*** Denotes antimicrobials which require ID review or are ID restricted**

Usual Doses of Antimicrobials Typically Not Requiring Renal Adjustment

Azithromycin	250 – 500 mg Q24	***Amphotericin B[1] Liposomal (Ambisome®)**	3-5 mg/kg Q24
Clindamycin	600 – 900 mg Q8		
Doxycycline	100 mg Q12	***Micafungin**	100 mg Q24 150 mg Q24 for invasive Aspergillus
***Linezolid**	600 mg Q12		
Metronidazole[2]	500 mg Q8-12 (Q8 for *C.difficile*)	***Voriconazole[3]**	Based on indication. See Cerner CareSet. IV voriconazole not recommended if CrCL <50 mL/min due to accumulation and potential toxicity from SBECD vehicle. PO preferred. Exceptions exist.
***Tigecycline**	100 mg x 1 dose, then 50 mg Q12 (if Child-Pugh=C, adjust maintenance dose to 25 mg Q12)		

	CrCL ≥50 mL/min[4]	**CrCL 49-30 mL/min**	**CrCL 29-10 mL/min**	**CrCL <10 mL/min or iHD[5]**
ANTIBACTERIALS				
*Amikacin[6]	Recommend **dosing per pharmacy** to ensure appropriate dosing, serum level targeting and monitoring			
	15 mg/kg Q24	5 mg/kg Q12	5 mg/kg Q24	5 mg/kg Q24-48
Ampicillin				
UTI, Mild infection	1 g Q6	1 g Q8	1 g Q8	1 g Q12
Moderate-Severe infection, Endocarditis, Meningitis	2 g Q4	2 g Q6	2 g Q6	2 g Q12
Ampicillin/Sulbactam				
	1.5 - 3 g Q6	1.5 - 3 g Q6	1.5 - 3 g Q12	1.5 - 3 g Q24
Aztreonam				
Mild-Moderate infection	1 g Q8	1 g Q8	1 g Q12	1 g Q24
Neutropenic fever, Severe infection	2 g Q8	2 g Q8	2 g Q12	2 g Q24
Cefazolin				
UTI, Mild SSTI	1 g Q8	1 g Q8	1 g Q12	500 mg Q24
All other indications	2 g Q8	2 g Q8	1 g Q12	1 g Q24 or 2 g TIW post-HD

[1] Use total body weight. Round to nearest 50 mg. Routine monitoring of CMP and IV hydration pre- and post- recommended.
[2] Some recommendations include metronidazole 500 mg Q12 in HD patients for prolonged durations >14 days
[3] Use adjusted body weight if patient is > 120% ideal body weight
[4] Usual dose recommended for patients with normal renal function
[5] Administer post-HD if on Q24+ hour interval.
[6] Use adjusted body weight if patient is > 120% ideal body weight. Round to nearest 50 mg.

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	CrCL ≥50 mL/min[4]	CrCL 49-30 mL/min	CrCL 29-10 mL/min	CrCL <10 mL/min or iHD[5]
Cefepime				
Standard Dose	1 g Q8	1 g Q12	1 g Q24	500 mg Q24
Neutropenic fever, Meningitis, CF, Pseudomonas	2 g Q8	1 g Q8	1 g Q12	1 g Q24 or 2 g TIW post-HD
Cefotetan				
	1-2 g Q12	1-2 g Q12	1-2 g Q24	500 mg Q24+500 mg post-HD
Cefoxitin				
	1-2 g Q6	1-2 g Q8	1-2 g Q12	1 g Q24
*Ceftaroline				
Standard Dose	600 mg Q12	400 mg Q12	300 mg Q12	200 mg Q12
Endocarditis, *S.aureus* Bacteremia	600 mg Q8	400 mg Q8	300 mg Q8	200 mg Q8
Ceftazidime				
Pseudomonas	2 g Q8	2 g Q12	2 g Q24	1 g Q24
*Ceftazidime/Avibactam				
Restricted to ID only per P&T	2.5 g Q8	1.25 g Q8	0.94 g Q12	0.94 g Q24
*Ceftolozane/Tazobactam *Restricted to ID only per P&T*				
All other indications	1.5 g Q8	750 mg Q8	375 mg Q8	750 mg x 1 dose, then 150 mg Q8
Pneumonia	3 g Q8	1.5 g Q8	750 mg Q8	1.5 g x 1 dose, then 300 mg Q8
Cefuroxime IV				
Mild-moderate infection	750 mg Q8	750 mg Q8	750 mg Q12	750 mg Q24
Severe infection	1.5 g Q8	1.5 g Q8	1.5 g Q12	1.5 g Q24
Ciprofloxacin IV				
Standard dose	400 mg Q12	400 mg Q12	400 mg Q24	400 mg Q24
Pneumonia, Severe Infection	400 mg Q8	400 mg Q8	400 mg Q12	400 mg Q24
*Colistimethate sodium	Please see Colistin IV Dosing Guideline			
	Consult pharmacy	Consult pharmacy	Consult pharmacy	Consult pharmacy

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	CrCL ≥50 mL/min[4]	CrCL 49-30 mL/min	CrCL 29-10 mL/min	CrCL <10 mL/min or iHD[5]
*Dalbavancin	*Restricted to outpatient infusion*			
Single-dose regimen	1.5 g x 1 dose	1.5 g x 1 dose	1.125 g x 1 dose	1.5 g x 1 dose
Two-dose regimen (separated by 1 week)	1 g x 1 dose, then 500 mg x 1 week later	1 g x 1 dose, then 500 mg x 1 week later	750 mg x 1 dose, then 375 mg x 1 week later	1 g x 1 dose, then 500 mg x 1 week later
*Daptomycin[7]				
SSTI	4-6 mg/kg Q24	4-6 mg/kg Q24	4-6 mg/kg Q48	4-6 mg/kg Q48
Bacteremia[8], Systemic Infection	6-10 mg/kg Q24	6-10 mg/kg Q24	6-10 mg/kg Q48	6-10 mg/kg Q48
*Ertapenem				
	1 g Q24	1 g Q24	500 mg Q24	500 mg Q24 (post HD)
Gentamicin[9]	Recommend **dosing per pharmacy** to ensure appropriate dosing, serum level targeting and monitoring			
	5 mg/kg Q24	1.5 – 2 mg/kg Q12	1.5 – 2 mg/kg Q24	1.5 – 2 mg/kg Q24-48
*Imipenem/Cilastatin[10]				CrCL <10 mL/min
Standard Dose	500 mg Q6	500 mg Q8	500 mg Q12	250-500 mg Q12 Must institute HD within 48 hrs
Severe infections and MIC ≥2 (NTE 50mg/kg/d or 4g/d)	**CrCL ≥90:** 1 g Q6 **CrCL 89-50:** 750 mg Q8	500 mg Q6	500 mg Q12	500 mg Q12 Must institute HD within 48 hrs
Levofloxacin[9]	CrCL ≥50 mL/min	CrCL 49-20 mL/min	CrCL 19-10 mL/min	CrCL <10 mL/min, iHD, CAPD
All other indications	750 mg Q24	750 mg Q48	750 mg x1, then 500 mg Q48	750 mg x1, then 500 mg Q48
Cystitis or weight <45 kg	500 mg Q24	500 mg Q48	500 mg x1, then 250 mg Q48	500 mg x1, then 250 mg Q48
*Meropenem				iHD: 30-min infusion
Standard dose (30min infusion)	500 mg Q6	500 mg Q8	500 mg Q12	500 mg Q24
Meningitis, Cystic Fibrosis	2 g Q8	2 g Q12	1 g Q12	1 g Q24
*Minocycline IV				
MDR Acinetobacter Infection	200 mg Q12	200 mg IV LOAD, then 100 mg Q12		
Penicillin G IV				
	2 - 4 mu Q4	2 - 4 mu Q6	2 - 4 mu Q6	1 - 2 mu Q6
Piperacillin/Tazobactam	4-hr infusion: CrCL >20 mL/min		4-hr infusion CrCL ≤20 mL/min	iHD: 30-min infusion

[7] Use total body weight. Round to nearest 50 mg. Routine serum CK monitoring recommended for prolonged use.

[8] Experts recommend 8-10 mg/kg once daily for complicated bacteremia or infective endocarditis.

[9] Use adjusted body weight if patient is > 120% ideal body weight. Round to nearest 20 mg.

[10] Note differences in renal function (CrCL) ranges.

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	CrCL ≥50 mL/min[4]	**CrCL 49-30 mL/min**	**CrCL 29-10 mL/min**	**CrCL <10 mL/min or iHD[5]**
Standard dose	3.375 – 4.5 g Q8	3.375 – 4.5 g Q8	3.375 – 4.5 g Q12	iHD: 2.25 g Q8
Weight >100 kg or Sepsis	4.5 g Q8	4.5 g Q8	4.5 g Q12	iHD: 2.25 g Q8
Tobramycin[8]	Recommend **dosing per pharmacy** to ensure appropriate dosing, serum level targeting and monitoring			
	5 mg/kg Q24	1.5 – 2 mg/kg Q12	1.5 – 2 mg/kg Q24	1.5 – 2 mg/kg Q24-48
TMP/SMX (Bactrim/Septra)[11]				
UTI	Equivalent to 1 DS tab BID	Equiv to 1 DS tab BID	Equivalent to 1 DS tab Daily	Equiv to 1 DS tab Daily
SSTI or Systemic GNR	5 mg/kg of TMP Q12	5 mg/kg of TMP Q12	2.5 mg/kg of TMP Q12	2.5 mg/kg of TMP Q24
Severe Infections, PCP	5 mg/kg of TMP Q6-8	5 mg/kg of TMP Q6-8	5 mg/kg of TMP Q12	5 mg/kg of TMP Q24
Vancomycin[12]	Recommend **dosing per pharmacy** to ensure appropriate dosing, serum level targeting and monitoring			
	15-20 mg/kg Q8-12	15-20 mg/kg Q12	15-20 mg/kg Q24	15-20 mg/kg Q24-48

ANTIFUNGALS				
	CrCL ≥50 mL/min[4]	**CrCL 49-30 mL/min**	**CrCL 29-10 mL/min**	**CrCL <10 mL/min or iHD[5]**
Fluconazole				
Candidal UTI	200 mg Q24	100 mg Q24	100 mg Q24	100 mg Q24
Systemic Infection[13]	400 mg Q24	200 mg Q24	200 mg Q24	200 mg Q24
Meningitis	800-1200 mg Q24	400-600 mg Q24	400-600 mg Q24	400-600 mg Q24

Note different renal function ranges for antivirals compared to above.

ANTIVIRALS[9]				
	CrCL ≥50 mL/min[4]	**CrCL 49-26 mL/min**	**CrCL 25-10 mL/min**	**CrCL <10 mL/min or iHD[5]**
Acyclovir[14]				
Genital HSV	5 mg/kg Q8	5 mg/kg Q12	5 mg/kg Q24	2.5 mg/kg Q24
HSV CNS Disease, VZV, Shingles	10 mg/kg Q8	10 mg/kg Q12	10 mg/kg Q24	5 mg/kg Q24
	CrCL ≥50 mL/min[4]	**CrCL 49-26 mL/min**	**CrCL 25-10 mL/min**	**CrCL <10 mL/min or iHD[5]**

[11] Use adjusted body weight if patient is > 120% ideal body weight.

[12] Use total body weight, not to exceed 2 g/dose. Round to nearest 250 mg.

[13] IDSA recommends 800 mg (~12 mg/kg) loading dose for candidemia / invasive candidiasis. Inadequate loading dose has been associated with ↑mortality in those patients.

[14] Use ideal body weight. Use adjusted body weight if patient is > 120% ideal body weight or life-threatening illness. Round to the nearest 50 mg.

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Cidofovir[15]				
	5 mg/kg Q1-2 weeks	Pre-existing renal impairment: Contraindicated for Scr >1.5 mg/dL, CrCL <55 mL/min, or urine protein ≥100 mg/dL (≥2+) If SCr ↑ by 0.3-0.4 mg/dL or >30% of baseline, reduce cidofovir dose to 3 mg/kg; discontinue therapy if SCr ↑ ≥0.5 mg/dL or development of ≥3+ proteinuria		Use not recommended
Foscarnet	Varies based on indication, renal function, etc. Recommended consult to pharmacy			
	Consult pharmacy	Consult pharmacy	Consult pharmacy	Consult pharmacy
Ganciclovir IV[16]				
CMV Induction or Prophylaxis	CrCL ≥70: 5 mg/kg Q12 CrCL 50-69: 2.5 mg/kg Q12	2.5 mg/kg Q24	1.25 mg/kg Q24	1.25 mg/kg Q48 or TIW post-HD
Maintenance	CrCL ≥70: 5 mg/kg Q24 CrCL 50-69: 2.5 mg/kg Q24	1.25 mg/kg Q24	0.625 mg/kg Q24	0.625 mg/kg Q48 or TIW post-HD
*Peramivir *Restricted to ID or ICU. Courses >5 days restricted to ID*	*Note different renal function ranges.*			
	CrCL ≥50 mL/min[4]	**CrCL 49-30 mL/min**	**CrCL 29-10 mL/min**	**CrCL <10 mL/min or iHD[5]**
Single dose	600 mg x 1 dose	200 mg x 1 dose	100 mg x 1 dose	100 mg x 1 dose post HD
Daily regimen	600 mg Q24	200 mg Q24	100 mg Q24	CrCL <10 mL/min: 100 mg on day 1, then 15 mg Q24 HD: 100 mg on day 1, then 100 mg 2hrs post each HD session

[15] Use total body weight. Consult ID or ID pharm for alternative dosing regimens. Pre-med: IV hydration, probenecid.

[16] Use total body weight