

# Jackson Memorial Hospital (JMH) and University of Miami Hospital (UMH) Adult Antimicrobial Renal Dosing Guidelines

## Renal Dosing Based on Creatinine Clearance and Dialysis Mayela Castillo, PharmD, BCPS

Antibiotic Intravenous (IV) GENERIC - Brand®	Estimated Creatinine Clearance (mL/min)				HD (give after HD)	CVVH/CVVHD/ CVVHDF*
	> 50	25 - 50	10 - 24	< 10		
<b>ACYCLOVIR</b> <sup>®</sup> - Zovirax <sup>®</sup>						
- Herpes Zoster	10mg/kg q8h	10mg/kg q12h	10mg/kg q24h	5mg/kg q24h	5mg/kg q24h	10mg/kg q12-24h
- Herpes Simplex	5mg/kg q8h	5mg/kg q12h	5mg/kg q24h	2.5mg/kg q24h	2.5mg/kg q24h	5mg/kg q12-24h
<b>AMIKACIN</b> <sup>1,2,3</sup>						
- Conventional and high dose extended interval dosing <sup>4</sup> * Trough: See foot notes <sup>5</sup>	See back of card	See back of card	See back of card	See back of card	See back of card	See back of card
<b>AMPICILLIN</b>						
- Severe infection	2g q4-6h	2g q6-8h	2g q8-12h	2g q12h	1g q12h	2g q6-8h
- Mild-moderate infection	1g q4-6h	1g q6-8h	1g q8-12h	1g q12h		1g q6-8h
<b>AMPICILLIN/ SULBACTAM</b> - Unasyn <sup>®</sup>						
- Severe infection	1.5-3g q6h	1.5-3g q6-8h	1.5-3g q12h	1.5-3g q24h	1.5-3g q24h	1.5-3g q8h
<b>AZTREONAM</b> - Azactam <sup>®</sup>						
- Severe infection	2g q6-8h	1-2g q6-8h	1-2g x 1, then 0.5-1g q6-8h	1-2g x 1, then 0.25-0.5g q6-8h	1-2g x 1, then 0.25-0.5g q6-8h	2g x 1, then 1-2g q12h
- Mild-moderate infection	1-2g q8-12h	1-2g q8-12h	1-2g x 1, then 0.5-1g q8-12h	1-2g x 1, then 0.25-0.5g q6-8h		
<b>CEFAZOLIN</b> - Ancef <sup>®</sup>						
- Severe infection	2g q6h	1.5g q8h	1g q12h	1g q24h	1g q24h	2g q12h
- Moderate infection	1g q6h	1g q8h	500mg q12h	500mg q24h	500mg q24h	
- Mild infection	500mg q6h	500mg q8h	250mg q12h	250mg q24h	250mg q24h	1g q8-12h
<b>CEFEPIME</b> - Maxipime <sup>®</sup>						
- Febrile neutropenia and meningitis	2g q8h	2g q12h	2g q24h	1g q24h	1g q24h	2g q12h
- Severe infection	2g q12h	2g q24h	1g q24h	500mg q24h	1g x 1, then 500mg q24h	1-2g q12h
- Moderate infection	1g q12h	1g q24h	500mg q24h	250mg q24h		1g q12h
<b>CEFOTAXIME</b> - Claforan <sup>®</sup>						
- Severe infection	2g q6-8h	2g q8h	2g q12h	1-2g q24h	1g q24h	2g q12h
- Mild-moderate infection	1-2g q8h	1g q8h	1g q12h	1g q24h		1g q8-12h
<b>CEFTAROLINE</b> <sup>®</sup> - Teflaro <sup>®</sup>						
- Complicated skin and skin structure infection or CAP	600mg q12h	400mg q12h	300mg q12h	200 mg q12h	200mg q12h	600-400mg q12h
<b>CEFTAZIDIME</b> <sup>®</sup> - Fortaz <sup>®</sup>						
- Severe infection	2g q8h	2g q12h	2g q24h	1g q24h	1g q24h	2g q12h
- Mild-moderate infection	1g q8h	1g q12h	1g q24h	500mg q24h		1g q12h
<b>CEFOXITIN</b> - Mefoxin <sup>®</sup>						
- Severe infection	2g q6-8h	1-2g q8-12h	1-2g q12-24h	0.5-1g q12-24h	1g q24h	2g q12h
- Mild-moderate infection	1g q6-8h	1g q8-12h	1g q12-24h	500mg q12-24h	500mg q24h	1g q8-12h
<b>CIPROFLOXACIN</b> <sup>®</sup> - Cipro <sup>®</sup>						
- Severe infection/pneumonia	400mg q8h	400mg q8h	400 mg q12-24h	400mg q24h	400mg q24h	200 mg q8h to 400mg q12h
- Mild-moderate infection	400mg q12h	400mg q12h	400mg q24h	200-400mg q24h	200-400mg q24h	
<b>COLISTIMETHATE</b> <sup>®</sup> - Colistin <sup>®</sup>						
- Multi-drug resistant gram negative infection	2.5mg/kg q12h	1.25-2mg/kg q12h	1.25mg/kg q12h	1.5mg/kg q36h	2.5mg/kg x 1, then 1.5mg/kg q24-48h	2.5mg/kg q12-24h
<b>DAPTOMYCIN</b> <sup>®</sup> - Cubicin <sup>®</sup>						
- Complicated skin and skin structure infection	4mg/kg q24h	4mg/kg q24h	4mg/kg q48h	4mg/kg q48h	4mg/kg q48h	4mg/kg q24h
- Bacteremia/Endocarditis (MSSA/MRSA)	6mg/kg q24h	6mg/kg q24h	6mg/kg q48h	6mg/kg q48h	6mg/kg q48h	6mg/kg q24h
- VRE	8mg/kg q24h	8mg/kg q24h	8mg/kg q48h	8mg/kg q48h	8mg/kg q48h	8mg/kg q24h
<b>FLUCONAZOLE</b> <sup>®</sup> - Diflucan <sup>®</sup>						
- Severe infection (Candida non-albicans)	12mg/kg q24h or ~800mg q24h	12mg/kg q24h or ~800mg q24h	6mg/kg q24h or ~400mg q24h	6mg/kg q24h or 200-400mg q24h	400mg q24h	400-800mg q24h
- Moderate infection (Candida albicans)	6mg/kg q24h or 400mg q24h	6mg/kg q24h or 400mg q24h	3mg/kg q24h or 200mg q24h	3mg/kg q24h or 200mg q24h	200-400mg q24h	400mg q24h
<b>GANCICLOVIR</b> - Cytovene <sup>®</sup>						
- Cytomegalovirus (CMV)	See below	See below	See below	See below	See below	See below
<b>GENTAMICIN</b> <sup>1,2,3</sup>						
- Conventional and high dose extended interval dosing * Trough: See foot notes <sup>5</sup>	See back of card	See back of card	See back of card	See back of card	See back of card	See back of card
<b>LEVOFLOXACIN</b> - Levaquin <sup>®</sup>						
- Nosocomial pneumonia, complicated skin/soft tissue, and pyelonephritis	750mg q24h	750mg q48h	750mg x 1, then 500mg q48h	750mg x 1, then 500mg q48h	750mg x 1, then 500mg q48h	500mg q24h
- Other infections	500mg q24h	500mg x 1, then 250mg q24h	500mg x 1, then 250mg q48h	500mg x 1, then 250mg q48h	500mg x 1, then 250mg q48h	
<b>MEROPENEM</b> <sup>®</sup> - Merrem <sup>®</sup>						
- Empiric ICU regimen (3 h infusion)	1g q8h	1g q12h	500mg q12h	500mg q24h	500 mg q12-24h	500mg q6h or 1g q12h
- Known susceptibility regimen (30 min infusion)	500mg q6h	500mg q8h	500mg q12h	500mg q24h	500mg q12-24h	500mg q6h or 1g q12h
- Special populations (3 h infusion) <sup>10</sup>	2g q8h	2 g q12h	1g q12h	1g q24h	500mg q12-24h	500mg q6h or 1g q12h
<b>PIPERACILLIN/AZOBACTAM</b> <sup>®</sup> - Zosyn <sup>®</sup> (JMH only, UMH to dose per policy)						
- Pseudomonas pneumonia/special populations <sup>10</sup>	4.5g q6h	4.5g q6h	3.375g q12h	3.375g q12h	3.375g q12h	4.5g q6h
- Infusion: 4.5g = 3h 3.375g = 4h						
- Other Infections	3.375 g q8h	3.375 g q8h				3.375g q8h
<b>TMP/SMX</b> - Bactrim <sup>®</sup>						
- PCP/PJP, Nocardia, Stenotrophomonas treatment	5-7mg/kg TMP q8h	5mg/kg TMP q8h	5mg/kg TMP q12h	5mg/kg TMP q12-24h	5-7mg/kg TMP q24h	5-7mg/kg TMP q8h
- PCP/PJP and or Toxoplasmosis prophylaxis	80-160mg TMP q24h or MWF	80-160mg TMP q24h or MWF	80-160mg TMP q24h or MWF	80-160mg TMP q24h or MWF	80-160mg TMP MWF	80-160mg TMP q24h or MWF
<b>TOBRAMYCIN</b> <sup>1,2,3</sup>						
- Conventional and high dose extended interval dosing * Trough: See foot notes <sup>5</sup>	See back of card	See back of card	See back of card	See back of card	See back of card	See back of card
<b>VALGANCICLOVIR</b> - Valcyte <sup>®</sup>						
- Cytomegalovirus (CMV)	See below	See below	See below	See below	See below	See below
<b>VANCOMYCIN</b> <sup>®</sup> - Vancocin <sup>®</sup>						
- Loading, maintenance and monitoring	See back of card	See back of card	See back of card	See back of card	See back of card	See back of card

GANCICLOVIR (IV) and VALGANCICLOVIR (PO)							
Indication	Estimated Creatinine Clearance (mL/min)					HD (Give After HD)	CVVH/CVVHD/ CVVHDF*
	> 70	50 - 69	25 - 49	10 - 24	< 10		
<b>GANCICLOVIR</b>							
- CMV induction/treatment	5mg/kg q12h	2.5mg/kg q12h	2.5mg/kg q24h	1.25mg/kg q24h	1.25mg/kg 3x/week	1.25mg/kg post HD	2.5mg/kg q24h
- CMV maintenance	5mg/kg q24h	2.5mg/kg q24h	1.25mg/kg q24h	0.625mg/kg q24h	0.625mg/kg 3x/week		2.5mg/kg q24h
<b>VALGANCICLOVIR</b> <sup>11</sup>							
- CMV induction	900mg q12h	450mg q12h	450mg q24h	450mg q48h	450mg q48h	900mg q48h	450mg q12h
- CMV maintenance	900mg q24h	450mg q24h	450mg q48h	450mg 2x/week	450mg 2x/week	450mg q48h	450mg q24h

\* CVVH: continuous venovenous hemofiltration; CVVHD: continuous venovenous hemodialysis; CVVHDF: continuous venovenous hemodiafiltration

### Foot Notes

- Ideal body weight (IBW) = 50 + (2.3 x inches above 5 feet) for males or IBW = 45.5 + (2.3 x inches above 5 feet) for females
- Aminoglycosides: If not obese, dose based on total body weight (TBW); If obese (>120% of ideal body weight), use adjusted body weight (ABW)
- Adjusted body weight (ABW) = IBW + 0.4 (TBW - IBW)
- Harford or High dose Extended Interval (Amikacin): Obtain a 10 hour post infusion level and schedule as follows:
  - < 10mcg/mL = q24h; 10-16mcg/mL = q36h; 16-20mcg/mL = q48h; > 20mcg/mL = Conventional/Traditional dosing
- Harford or High Dose Extended Interval (Gentamicin/Tobramycin): Obtain a 10 hour post infusion level and schedule as follows:
  - < 5mg/mL = q24h; 5-8mcg/mL = q36h; 8-10mcg/mL = q48h; > 10mcg/mL = Conventional/Traditional dosing
- Restricted: Requires Antimicrobial Stewardship Program (ASP) approval (see back of card for complete list)
  - Meropenem and colistin are not restricted for empiric use in ICU
- Ciprofloxacin equivalent doses: 250mg PO q12h = 200mg IV q12h; 500mg PO q12h = 400mg IV q12h; 750mg PO q12h = 400mg IV q8h
- Candidemia due to Candida albicans: Consider loading dose of 800 mg IV x 1 dose
- Vancomycin: Dose based on actual body weight (ABW)
- Special populations: CNS, cystic fibrosis, febrile neutropenia, patients > 2 times IBW, eye infections
- Valcyte<sup>®</sup> manufacturer recommends to: Use ganciclovir in CrCl < 10mL/min, HD and CRRT. Valcyte<sup>®</sup> recommendations based on tertiary references
- Colistin: Dose based on ideal body weight (IBW); if obese (>120% of ideal body weight), use adjusted body weight (ABW)
- Meropenem and Piperacillin/Tazobactam: Dose frequencies based on infusion regimen not on package insert recommendations

### JMH and UMH Antimicrobial Stewardship Programs (ASP)

Lilian Abbo, MD, Laura Aragon, PharmD, BCPS (AQ ID), Marissa Tysiak, PharmD, BCPS

**When dosing vancomycin, use the patient's TOTAL BODY WEIGHT**

VANCOMYCIN: Loading Dose (CNS/Meningitis, Endocarditis, Febrile Neutropenia, Necrotizing Fasciitis, Pneumonia, Sepsis)			
Total Body Weight	50 – 70 kg	71 – 90 kg	> 90 kg
Dose	1.5 g x 1	2 g x 1	2.5 g x 1

VANCOMYCIN: Maintenance Dosing						
CrCl (ml/min)	Weight: TOTAL body weight					
	45 - 60 kg	61 - 75 kg	76 - 90 kg	91 - 110 kg	111 - 125 kg	>125 kg
> 90 (≤ 35 yrs old)	1 g q8h	1 g q8h	1.25 g q8h	1.5 g q8h	1.75 g q8h	2 g q8h
> 90 (> 35 yrs old)	1 g q12h	1 g q12h	1.25 g q12h	1 g q8h	1.75 g q12h	2 g q8h
50-90	1 g q12h	1 g q12h	1.25 g q12h	1 g q8h	1.75 g q12h	2 g q12h
30-49	1 g q24h	1 g q24h	1.25 g q24h	1.5 g q24h	1.75 g q24h	2 g q24h
15-30	750 mg q24h	1 g q24h	1.25 g q24h	1.5 g q24h	1.75 g q24h	2 g q24h
< 15	750 mg x 1 dose	1 g x 1 dose	1 g x 1 dose	1.5 g x 1 dose	1.75 g x 1 dose	2 g x 1 dose
CVVHD	1 g q24h	1 g q24h	1.25 g q24h	1.5 g q24h	1.75 g q24h	2 g q24h
HD	500 mg after HD	1 g after HD	1 g after HD	1 g after HD	1 g after HD	1 g after HD

VANCOMYCIN: Adjusting Doses Based on Level (Patients NOT on HD)				
Trough Level	Current Vancomycin Frequency			
	q8h	q12h	q24h	q48h
≤ 5 mcg/mL	Continue current dosing → Call ASP from 0700 to 2300	↑ dose by 500mg & ↑ frequency to q8h	↑ dose by 500mg & ↑ frequency to q12h	↑ dose by 500mg & ↑ frequency to q24h
5 - 9.9 mcg/mL	↑ dose 500mg	↑ frequency to q8h	↑ frequency to q12h	↑ frequency to q24h
10 - 14.9 mcg/mL	↑ dose 250-500 mg -OR- Same dose if indicated	↑ dose by 250-500mg -OR- Same dose if indicated	↑ dose by 250-500 mg -OR- Same dose if indicated	↑ dose by 250-500mg -OR- Same dose if indicated
15 – 22 mcg/mL	No change	No change	No change	No change
22.1 – 25 mcg/mL	↓ dose 250-500 mg -OR- Same dose if no toxicity	↓ dose by 250-500 mg -OR- Same dose if no toxicity	↓ dose by 250-500 mg -OR- Same dose if no toxicity	↓ dose by 250-500mg -OR- Same dose if no toxicity
25.1 – 30 mcg/mL	↓ frequency to q12h	↓ frequency to q24h	Half current dose	Half current dose
> 30 mcg/mL	Hold → Call ASP from 0700 to 2300	Hold → Call ASP from 0700 to 2300	Hold → Call ASP from 0700 to 2300	Hold → Call ASP from 0700 to 2300

VANCOMYCIN: Adjusting HD Doses Based on Level			
Pre-HD Level	< 10 mcg/mL	10 – 25 mcg/mL	> 25 mcg/mL
Post HD dose	1g IV x 1 post-HD	500 – 750mg IV post-HD	Hold vancomycin post-HD

**When dosing Aminoglycosides: If patient is not obese, use TOTAL BODY WEIGHT  
If obese (>120% of Ideal Body Weight), use ADJUSTED BODY WEIGHT = [(TBW-IBW) x 0.4] + IBW**

AMINOGLYCOSIDES: High Dose Extended Interval Dosing (may use Hartford Nomogram)				
Drug	Dose	Dosing Interval Based on CrCl (ml/min)		
		≥ 50	30-49	< 30
Gentamicin	7 mg/kg	q24h	q36h	Conventional Dosing Recommended
Tobramycin	7 mg/kg			
Amikacin	10-20 mg/kg*			

\* Amikacin dosing: 10 mg/kg for atypical mycobacteria, 15 mg/kg for most patients, 20 mg/kg for cystic fibrosis and burns

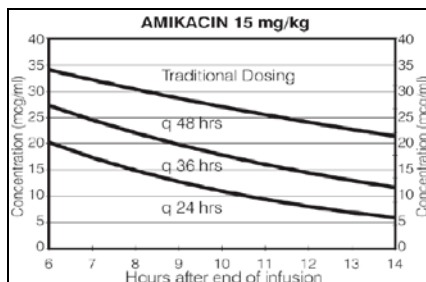
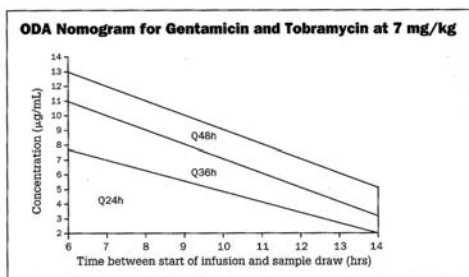
AMINOGLYCOSIDES: Conventional Dosing					
Drug	Dose	Dosing Interval Based on CrCl (ml/min)			
		>60	40-59	20-39	<20
Gentamicin	2 mg/kg	q8h	q12h	q24h	q48h
Tobramycin	2 mg/kg				
Amikacin	5 mg/kg				

AMINOGLYCOSIDES: HD and CVVHD Dosing				
Drug	Loading Dose	Maintenance Dose	Dosing Interval Based	
			HD	CVVHD
Gentamicin	2 mg/kg x 1	1.5 mg/kg	After each HD session	q24h
Tobramycin	2 mg/kg x 1	1.5 mg/kg		
Amikacin (HD)	5 mg/kg x 1	5 mg/kg		
Amikacin (CVVHD)	7.5 mg/kg x 1	7.5 mg/kg	N/A	

AMINOGLYCOSIDES: Synergy AND Urinary Tract Infection Dosing						
Drug	Dose	Dosing Interval Based on CrCl (ml/min)				
		>60	40-59	20-39	<20	
Gentamicin	1 mg/kg	q8h	q12h	q24h	q48h	
<b>Once Daily: Recommended for Staphylococcus and Streptococcus endocarditis synergy AND Urinary tract infection</b>						
Gentamicin	3 mg/kg	q24h	3 mg/kg	q24h	1 mg/kg	q24h
Tobramycin	3 mg/kg	q24h	3 mg/kg	q24h	1 mg/kg	q24h
Amikacin	7 mg/kg	q24h	7 mg/kg	q24h	3 mg/kg	q24h

AMINOGLYCOSIDES: Trough Monitoring			
Dosing Interval	Obtain Trough 30 Minutes Before	Reference Range (mcg/ml)	
		Gentamicin/Tobramycin	Amikacin
q8h	4 <sup>th</sup> dose	<1	<4
q12h	3 <sup>rd</sup> dose		
q24-48h	2 <sup>nd</sup> dose		
HD	Next HD session	<2	<8

**Hartford Nomograms for High Dose Extended Interval Aminoglycosides Dosing<sup>1,2,3,4,5</sup>**



Antimicrobials Requiring Approval		
Amphotericin B Lipid Complex (ABLC, Abelcet <sup>®</sup> )	Daptomycin (Cubicin <sup>®</sup> )	Minocycline IV (Minocin <sup>®</sup> )
Amphotericin B Liposomal (Ambisome <sup>®</sup> )	Ertapenem (Invanz <sup>®</sup> )	Nitazoxanide (Alinia <sup>®</sup> )
Aztreonam (Azactam <sup>®</sup> )	Fidaxomicin (Dificid <sup>®</sup> )	Posaconazole (Noxafil <sup>®</sup> )
Ceftaroline (Teflaro <sup>®</sup> )	Imipenem/cilistatin (Primaxin <sup>®</sup> )	Quinopristin/Dalfopristin (Synercid <sup>®</sup> )
Ceftazidime (Fortaz <sup>®</sup> )	Linezolid (Zyvox <sup>®</sup> )	Telavancin (Vibativ <sup>®</sup> )
Colistimethate IV (colistin <sup>®</sup> ) <sup>*</sup>	Meropenem (Merrem <sup>®</sup> ) <sup>*</sup>	Tigecycline (Tygacil <sup>®</sup> )
Dalbavancin (Dalvance)	Micafungin (Mycamine <sup>®</sup> )	Voriconazole (Vfend <sup>®</sup> )

\* Not restricted for empiric use in ICU

Contact Numbers		
<b>For Approvals: ASP</b>		<b>For Formal Consult: ID Fellow On-Call</b>
JMH ASP: (786) 586 - 0607	Hours: 7:00 am – 11:00 pm	JMH Team A (General ID): (305) 881 - 3165
UMH ASP: (786) 501 - 5008	Hours: 8:00 am – 4:30 pm	JMH Team B (Oncology/Transplant): (305) 996 - 0007
		UMH: (305) 277 - 5998



For more information, please visit: [www.ugotabug.med.miami.edu](http://www.ugotabug.med.miami.edu)  
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