Renal Dosing Guidelines

Calculate estimated CrCl in the following manner:

1. Use Ideal Body Weight (IBW) unless:
    a. the manufacturer instructs otherwise
    b. the patient is under their IBW, then use Actual Body Weight (ABW)
2. If a patient is > 65 year old and their SCr is < 1, use 1 to calculate estimated CrCl.
3. Use the Cockroft-Gault equation.

Males $\frac{(140\text{-age}) \times \text{IBW}}{72 \times \text{SCr}}$ **Females** $\frac{(140\text{-age}) \times \text{IBW}}{72 \times \text{SCr}} \times 0.85$

Drug	CrCl (mL/min)	Dose	Interval (hours)
Penicillins			
Amoxicillin	> 50 10-50 < 10 HD	500 mg 250 – 500 mg	8 8-12 12-24 12-24; dose given after HD
Amoxicillin/Clavulanate	10-30 < 10 HD	250 – 500 mg	12 24 24; dose given after HD
Ampicillin	> 50 10-50 < 10 HD	500 mg – 2 gm	6 8-12 12-24 12-24; dose given after HD
Dicloxacillin	Unchanged No HD		
Nafcillin	Unchanged No HD		
Penicillin G (IV)	> 50 30-50 10-30 < 10 HD	0.5 – 4 MU	4-6 6 8 12 12; dose given after HD
Piperacillin	> 50 10-50 < 10 HD	3 – 4 gm 2 gm	4-6 6-8 8 8; dose given after HD
Piperacillin/Tazobactam	> 40 20-40 < 20 HD	3.375 – 4.5 gm 2.25 gm	6-8 6 8 8; dose given after HD

Drug	CrCl (mL/min)	Dose	Interval (hours)
Cephalosporins			
Cefazolin	> 50 10-50 < 10 HD	500 mg – 1 gm	8 12 24-48 24-48; dose given after HD
Cefepime	30-60 11-29 ≤ 10	1 – 2 gm 1 – 2 gm 500 mg – 1 gm	12-24 24
Cefotaxime	> 50 10-50 < 10 HD	1 – 2 gm	6-8 8-12 24 24; dose given after HD
Cefotetan	> 30 10-30 < 10 HD	1 – 2 gm 500 mg 250 mg on non-dialysis days and 500 mg on dialysis days after HD	12 24 24 24
Cefpodoxime	< 30 HD	Dose per indication LD of 200 mg followed by 100 mg 12 hours later, followed by 100 mg Q24h	24
Ceftriaxone	Unchanged HD		 Dose given after HD
Cefuroxime (IV)	> 30 10-30 < 10 HD	750 – 1500 mg 750 mg 750 mg	8 12 24 24; dose given after HD
Cefuroxime (PO)	> 50 30-49 10-29 < 10 HD	250 – 500 mg	8 12 24 48 48; dose given after HD
Cephalexin	> 50 10-49 < 10 HD	250 mg – 500 mg	6-8 8-12 12 12; dose given after HD
Cefoxitin	> 50 30-50 10-29 < 10	1 – 2 gm 0.5 – 1 gm	6-8 8-12 12-24 12-48
Fluroquinolones			
Ciprofloxacin (IV)	5-29	200 – 400 mg	18-24
Ciprofloxacin (PO)	10-50 <10	Dose reduced to 50% to 75% Dose reduced to 50%	
Levofloxacin	Refer to dosing guidelines		

Drug	CrCl (mL/min)	Dose	Interval (hours)
Macrolides			
Azithromycin	Unchanged		
Clarithromycin	<30 No HD	500 mg (or 250 mg)	24 (or 12)
Erythromycin	>10 <10 No HD	500 mg – 1 gm 250 – 500 mg (or 500 mg – 1 gm)	6 6 (or 8)
Tetracyclines			
Doxycycline	Unchanged No HD		
Tetracycline	10 – 50 (GFR) <10		12-24 24
Antifungals			
Amphotericin B	Monitor SCr trends No HD	Based on disease state	
Fluconazole	> 50 ≤ 50 HD	Load dose up to 800 mg x 1, then 50% of the load dose Load dose up to 800 mg x 1, then 25% of load dose **OR** 50% of load dose Load dose up to 800 mg x 1, then 50% of the load dose	24 24 **OR** 48 Dose given after HD
Aminoglycosides			
Amikacin	Monitor serum drug levels HD		Dose given after HD
Gentamicin	Monitor serum drug levels HD		Dose given after HD
Tobramycin	Monitor serum drug levels HD		Dose given after HD
Antivirals			
Acyclovir (IV)	25-50 10-25 <10 HD	5 – 10 mg/kg 5 – 10 mg/kg 2.5 – 5 mg/kg	12 24 24 24; dose given after HD
Acyclovir (PO)	>25 10-25 <10	Multiple – see reference for suggested adjustments for HSV and Varicella-zoster only.	No change 8 12
Amantidine	30-50 15-29 <15 HD	200 mg first day, then 100 mg 200 mg first day, then 100 mg 200 mg 200 mg	24 48 Every 7 days Every 7 days
Oseltamivir	30-10 <10 No HD info available	75 mg Not studied	24

Drug	CrCl (mL/min)	Dosage	Interval
Anti-TB			
Ethambutol	Dose reduction and HD doses based on serum levels		
Isoniazid	Unchanged HD		 Extra dose after HD
Pyrazinamide	Unchanged HD		 Extra dose after HD
Rifampin	Unchanged No HD		
Carbapenems			
Ertapenem	≥ 30 < 30	1000 mg 500 mg	24 24
Imipenem/cilastatin	Refer to dosing guidelines HD		 Dose given after HD
Meropenem	> 50 26-50 10-25 < 10	Dose per indication Dose per indication ½ recommended dose ½ recommended dose	8 12 12 24
Misc. Antibiotics			
Aztreonam	10-30 ≤ 10 HD	1 – 2 gm load, then reduce dose by 50% 500 mg – 2 gm load, then reduce dose by 75%	 50% dose given after HD
Clindamycin	Unchanged No HD		
Daptomycin	≥ 30 < 30 HD or PD	Dose per disease state Dose per disease state Dose per disease state	24 48 48; dose given after HD
Linezolid	Renal insufficiency HD	Metabolites accumulate, weigh use vs. risk	 dose given after HD
Metronidazole	<10 HD	500 mg	12 12; dose given after HD
SMZ/TMP	30-15 < 15 HD	50% standard regimen Not recommended	 extra 50% dose given after HD
Tigecycline	Unchanged No HD		
Vancomycin	Monitor serum drug levels		

Drug	CrCl (mL/min)	Dosage	Interval
Misc. Drugs			
Aldactone	Monitor potassium levels		
Alendronate	< 35	Contraindicated	
Allopurinol	≥ 20 10-20 3-10 < 3	300 mg 200 mg 100 mg 100 mg	24 24 24 Intervals longer than 24
Amiloride	Monitor potassium levels		
Colchicine	< 30 HD	Prophylaxis dose – 0.3 mg Treatment dose – maybe repeated no more than every Prophylaxis dose – 0.3 mg Treatment dose – 0.6 mg no more than every	24 2 weeks Twice weekly 2 weeks
Digoxin	Monitor serum drug levels No HD		
Dofetilide	> 60 40-60 20-40 < 20	500 mg 250 mg 125 mg Contraindicated	12 12 12
Enoxaparin	< 30	DVT Prophylaxis – 30 mg Hip/Knee/Abdominal Surgery – 30 mg Treatment – 1 mg/kg	24 24 24
Eptifibitide *Calculate using actual body weight and serum creatinine*	Bolus ≥ 50 or SCr < 2 < 50 or SCr > 2	180 mcg/kg (Max of 22.6 mg) 2 mcg/kg/min (Max of 15 mg/hr) 1 mcg/kg/min (Max of 7.5 mg/hr)	
Famotidine	<50	20 mg	24
Fexofenadine	Decreased renal function	60 mg	24
Flecainide	< 35	100 mg (or 50 mg)	24 (or 12)
Fondaparinux	< 30	Contraindicated	
Gabapentin	Refer to dosing guidelines		
Hydrochlorothiazide	25-50	Not effective = recommend Lasix	
Levetiracetam	> 80 50-80 30-50 < 30 HD	500-1500 mg 500-1000 mg 250-750 mg 250-500 mg 500-1000 mg with supplemental dose after each dialysis	12 12 12 12 24
Meperidine	Educate physician regarding accumulation of normeperidine		
Metformin	Contraindicated in renal dysfunction: SCr ≥ 1.5 (males) SCr ≥ 1.4 (females)	Discontinue use of medication	

Drug	CrCl (mL/min)	Dosage	Interval
Metoclopramide	< 40	Decrease all doses to 5 mg	No change
NSAIDS	Monitor for increases in BUN or SCr associated with NSAID use		
Pregabalin	30-60 15-30 < 15 HD	75-300 mg/day 25-150 mg/day 25-75 mg/day Supplemental dose of: 25 or 50 mg for 25 mg daily regimen 50 or 75 mg for 25-50 mg daily regimen 75 or 100 mg for 50-75 mg daily regimen 100 or 150 mg for > 75 mg daily regimen	8 or 12 12 or 24 24 Dose given after HD
Probenecid	< 50	Not recommended	
Sitagliptin	≥ 50 30-50 < 30 HD or PD	100 mg 50 mg 25 mg 25 mg	24 24 24 24, regardless of dialysis timing
Tramadol	<30	50 mg	12

Gabapentin Renal Dosing Guidelines

CrCl (mL/min)	Daily Dose Range (mg/day)	Dose Regimen				
≥ 60	900 – 3600	300 mg q 8 h	400 mg q 8 h	600 mg q 8 h	800 mg q 8 h	1200 mg q 8 h
30-59	400 – 1400	200 mg q 12 h	300 mg q 12 h	400 mg q 12 h	500 mg q 12 h	700 mg q 12 h
15-29	200 – 700	200 mg q 24 h	300 mg q 24 h	400 mg q 24 h	500 mg q 24 h	700 mg q 24 h
15	100 – 300	100 mg q 24 h	125 mg q 24 h	150 mg q 24 h	200 mg q 24 h	300 mg q 24 h
< 15	Reduce daily dose in proportion to CrCl (e.g. CrCl of 7.5 mL/min should receive ½ the daily dose of patients with CrCl of 15 mL/min)					
HD	Supplemental dose after HD	125 mg	150 mg	200 mg	250 mg	300 mg

Levofloxacin Renal Dosing Guidelines

Indication	CrCl > 50 mL/min	CrCl = 20-49 mL/min	CrCl = 10-19 mL/min & Dialysis
Acute bacterial exacerbation of chronic bronchitis	500 mg q 24 h	500 mg q 48 h	Initial 500 mg, then 250 mg q 48 h
Nosocomial pneumonia	750 mg q 24 h	750 mg q 48 h	Initial 750 mg, then 500 mg q 48 h
Community acquired pneumonia	750 mg q 24 h	750 mg q 48 h	Initial 750 mg, then 500 mg q 48 h
Acute Maxillary Sinusitis	750 mg q 24 h	750 mg q 48 h	Initial 750 mg, then 250 mg q 48 h
Complicated skin/soft tissue infection	750 mg q 24 h	750 mg q 48 h	Initial 750 mg, then 500 mg q 48 h
Uncomplicated skin/soft tissue infection	500 mg q 24 h	500 mg q 48 h	Initial 500 mg, then 250 mg q 48 h
Complicated UTI	250 mg q 24 h	250 mg q 24 h	Initial 250 mg, then 250 mg q 48 h
Acute pyelonephritis	250 mg q 24 h	250 mg q 24 h	Initial 250 mg, then 250 mg q 48 h
Uncomplicated UTI (3 day course)	250 mg q 24 h	250 mg q 24 h	Initial 250 mg, then 250 mg q 24 h

Imipenem/Cilastatin Renal Dosing Guidelines

Imipenem/Cilastatin IV Dosing Schedule for Adults with Normal Renal Function				
Type of Severity of Infection	**Fully susceptible organisms**	**Total Daily Dose**	**Moderately susceptible organisms including some strains of *P. aeruginosa***	**Total Daily Dose**
Mild	250 mg q 6 h	1 gm	500 mg q 6 h	2 gm
Moderate	500 mg q 8 h **or** 500 mg q 6 h	1.5 gm **or** 2 gm	500 mg q 6 h **or** 1 gm q 8 h	2 gm **or** 3 gm
Severe, life-threatening	500 mg q 6 h	2 gm	1 gm q 8 h **or** 1 gm q 6 h	3 gm **or** 4 gm
Uncomplicated UTI	250 mg q 6 h	1 gm	250 mg q 6 h	1 gm
Complicated UTI	500 mg q 6 h	2 gm	500 mg q 6 h	2 gm

Renal Dosing for Adult Patients with Impaired Renal Function or Body Weight < 70 kg					
Body Weight	≥ 70 kg	60 kg	50 kg	40 kg	30 kg
CrCl (mL/min)	**If total daily dose for normal renal function is 1 gm/day, use:**				
≥ 71	250 mg q 6 h	250 mg q 8 h	125 mg q 6 h	125 mg q 6 h	125 mg q 8 h
41-71	250 mg q 8 h	125 mg q 6 h	125 mg q 6 h	125 mg q 8 h	125 mg q 8 h
21-40	250 mg q 12 h	250 mg q 12 h	125 mg q 8 h	125 mg q 12 h	125 mg q 12 h
6-20	250 mg q 12 h	125 mg q 12 h	125 mg q 12 h	125 mg q 12 h	125 mg q 12 h
If total daily dose for normal renal function is 1.5 gm/day, use:					
≥ 71	500 mg q 8 h	250 mg q 6 h	250 mg q 6 h	250 mg q 8 h	125 mg q 6 h
41-71	250 mg q 6 h	250 mg q 8 h	250 mg q 8 h	125 mg q 6 h	125 mg q 8 h
21-40	250 mg q 8 h	250 mg q 8 h	250 mg q 12 h	125 mg q 8 h	125 mg q 8 h
6-20	250 mg q 12 h	250 mg q 12 h	250 mg q 12 h	125 mg q 12 h	125 mg q 12 h
If total daily dose for normal renal function is 2 gm/day, use:					
≥ 71	500 mg q 6 h	500 mg q 8 h	250 mg q 6 h	250 mg q 6 h	250 mg q 8 h
41-71	500 mg q 8 h	250 mg q 6 h	250 mg q 6 h	250 mg q 8 h	125 mg q 6 h
21-40	250 mg q 6 h	250 mg q 8 h	250 mg q 8 h	250 mg q 12 h	125 mg q 8 h
6-20	250 mg q 12 h	250 mg q 12 h	250 mg q 12 h	250 mg q 12 h	125 mg q 12h
If total daily dose for normal renal function is 3 gm/day, use:					
≥ 71	1000 mg q 8 h	750 mg q 8 h	500 mg q 6 h	500 mg q 8 h	250 mg q 6 h
41-71	500 mg q 6 h	500 mg q 8 h	500 mg q 8 h	250 mg q 6 h	250 mg q 8 h
21-40	500 mg q 8 h	500 mg q 8 h	250 mg q 6 h	250 mg q 8 h	250 mg q 8 h
6-20	500 mg q 12 h	500 mg q 12 h	250 mg q 12 h	250 mg q 12 h	250 mg q 12 h
If total daily dose for normal renal function is 4 gm/day, use:					
≥ 71	1000 mg q 6 h	1000 mg q 8 h	750 mg q 8 h	500 mg q 6 h	500 mg q 8 h
41-71	750 mg q 8 h	750 mg q 8 h	500 mg q 6 h	500 mg q 8 h	250 mg q 6 h
21-40	500 mg q 6 h	500 mg q 8 h	500 mg q 8 h	250 mg q 6 h	250 mg q 8 h
6-20	500 mg q 12 h	500 mg q 12 h	500 mg q 12 h	250 mg q 12 h	250 mg q 12 h