



**Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment**

Equations

CrCl in mL/min for male:	$= \frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	$= (\text{CrCl male}) 0.85$
IBW in kg for male:	$= 50 + (2.3 * \text{every inch over 5 ft of height})$	IBW in kg for female:	$= 45.5 + (2.3 * \text{every inch over 5 ft of height})$
ABW (adjusted) in kg:	$= \text{IBW} + 0.4(\text{actual weight in kg} - \text{IBW})$		
<ul style="list-style-type: none"> Consider using ABW when patient's actual body weight is >20% IBW Consider using actual weight when patient's actual body weight is <IBW In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)		
Acyclovir (Zovirax) <small>*Use IBW</small>	Mucosal & cutaneous				
	IV: 5mg/kg q8h PO: 500mg 5x/day	25-50 10-24 <10 HD PD	IV 5mg/kg q12h 5mg/kg q24h 2.5mg/kg q24h 2.5-5mg/kg q24h (post HD) 50% standard dose q24h	PO 400mg 5x/day 400mg q8h 400mg q12h	
	Genital herpes, initial				
	IV: 5-10mg/kg q8h PO: 200mg 5x/day OR 400mg TID	25-50 10-24 <10 HD PD	IV 5-10mg/kg q12h 5-10mg/kg q24h 50% dose q24h 2.5-5mg/kg q24h (post HD) 50% standard dose q24h	PO No Δ No Δ 200mg q12h	
	Genital herpes, intermittent				
	IV: 5mg/kg q8h PO: 800mg TID x 2d or 400mg TID x 5-10d	10-50 <10 HD PD	IV 5mg/kg q12h 2.5mg/kg q24h 2.5-5mg/kg q24h (post HD) 50% standard dose q24h	PO 800mg TID x 2d or 400mg TID x 5-10d 50% dose q12h	
	Genital herpes, chronic suppression				
	PO: 400mg BID or 200mg 3- 5x/day	10-50 <10		PO 400mg BID or 200mg 3-5x/day or 400-800mg BID-TID 50% dose q12h	
	Herpes simplex encephalitis				
	IV only: 10mg/kg IV q8h	25-50 10-24 <10 HD PD	IV 10mg/kg q12h 10mg/kg q24h 5mg/kg q24h 2.5-5mg/kg q24h (post HD) 50% standard dose q24h		
Herpes zoster (shingles)					
IV: 10mg/kg q8h PO: 800mg 5x/day	25-50 10-24 <10 HD PD	IV 10mg/kg q12h 10mg/kg q24h 5mg/kg q24h 2.5-5mg/kg q24h (post HD) 50% standard dose q24h	PO 800mg 4x/day 800mg TID 800mg BID		
Varicella (chickenpox)					
IV: 10mg/kg q8h PO: 800mg 4x/day PO, immunosuppressed: 800mg 5x/day	25-50 10-24 <10 HD PD	IV 10mg/kg q12h 10mg/kg q24h 5mg/kg q24h 2.5-5mg/kg q24h (post HD) 50% standard dose q24h	PO 800mg 4x/day 800mg TID 800mg BID		
Herpes Virus prophylaxis, transplant patient, CMV D-R-					
PO: 800mg TID	<25 <10		PO: 800mg q24h 800mg q48h		
Amantadine (Symmetrel)	100mg-200mg PO BID	30-50 15-29 <15 and HD	200mg PO day 1, then reduce to 100mg po daily 100mg PO day 1, then reduce to 100mg po every other day 200mg PO every 7 days		



**Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment**

Equations

CrCl in mL/min for male:	$= \frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	$= (\text{CrCl male}) 0.85$
IBW in kg for male:	$= 50 + (2.3 * \text{every inch over 5 ft of height})$	IBW in kg for female:	$= 45.5 + (2.3 * \text{every inch over 5 ft of height})$
ABW (adjusted) in kg:	$= \text{IBW} + 0.4(\text{actual weight in kg} - \text{IBW})$		
<ul style="list-style-type: none"> Consider using ABW when patient's actual body weight is >20% IBW Consider using actual weight when patient's actual body weight is <IBW In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Amikacin (Amikin) <i>NOTE: First dose adjustment only; all others based on pharmacokinetics</i> <i>Dose based on IBW, if > 120% IBW use AdjBW</i> <i>Goal trough < 8mcg/mL</i> <i>Trough generally drawn before 3rd dose</i>	Conventional Dosing		
	5mg/kg q8h	40-60 20-39 10-20 <10 HD	Administer q12h. Physician to follow and monitor levels. Administer q24h. Physician to follow and monitor levels. Administer q48h. Physician to follow and monitor levels. Administer q72h. Physician to follow and monitor levels. Administer post-dialysis. Physician to follow and monitor levels.
	High-dose, Extended Interval Dosing		
	15-20mg/kg q24h	≥ 40 30-39 < 30 and HD	Administer q24h. Physician to follow and monitor levels. Administer q36h. Physician to follow and monitor levels. Contact physician for orders for conventional dosing
Amoxicillin (Amoxil)	250-500mg PO q8h Or 1,000mg PO q12h	10-30 <10 and HD	250-500mg PO q12h 250-500mg PO q24h (on dialysis days, give dose after dialysis)
Amoxicillin/Clav. (Augmentin)	875mg PO q12h	10-30 < 10 HD	500mg PO q12h 250mg PO q24h 500mg PO q24h (on dialysis days, give dose after dialysis) *do not use 875mg tablet or extended release with CrCl < 30mL/min*
Ampicillin <i>IV only</i>	1-2g q4-6h	30-50 10-29 <10 HD	1-2g q6-8h 1-2g q8-12h 1-2g q12h 1-2g q12h (on dialysis days, give dose after dialysis)
Ampicillin/Sulb (Unasyn)	1.5-3g q6h	30-50 15-29 < 15 and HD	1.5-3g q8h 1.5-3g q12h 1.5-3g q24h (daily; on dialysis days, give dose after dialysis)
Aztreonam (Azactam)	UTI		
	1g IV q8h	10-29 <10 HD	1g IV q12h 1g, then 500mg q12h 1-2g IV q24h (daily; on dialysis days, give dose after dialysis)
	Other Infections		
	2g IV q8h	10-29 <10 HD	2g IV q12h 2g, then 1g q12h 1-2g IV q24h (daily; on dialysis days, give dose after dialysis)
Cefazolin (Ancef)	Mild-Moderate (if patient > 100kg, increase dose to 2g at recommended frequency)		
	500mg – 1g q6-8h	10-30 <10 HD	500-1g q8-12h 1g q24h 1g q24h (daily; on dialysis days, give dose after dialysis)
	Severe		
	2g q6-8h	10-30 <10 HD	2g q8-12h 2g q24h 2g q24h (daily; on dialysis days, give dose after dialysis)
	UTI		
	1g q12h	< 10 HD	1g q24h (daily; on dialysis days, give dose after dialysis) 1g q24h (daily; on dialysis days, give dose after dialysis)



**Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment**

Equations

CrCl in mL/min for male:	$= \frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	$= (\text{CrCl male}) 0.85$
IBW in kg for male:	$= 50 + (2.3 * \text{every inch over 5 ft of height})$	IBW in kg for female:	$= 45.5 + (2.3 * \text{every inch over 5 ft of height})$
ABW (adjusted) in kg:	$= \text{IBW} + 0.4(\text{actual weight in kg} - \text{IBW})$		
<ul style="list-style-type: none"> Consider using ABW when patient's actual body weight is >20% IBW Consider using actual weight when patient's actual body weight is <IBW In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Cefepime (Maxipime)	Mild, UTI		
	1g q12h	10-50 <10 HD	1g q24h 500mg q 24h 500mg q24h (daily; on dialysis days, give dose after dialysis)
	Moderate-Severe		
	2g q12h	30-50 10-29 < 10 HD	1g q12h 1g q24h 500mg q24h 500mg q24h (daily; on dialysis days, give dose after dialysis)
	Pseudomonas spp., Febrile neutropenia, CNS infection, Body weight > 100kg		
	2g q8h	30-50 10-29 < 10 HD	2g q12h 1g q12h 1g q24h 1g q24h (daily; on dialysis days, give dose after dialysis)
	Cefoxitin (Mefoxin)		
	Not considered a therapeutic agent due to significant resistance; indicated for use as a pre-operative antimicrobial in select procedures only		
	Uncomplicated		
	1g q6-8h	30-50 10-29 <10 HD	1g q8h 1g q12h 1g q24h 1g q24h (daily; on dialysis days, give after dialysis)
	Moderate-Severe		
	2g q6h	30-50 10-29 <10 HD	2g q8h 2g q12h 2g q24h 2g q24h (daily; on dialysis days, give after dialysis)
Ceftaroline (Teflaro)	600mg q12h	30-50 15-20 <15	400mg q12h 300mg q12h 200mg q12h
Ceftazidime (Fortaz)	Not considered a therapeutic agent due to significant resistance; indicated for use as a pre-operative antimicrobial in select procedures only		
	UTI		
	500mg q8-12h	30-50 10-29 < 10 HD	500mg q12h 500mg q24h 500mg q48h 500mg q24h (daily; on dialysis days, give after dialysis)
	Mild-moderate		
	1g q8h	30-50 10-29 < 10 HD	1g q12h 1g q24h 500mg q24h 1g q24h (daily; on dialysis days, give after dialysis)
	Bone/Joint		
	2g q12h	30-50 10-29 <10 HD	1g q12h 1g q24h 500mg q24h 1g q24h (daily; on dialysis days, give after dialysis)
	Severe/meningitis		
	2g q8h	30-50 10-29 <10 HD	2g q12h 2g q24h 1g 24h 1g q24h (daily; on dialysis days, give after dialysis)
	P. aeruginosa/CF		
2g q6-8h	30-50 10-29 <10 HD	2g q8-12h 2g q12-24h 2g q24h 1g q24h (daily; on dialysis days, give after dialysis)	



Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment

Equations

CrCl in mL/min for male:	$= \frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	$= (\text{CrCl male}) 0.85$
IBW in kg for male:	$= 50 + (2.3 * \text{every inch over 5 ft of height})$	IBW in kg for female:	$= 45.5 + (2.3 * \text{every inch over 5 ft of height})$
ABW (adjusted) in kg:	$= \text{IBW} + 0.4(\text{actual weight in kg} - \text{IBW})$		
<ul style="list-style-type: none"> • Consider using ABW when patient's actual body weight is >20% IBW • Consider using actual weight when patient's actual body weight is <IBW • In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Ceftriaxone (Rocephin)	**No renal dose adjustment necessary**		
	Usual dose: 1g q24h **NOTE: if TBW > 100kg and/or treating <i>Staphylococcus aureus</i> ; dose should be increased to 2g q24h** Endocarditis: 2g q12-24h Meningitis: 2g q12h		
Cefuroxime Axetil (Ceftin) <i>PO only</i>	250-500mg q12h	10-20 < 10 HD	Administer q12h Administer q24h Administer q24h (daily; on dialysis days, give after dialysis)
Cephalexin (Keflex)	250-1000mg every 6 hours; Maximum: 4g/day	30-50 10-29 <10 HD	Administer q8h Administer q12h Administer q12-24h Administer q24h (daily; on dialysis days, give after dialysis)
Ciprofloxacin (Cipro)	Mild-Moderate		
	IV: 400mg q12h PO: 250-500mg q12h	<30 <10 HD	IV: 400mg q24h PO: 250-500mg q24h IV: 200mg q24h PO: 250mg q24h IV: 200mg q24h (daily; on dialysis days, give after dialysis) PO: 250-500mg q24h (daily; on dialysis days, give after dialysis)
	Severe/P. aeruginosa PNA/Obese		
	IV: 400mg q8h PO: 750mg q12h	10-29 <10 HD	IV: 400mg q12h PO: 750mg q24h IV: 400mg q24h PO: 500mg q24h IV: 400mg q24h (daily; on dialysis days, give after dialysis) PO: 500mg q24h (daily; on dialysis days, give after dialysis)
Clarithromycin (Biaxin)	H. pylori and MAC		
	500mg q12h	<30 HD	500mg q24h 500mg q24h (daily; on dialysis days, give after dialysis)
Colistimethate (Colistin) <i>NOTE:</i> dose based on IBW	5mg/kg/day divided in 2 doses (2.5mg/kg IV Q12h)	Scr 1.3-1.5 Scr 1.6-2.5 Scr 2.6-4.0	2.5-3.8mg/kg/day divided in 2 doses (1.25-2mg/kg IV q12h) 2.5mg/kg/day divided in 2 doses (1.25mg/kg IV q12h) 1.5mg/kg IV q36h
Dabigatran (Pradaxa)	150mg PO BID	15-30 <15	75mg BID No published recommendations
Daptomycin (Cubicin) <i>NOTE:</i> dose based on TBW	Complicated Skin/Soft tissue Infection		
	4mg/kg	<30 HD	Administer q48h Stable HD: dose after HD 3 x weekly Unstable HD: q48h (on dialysis days, give after dialysis)
	Bacteremia or Endocarditis		
	6-8mg/kg	<30 HD	Administer q48h Stable HD: dose after HD 3 x weekly Unstable HD: q48h (on dialysis days, give after dialysis)



**Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment**

Equations

CrCl in mL/min for male:	= $\frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	= (CrCl male) 0.85
IBW in kg for male:	= 50 + (2.3* every inch over 5 ft of height)	IBW in kg for female:	= 45.5 + (2.3* every inch over 5 ft of height)
ABW (adjusted) in kg:	= IBW +0.4(actual weight in kg-IBW)		
<ul style="list-style-type: none"> Consider using ABW when patient's actual body weight is >20% IBW Consider using actual weight when patient's actual body weight is <IBW In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Didanosine Buffered Tablets (Videx)	≥60kg: 200mg po bid or 400mg po q24h < 60kg: 125mg po bid or 250mg po qd	30-59	≥60kg: 200mg po qd or 100 mg po bid < 60kg: 150mg po q24h or 75mg po q12h
		10-29	≥60kg: 150 mg po q24h < 60kg: 100mg po q24h
		< 10 (and HD)	≥60kg: 100mg po q24h < 60kg: 75mg po q24h
Didanosine Enteric Coated Capsules (Videx EC)	≥60kg: 400mg po q24h < 60kg: 250mg po qd	30-59	≥60kg: 200mg po qd < 60kg: 125mg po q24h
		10-29	≥60kg: 125mg po q24h < 60kg: 125mg po q24h
		< 10 or HD	≥60kg: 125mg poq24h < 60kg: Formulation not suitable; use buffered tab.
Emtricitabine (Emtriva)	200mg PO q24h	30-49	200mg PO q48h
		10-29	200mg PO 72h
		<10 and HD	200mg PO q96h
Enoxaparin (Lovenox)	Treatment		
	1mg/kg SC q12h or 1.5mg/kg SC q24h	<30	1mg/kg SC q24h
	Prophylaxis		
	30mg SC q12h or 40mg SC q24h	<30	30mg SC q24h
Ertapenem (Invanz)	1g q24h	< 30	500mg q24h
		HD	500mg q24h (daily; on dialysis days, give after dialysis)
<i>NOTE: not active against P. aeruginosa or Enterococcus spp.</i>			
Ethambutol (Myambutol)	15-25mg/kg po q24h	10-50	Administer q24-q36h
		< 10 HD	Administer q48h 15-25mg/kg (up to 1600mg) after each HD
Fluconazole (Diflucan), IV/PO	Vaginitis		
	150mg single dose		
	Mild (oropharyngeal, symptomatic cystitis)		
	200mg q24h	<50	Give usual LD x 1 then either: 50% of recommended dose q24h OR 100% of recommended dose q48h
		HD	100mg q24h (daily; on dialysis days, give after dialysis)
	Moderate (esophageal, pyelonephritis)		
	400mg q24h	<50	Give usual LD x 1 then either: 50% of recommended dose q24h OR 100% of recommended dose q48h
		HD	100mg q24h (daily; on dialysis days, give after dialysis)
	Candidemia		
	800mg x 1, then: <60kg 400mg q24h 60-100kg 600mg q24h >100kg 800mg q24h	<50	Give usual LD x 1 then either: 50% of recommended dose q24h OR 100% of recommended dose q48h
	HD	200mg q24h (daily; on dialysis days, give after dialysis)	
Meningitis			
800mg q24h	<50	Give usual LD x 1 then either: 50% of recommended dose q24h OR 100% of recommended dose q48h	
	HD	200mg q24h (daily; on dialysis days, give after dialysis)	
Candidiasis, 2nd line in transplant patient			
50mg q24h			



**Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment**

Equations

CrCl in mL/min for male:	= $\frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	= (CrCl male) 0.85
IBW in kg for male:	= 50 + (2.3* every inch over 5 ft of height)	IBW in kg for female:	= 45.5 + (2.3* every inch over 5 ft of height)
ABW (adjusted) in kg:	= IBW +0.4(actual weight in kg-IBW)		
<ul style="list-style-type: none"> • Consider using ABW when patient's actual body weight is >20% IBW • Consider using actual weight when patient's actual body weight is <IBW • In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Flucytosine (Ancobon) <i>NOTE: therapeutic drug monitoring is recommended with renal insufficiency</i>	Candidiasis, Cryptococcosis		
	25mg/kg q6h	20-39	37.5mg/kg q12h
		10-19	37.5mg/kg q24h
		<10	37.5mg/kg q24-48h
		HD	Administer 37.5mg/kg after each HD session
Gabapentin (Neurontin)* 300mg-1200mg PO q8h		30-59	200mg-600mg PO q12h
		15-29	200mg-700mg PO q24h
		<15	100mg-300mg PO q24h
		HD	Give 100mg-300mg post HD supplemental dose
Ganciclovir (Cytovene) 5mg/kg q12h	CMV induction		
	5mg/kg q12h	50-69	2.5mg/kg q12h
		25-49	2.5mg/kg q24h
		10-24	1.25mg/kg q24h
		< 10	1.25mg/kg 3 times/week
		HD	1.25mg/kg after each HD
CMV maintenance			
5mg/kg q24h	50-69	2.5mg/kg q24h	
	25-49	1.25mg/kg q24h	
	10-24	0.625 mg/kg q24h	
	< 10	0.625 mg/kg 3 times/week	
	HD	0.625mg/kg following each HD	
Gentamicin (Garamycin) <i>NOTE: First dose adjustment only; all others based on pharmacokinetics</i> <i>Dose based on IBW, if > 120% IBW use AdjBW</i> <i>Goal trough < 1-2mcg/mL</i> <i>Trough generally drawn before 3rd dose</i>	Conventional Dosing		
	<u>Uncomplicated UTI</u>		
	1-1.5mg/kg	≥ 60	Administer q8h. Physician to follow and monitor levels.
	1-1.5mg/kg	40-59	Administer q12h. Physician to follow and monitor levels.
	1-1.5mg/kg	20-39	Administer q24h. Physician to follow and monitor levels.
	1-1.5mg/kg	10-20	Administer q48h. Physician to follow and monitor levels.
	2mg/kg	HD	1-2mg/kg post HD. Physician to follow and monitor levels.
<u>Pneumonia, life-threatening</u>			
2mg/kg			
High-dose, Extended Interval Dosing			
5-7 mg/kg q24h	> 50	Administer q24h. Physician to follow and monitor levels.	
	30-49	Administer q36h. Physician to follow and monitor levels.	
	< 30	Contact physician for orders for conventional dosing	



Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment

Equations

CrCl in mL/min for male:	$= \frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	$= (\text{CrCl male}) 0.85$
IBW in kg for male:	$= 50 + (2.3 * \text{every inch over 5 ft of height})$	IBW in kg for female:	$= 45.5 + (2.3 * \text{every inch over 5 ft of height})$
ABW (adjusted) in kg:	$= \text{IBW} + 0.4(\text{actual weight in kg} - \text{IBW})$		
<ul style="list-style-type: none"> • Consider using ABW when patient's actual body weight is >20% IBW • Consider using actual weight when patient's actual body weight is <IBW • In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Imipenem/ Cilastatin (Primaxin) <i>NOTE: for patients <70kg refer to tables on package insert.</i> <i>Maximum total daily dose 50mg/kg/day or 4g</i> <i>Not recommended if CrCl < 5mL/min unless dialysis</i>	Moderate		
	500mg q6h	41-70 21-40 6-20 HD	500mg q8h 250mg q6h 250mg q12h 500mg q12h
	Severe		
	1g q8h	41-70 21-40 6-20 and HD	500mg q6h 500mg q8h 500mg q12h
Life-threatening			
1g q6h	41-70 21-40 6-20 and HD	750mg q8h 500mg q6h 500mg IV q12h	
Ketorolac (Toradol)	Single dose: 60mg IM x 1	< 50kg or > 65 yr old or SCr \geq 1.2 Scr > 2	Single dose: 30mg IM x 1 Call MD – Not recommended
	Maintenance dose: 30mg IM/IV q6h PRN	<50kg or > 65 yr old or SCr \geq 1.2 Scr > 2	15mg IM/IV q6h or q6h prn (max daily dose 60mg) Call MD – Not recommended
Lamivudine (Epivir)	150mg PO q12h or 300mg PO q24h	30-49 15-29 5-14 <5 and HD CVVHD	150mg q24h 150mg first dose, then 100mg q24h 150mg first dose, then 50mg q24h 50mg first dose, then 25mg q24h 100mg x 1, then 50mg q24h
Leveiracetam (Keppra), IV/PO	500mg-1500mg IV or PO Q12H	50-80 30-49 <30 and HD	500-1000mg IV/PO Q12h 250-750mg IV/PO Q12h 250-500mg IV/PO Q12h
Levofloxacin (Levaquin), IV/PO	HAP/CAP/HCAP, Pyelonephritis, Intra-abdominal infection, complicated Skin/Skin structure infection		
	750mg q24h	20-49 <20 HD	750mg q48h 750mg x1, then 500mg q48h 750mg x 1, then 500mg q48h (on dialysis days, give after dialysis)
	Prostatitis, Chronic bronchitis, Inhaled anthrax exposure		
	500mg q24h	20-49 < 20 HD	500mg x 1, then 250mg q24h 500mg x 1, then 250mg q48h 500mg x 1, then 250mg q48h (on dialysis days, give after dialysis)
UTI (uncomplicated)			
250mg q24h	20 -49 < 20 HD	No dosage adjustment 250mg q48h 250mg q48h (on dialysis days, give after dialysis)	
Memantine (Namenda XR)	28mg q24h	5-29	14mg q24h



**Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment**

Equations

CrCl in mL/min for male:	$= \frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	$= (\text{CrCl male}) 0.85$
IBW in kg for male:	$= 50 + (2.3 * \text{every inch over 5 ft of height})$	IBW in kg for female:	$= 45.5 + (2.3 * \text{every inch over 5 ft of height})$
ABW (adjusted) in kg:	$= \text{IBW} + 0.4(\text{actual weight in kg} - \text{IBW})$		
<ul style="list-style-type: none"> Consider using ABW when patient's actual body weight is >20% IBW Consider using actual weight when patient's actual body weight is <IBW In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Meropenem (Merem) <i>Extended infusion (3 hours)</i>	Meningitis, Febrile neutropenia, Severe infections + drug-resistant pathogens		
	2g q8h	25-49 10-25 <10 HD CVVHD	2g q12h 1g q12h 1g q24h 1g q24h (daily; on dialysis days, give after dialysis) 1g IV q8h
	Intra-abdominal infections, Pneumonia, Bacteremia, ICU		
	1g q8h	25-49 10-25 <10, HD CVVHD	1g q12h 500mg q12h 500mg q24h (daily; on dialysis days, give after dialysis) 1g IV q8h
Skin/Skin Structure infections, Genitourinary infections, Urinary Tract Infections			
500mg q8h	25-49 10-25 <10, HD CVVHD	500mg q12h 500mg q24h 250mg q24h (daily; on dialysis days, give after dialysis) 500mg IV q8h	
Oseltamivir (Tamiflu)	Influenza, Treatment		
	75mg PO q12h	31-59 11-29 ≤10 HD PD	30mg PO q12h 30mg PO q24h Not recommended 30mg after each hemodialysis session 30mg x 1 (given immediately after dialysis exchange)
	Influenza, Prophylaxis		
	75mg PO q24h	31-59 11-29 ≤10 HD PD	30mg PO q24h 30mg PO q48h Not recommended 30mg after alternate hemodialysis sessions 30mg once weekly (given immediately after dialysis exchange)
Penicillin G (Pfizerpen)	Bacterial endocarditis		
	12-30mU/day divided q4h	10-50 <10 HD	Administer 75% of dose at the same dosing interval Administer 35-50% of dose at the same dosing interval Give normal LD then either: 25-50% of normal dose q4-6h OR 50-100% of normal dose q8-12h
	Meningococcal/Streptococcal meningitis		
	24mU/day divided q4h	10-50 <10 HD	Administer 75% of dose at the same dosing interval Administer 35-50% of dose at the same dosing interval Give normal LD then either: 25-50% of normal dose q4-6h OR 50-100% of normal dose q8-12h
Pentamidine (Pentam)	Treatment		
	4mg/kg q24h	<10 HD	4mg/kg q24-36h 4mg/kg q24-36h + 0.75g after HD
Piperacillin/Tazobactam (Zosyn) <i>Extended infusion (4 hours)</i>	Weight ≥ 100kg, septic shock (ICU), CF		
	4.5g q8h	<20 HD	4.5g q12h 4.5g q12h
	< 100kg		
	3.375g q8h	<20 HD	3.375g q12h 3.375g q12h
Pregabalin (Lyrica)*	150mg-600mg PO q8-12h		
		30-59 15-29 <15 HD	75mg-300mg PO q8-12h 25mg-150mg PO q12-24h 25mg-75mg PO q24h Give 25mg-150mg post HD supplemental dose
	150 mg po q12h		
	50mg IV q6-8h	<50	150mg PO q24h 50mg IV q24h



Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment

Equations

CrCl in mL/min for male:	$= \frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	$= (\text{CrCl male}) 0.85$
IBW in kg for male:	$= 50 + (2.3 * \text{every inch over 5 ft of height})$	IBW in kg for female:	$= 45.5 + (2.3 * \text{every inch over 5 ft of height})$
ABW (adjusted) in kg:	$= \text{IBW} + 0.4(\text{actual weight in kg} - \text{IBW})$		
<ul style="list-style-type: none"> • Consider using ABW when patient's actual body weight is >20% IBW • Consider using actual weight when patient's actual body weight is <IBW • In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Rivaroxaban (Xarelto)	Atrial Fibrillation		
	20mg PO daily	15-50 <15	15mg PO q24h Avoid use
	VTE Prophylaxis in hip/knee replacement		
	10mg PO daily	30-50 <30	Monitor for blood loss Avoid use
	Treatment of DVT/PE:		
	15mg PO BID x 21 days then 20mg daily. Give with food.	<30	Avoid use
Stavudine (Zerit)	≥ 60kg: 30-40mg po q12h	10-50 or CVVHD < 10 and HD	Give 50% of dose PO q12h >60kg: 20 mg PO q24h <60kg: 15mg PO q24h
Sulfamethoxazole /Trimethoprim IV/PO <i>NOTE: dose based on TBW and dose based on TMP component</i>	UTI		
	IV: 8-12mg/kg/day TMP divided q6-12h	15-29	IV: 4-5mg/kg/day TMP divided q6-12h PO: 1 DS tablet q24h
	PO: 1 DS tablet q12h	<15	Use is not recommended
		HD	Not recommended, but if necessary administer 5-10mg/kg TMP daily, give after dialysis on dialysis days
	Skin/Skin Structure Infection		
	IV: 8-12mg/kg/day TMP divided q6-12h	15-29	IV: 4-5mg/kg/day TMP divided q6-12h PO: 1-2 DS tablet q24h
	PO: 1-2 DS tablet q12h	<15	Use is not recommended
		HD	Not recommended, but if necessary administer 5-10mg/kg TMP daily, give after dialysis on dialysis days
	Shigellosis		
	IV: 8-12mg/kg/day TMP divided q6-12h	15-29	IV: 4-5mg/kg/day TMP divided q6-12h PO: 1 DS tablet q24h
PO: 1 DS tablet q12h	<15	Use is not recommended	
	HD	Not recommended, but if necessary administer 5-10mg/kg TMP daily, give after dialysis on dialysis days	
Pneumocystis prophylaxis			
PO: 1 DS tablet q24h OR 1 DS tablet MWF OR 1 SS tablet q24h	15-29 <15 HD	PO: ½ SS tablet q24h OR 1 SS tablet q24h OR 1 SS MFW PO: ½ SS tablet q24h OR 1 SS tablet MWF Not recommended, but if necessary administer 5-10mg/kg TMP daily, give after dialysis on dialysis days	
Pneumocystis treatment; <i>Stenotrophomonas maltophilia</i> treatment			
IV/PO: 15-20mg/kg/day TMP divided q6-8h	15-29 <15 HD	IV/PO: 15-20mg/kg/day TMP divided q6h x 2 days, then 10mg/kg TMP divided q12h IV/PO: 7-10mg/kg/day TMP given q12-24h Not recommended, but if necessary administer 5-10mg/kg TMP daily, give after dialysis on dialysis days	
Tenofovir (Viread)	300mg po qd	30-49 10-29 < 10 and HD	300mg po q48h 300mg twice weekly (i.e., every 3-4 days) 300mg po every 7 days (Administer following completion of dialysis)



**Department of Pharmacy
Dosage Adjustments of Medications in Renal Impairment**

Equations

CrCl in mL/min for male:	= $\frac{(140 - \text{Age}) \text{IBW}}{(72)(\text{Scr})}$	CrCl in mL/min for female:	= (CrCl male) 0.85
IBW in kg for male:	= 50 + (2.3* every inch over 5 ft of height)	IBW in kg for female:	= 45.5 + (2.3* every inch over 5 ft of height)
ABW (adjusted) in kg:	= IBW + 0.4(actual weight in kg-IBW)		
<ul style="list-style-type: none"> Consider using ABW when patient's actual body weight is >20% IBW Consider using actual weight when patient's actual body weight is <IBW In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding Scr to 1 			

Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Tobramycin (Nebcin) <i>NOTE: First dose adjustment only; all others based on pharmacokinetics</i> <i>Dose based on IBW, if > 120% IBW use AdjBW</i> <i>Goal trough < 1-2mcg/mL</i> <i>Trough generally drawn before 3^d dose</i>	Conventional Dosing		
	<u>Uncomplicated UTI</u> 1-1.5mg/kg	≥ 60	Administer q8h. Physician to follow and monitor levels. Administer q12h. Physician to follow and monitor levels. Administer q24h. Physician to follow and monitor levels. Administer q48h. Physician to follow and monitor levels. 1-2mg/kg post HD. Physician to follow and monitor levels.
	<u>Enterococcal endocarditis</u> 1-1.5mg/kg	40-59	
	<u>Sepsis</u> 2mg/kg	20-39	
	<u>Pneumonia, life-threatening</u> 2mg/kg	10-20	
	HD		
High-dose, Extended Interval Dosing			
5-7 mg/kg q24h	> 50	Administer q24h. Physician to follow and monitor levels.	
	30-49	Administer q36h. Physician to follow and monitor levels.	
	< 30	Contact physician for orders for conventional dosing.	
CF patients: High-dose, Extended Interval Dosing			
10-20mg/kg q24h	> 50	Administer q24h. Physician to follow and monitor levels.	
	30-49	Administer q36h. Physician to follow and monitor levels.	
	< 30	Contact physician for orders for conventional dosing.	
Vancomycin (Vancocin) <i>NOTE: First dose adjustment only; all others based on pharmacokinetics</i> <i>Dose based on TBW; if TBW > 110kg, consider AdjBW</i> <i>Goal trough 10-20mcg/mL, dependent upon indication</i> <i>Trough generally drawn before 4th dose</i> <i>Round doses to nearest 250mg</i>	Goal trough 15-20: Abscess, Bacteremia, Bone/Joint, Endocarditis, Meningitis, Pneumonia		
	Goal trough 10-15: Skin/Soft tissue infections, UTIs, Pyelonephritis, Intra-abdominal		
	Loading dose		
	20mg/kg (max 2g) preferred, especially in life-threatening infections	If patient is severely obese and the dose exceeds 2g, initial doses should be staggered over a short period of time (clinical pharmacist consult suggested)	
		HD	No Δ
	Maintenance dose (below a guide only; dosing & monitoring should be individualized for each patient)		
	15mg/kg q8-12h	> 70	Administer q8-12h.
	50-69	Administer q12h.	
	30-49	Administer q24h.	
	<30	*Obtain random level and re-dose when level within goal trough range*	
	HD	15mg/kg post HD (on dialysis days only)	
PO Vancomycin			
125-250mg PO q6h	**No renal dose adjustment necessary**		
Zidovudine	300mg BID or 200mg TID	<15	100mg PO q8h or 300mg PO daily
<ul style="list-style-type: none"> Only to be adjusted if: initiated in past 48 hours, not a continuation of home dose, and/or not indicated for seizure disorder 			