UNIVERSITY OF MIAMI HOSPITAL AND CLINICS

Department of Pharmacy
Dosage Adjustment Protocol

Equations

CrCl in mL/min for male:	= (140-Age) IBW / (72)(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)		

- **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) *Use IBW	***Mucosal & cutaneous***			
	IV: 5 mg/kg q8h **PO:** 500 mg 5x/day	25-50 10-24 <10 HD PD CVVHD	**IV** 5 mg/kg q12h 5 mg/kg q24h 2.5 mg/kg q24h 2.5-5 mg/kg q24h (post HD) 50% standard dose q24h 5 mg/kg q24h	**PO** 400 mg 5x/day 400 mg q8h 400 mg q12h
	Genital herpes, initial			
	IV: 5-10 mg/kg q8h **PO:** 200 mg 5x/day OR 400 mg TID	25-50 10-24 <10 HD PD CVVHD	**IV** 5-10 mg/kg q12h 5-10 mg/kg q24h 50% dose q24h 2.5-5 mg/kg q24h (post HD) 50% standard dose q24h 5-10 mg/kg q24h	**PO** No Δ No Δ 200 mg q12h
	Genital herpes, intermittent			
	IV: 5 mg/kg q8h **PO:** 800 mg TID x 2d or 400 mg TID x 5-10d	10-50 <10 HD PD CVVHD	**IV** 5 mg/kg q12h 2.5 mg/kg q24h 2.5-5 mg/kg q24h (post HD) 50% standard dose q24h 5 mg/kg q24h	**PO** No Δ 800 mg TID x 2d or 400 mg TID x 5-10d 50% dose q12h
	Genital herpes, chronic suppression			
	PO: 400 mg BID or 200 mg 3-5x/day	10-50 <10		**PO** 400 mg BID or 200 mg 3-5x/day or 400-800 mg BID-TID 50% dose q12h
	Herpes simplex encephalitis			
	IV only: 10 mg/kg IV q8h	25-50 10-24 <10 HD PD CVVHD	**IV** 10 mg/kg q12h 10 mg/kg q24h 5 mg/kg q24h 2.5-5 mg/kg q24h (post HD) 50% standard dose q24h 10 mg/kg q12h	
	Herpes zoster (shingles)			
	IV: 10 mg/kg q8h **PO:** 800 mg 5x/day	25-50 10-24 <10 HD PD CVVHD	**IV** 10 mg/kg q12h 10 mg/kg q24h 5 mg/kg q24h 2.5-5 mg/kg q24h (post HD) 50% standard dose q24h 10 mg/kg q12h	**PO** 800 mg 4x/day 800 mg TID 800 mg BID

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ABW (adjusted) in kg:	= IBW +0.4(actual weight in kg-IBW)		

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Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)	
Acyclovir (Zovirax) *Use IBW	***Varicella (chickenpox)***			
	IV: 10 mg/kg q8h **PO:** 800 mg 4x/day **PO, immunosuppressed:** 800 mg 5x/day	25-50 10-24 <10 HD PD CVVHD	**IV** 10 mg/kg q12h 10 mg/kg q24h 5 mg/kg q24h 2.5-5 mg/kg q24h (post HD) 50% standard dose q24h 10 mg/kg q12h	**PO** 800 mg 4x/day 800 mg TID 800 mg BID
	Herpes Virus prophylaxis, transplant patient, CMV D-R-			
	PO: 800 mg q12h	<25 <10	[redacted]	**PO** 400 mg q12h 200 mg q12h
	Herpes Virus prophylaxis, HemeOnc patients			
	PO: 400 mg q12h	<10	[redacted]	**PO:** 200 mg q12h
Allopurinol (Zyloprim)	***Tumor lysis syndrome, cancer-induced hyperuricemia***			
	300-400 mg PO q12h or 100 mg/m^2 q8h (Max. 800 mg/day)	10-30 <10 or HD CVVHD	50% standard dose q8-12h No data, contact clinical pharmacist 50% standard dose q8-12h	
	Gout			
	100-800 mg PO q24h (Max. 800 mg/day)	10-20 3-9 <3 HD CVVHD	Maximum 200 mg q24h Maximum 100 mg q24-48h 100 mg q48h 100 mg after each dialysis Maximum 200 mg q24h	
Amantadine (Symmetrel) ***NOTE*: Not recommended for flu**	100 mg-200 mg PO BID	30-50 15-29 <15 and HD	200 mg PO day 1, then reduce to 100 mg po daily 200 mg PO day 1, then reduce to 100 mg po every other day 200 mg PO every 7 days	
Amikacin (Amikin) ***NOTE:** First dose adjustment only; all others based on pharmacokinetics* *Dose based on IBW, if > 120% IBW use AdjBW*	***High-dose, extended interval dosing***			
	15 mg/kg IV q24h ***VAP/CF/ICU*** 15-30 mg/kg IV q24h *NOTE: Random level generally obtained 6-12 hours after the start of the infusion of 1st dose.*	>60 50-59 30-49 <30 CVVHD	Administer q24h. Physician to follow and monitor levels. Administer q36h. Physician to follow and monitor levels. Administer q48h. Physician to follow and monitor levels. Use conventional dosing. 15-30 mg/kg q36-48h, adjust for goal trough	
	Conventional dosing			
	5 mg/kg IV q8h ***NOTE**: Trough generally drawn before 3rd maintenance dose. Peak level drawn after end of the infusion of 3rd maintenance dose.* *Goal trough < 8 mcg/mL*	40-60 20-39 10-20 <10 HD CVVHD	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. 5 mg/kg q24-48h, adjust for goal trough	
Amoxicillin (Amoxil)	250-500 mg PO q8h Or 1,000 mg PO q12h	10-30 <10 and HD	250-500 mg PO q12h 250-500 mg PO q24h (on dialysis days, give dose after dialysis)	

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ABW (adjusted) in kg:	= IBW +0.4(actual weight in kg-IBW)		

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Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Amoxicillin/ Clavulanate (Augmentin)	875 mg PO q12h Or 500 mg PO q8h	10-30 < 10 HD	500 mg PO q12h 250 mg PO q24h 500 mg PO q24h (on dialysis days, give dose after dialysis) ***do not use 875mg tablet or extended release with CrCl < 30mL/min***
Ampicillin *IV only*	1-2 g IV q4-6h	30-50 10-29 <10 HD CVVHD	1-2 g IV q6-8h 1-2 g IV q8-12h 1-2 g IV q12h 1-2 g IV q12h (on dialysis days, give dose after dialysis) 2 g IV q8h (q6h for meningitis/endocarditis)
Ampicillin/ Sulbactam (Unasyn)	1.5-3 g IV q6h Note: higher doses may be indicated for infections due to *Acinetobacter* species	15-29 < 15 and HD CVVHD	1.5-3 g IV q12h 1.5-3 g IV q24h (daily; on dialysis days, give dose after dialysis) 3 g IV q8h (q6h for severe infection)

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Drug Name	Usual Dose (Normal Renal Function)	CrCl (mL/min)	Dose Adjustment (In renal insufficiency)
Amikacin (Amikin) ***NOTE:*** *First dose adjustment only; all others based on pharmacokinetics* *Dose based on IBW, if > 120% IBW use AdjBW* *Goal trough < 8mcg/mL* *Trough generally drawn before 3rd dose*	**Conventional Dosing**		
	5 mg/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		
	15-20 mg/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)	250-500 mg PO q8h Or 1,000 mg PO q12h	10-30 <10 and HD	250-500 mg PO q12h 250-500 mg PO q24h (on dialysis days, give dose after dialysis)
Amoxicillin/Clav. (Augmentin)	875 mg PO q12h	10-30 < 10 HD	500 mg PO q12h 250 mg PO q24h 500 mg PO q24h (on dialysis days, give dose after dialysis) ***do not use 875 mg tablet or extended release with CrCl < 30mL/min***
Ampicillin *IV only*	1-2 g q4-6h	30-50 10-29 <10 HD	1-2 g q6-8h 1-2 g q8-12h 1-2 g q12h 1-2 g q12h (on dialysis days, give dose after dialysis)
Ampicillin/Sulb (Unasyn)	1.5-3 g q6h	30-50 15-29 < 15 and HD	1.5-3 g q8h 1.5-3 g q12h 1.5-3 g q24h (daily; on dialysis days, give dose after dialysis)
Apixaban (Eliquis)	***DVT and PE treatment***		
	10 mg PO q12h x 7 days, followed by 5 mg PO q12h for at least 6 months	No adjustment necessary	N/A
	DVT and PE prophylaxis		
	2.5 mg PO q12h • After at least 6 months of treatment for DVT/PE • For 12 days after knee replacement or 35 days after hip surgery (start 12-24 hrs after surgery)	No adjustment necessary	N/A
	Stroke and systemic embolism prophylaxis in nonvalvular atrial fibrillation		

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	5 mg PO q12h	Meets two out of three: SCr ≥1.5 ≤60 kg ≥80 y/o SCr <1.5 and ≤60 kg **and** ≥80 y/o HD HD **and** ≤60 kg **or** ≥80 y/o	2.5 mg PO q12h 2.5 mg PO q12h 5 mg PO q12h 2.5 mg PO q12h
Aztreonam (Azactam)	***UTI***		
	1 g IV q8h	10-29 <10 HD CVVHD	1 g IV q12h 1 g IV q24h 1 g IV q24h (daily; on dialysis days, give dose after dialysis) 2 g IV x 1, then 1 g IV q12h
Aztreonam (Azactam)	***Other infections***		
	2 g IV q8h	10-29 <10 HD CVVHD	2 g IV q12h 2 g IV q24h 2 g IV q24h (daily; on dialysis days, give dose after dialysis) 2 g IV q12h (q8h for NLF GNR)
Cefazolin (Ancef)	***Mild infections, surgical prophylaxis, UTI***		
	500 mg – 1 g IV q8h	10-30 <10 HD CVVHD	1 g IV q12h 1 g IV q24h 1 g IV q24h (daily; on dialysis days, give dose after dialysis) 2 g IV x 1, then 1 g IV q8h
	Moderate-severe infections, gram-negative infections, MSSA, weight >80kg (<120kg)		
	2 g IV q8h	10-30 <10 HD CVVHD	2 g IV q12h 2 g IV q24h 2 g IV q24h (daily; on dialysis days, give dose after dialysis) 2 g IV q8h
	Weight >120kg		
	3 g IV q8h	10-30 <10 HD CVVHD	3 g IV q12h 3 g IV q24h 3 g IV q24h (daily; on dialysis days, give dose after dialysis) 3 g IV q8h
Cefepime (Maxipime)	***Moderate-severe infections***		

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	1 g IV q8h	30-50 10-29 <10 HD CVVHD	1 g IV q12h 1 g IV q24h 1 g IV q48h 1 g IV q24h (daily; on dialysis days, give dose after dialysis) 2 g IV x 1, then 1 g IV q8h
	Pseudomonas spp., febrile neutropenia, CNS infection, body weight > 100kg		
	2 g IV q8h	30-50 10-29 < 10 HD CVVHD	2 g IV q12h 2 g IV q24h 1 g IV q24h 1 g IV q24h (daily; on dialysis days, give dose after dialysis) 2 g IV q8h
Cefoxitin (Mefoxin) ***Note**: Not considered a therapeutic agent due to significant resistance* *Indicated for used as a pre-operative antimicrobial in selected procedures only*	***Uncomplicated infections***		
	1 g IV q6h	30-50 10-29 <10 HD CVVHD	1 g IV q8h 1 g IV q12h 1 g IV q24h 1 g IV q24h (daily; on dialysis days, give after dialysis) 2 g IV x 1, then 1 g IV q8h
	Moderate-severe infections		
	2 g IV q6h	30-50 10-29 <10 HD CVVHD	2 g IV q8h 2 g IV q12h 2 g IV q24h 2 g IV q24h (daily; on dialysis days, give after dialysis) 2 g IV q8h
Ceftaroline (Teflaro) ***Note:** Certain indications may require q8h dosing*	600 mg IV q12h	30-50 15-20 <15 HD CVVHD	400 mg IV q12h 300 mg IV q12h 200 mg IV q12h 200 mg IV q12h 600 mg IV q12h (q8h for bacteremia/endocarditis)
Ceftazidime (Fortaz) ***Note**: Not considered a therapeutic agent due to significant resistance* *Indicated for use as a pre-operative antimicrobial in selected procedures only*	***Mild-moderate infections, UTI***		

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	1 g IV q8h	30-50 10-29 < 10 HD CVVHD	1 g IV q12h 1 g IV q24h 500mg IV q24h 1 g IV q24h (daily; on dialysis days, give after dialysis) 1 g IV q8h
	Severe infections, meningitis, P. aeruginosa, bone/joint infections		
	2 g IV q8h	30-50 10-29 <10 HD CVVHD	2g IV q12h 2g IV q24h 1g IV q24h 1g IV q24h (daily; on dialysis days, give after dialysis) 2 g IV q8h
	P. aeruginosa in CF patients only		
	2 g IV q6h	30-50 10-29 <10 HD CVVHD	2g IV q8h 2g IV q12h 2g IV q24h 1g IV q24h (daily; on dialysis days, give after dialysis) 2 g IV q6h
Ceftriaxone (Rocephin)	****No renal dose adjustment necessary**** **Usual dose:** 1 g q24h (if TBW>100 kg, increase dose to 2 g q12h) **Endocarditis:** 2 g q24h (increase to 2 g q12h if treating PCN resistant *Streptococcus sp.*) **Meningitis:** 2 g q12h **Note: In patients with both hepatic dysfunction and significant renal impairment, the dosage should not exceed 2 g/day.**		
Cefuroxime Axetil (Ceftin) ***NOTE**: PO only*	250-500 mg PO q12h	10-20 <10 HD	Administer q12h Administer q24h Administer q24h (daily; on dialysis days, give after dialysis)
Cephalexin (Keflex)	***Uncomplicated cystitis, Streptococcal pharyngitis***		
	500 mg PO q12h	<15 and HD	500 mg PO q24h (if HD, give after dialysis)
	Mild-moderate infections		
	500 mg PO q6h	<15 HD	500 mg PO q12h 500 mg PO q24h (give after dialysis)
Ciprofloxacin (Cipro)	***Mild-moderate infections***		
	IV: 400 mg q12h **PO:** 500 mg q12h ***NOTE**: if patient on tube feeds and taking PO ciprofloxacin consider 750 mg PO q12h*	<30 HD CVVHD	**IV:** 400 mg q24h **PO:** 500 mg q24h **IV:** 200 mg q24h (daily; on dialysis days, give after dialysis) **PO:** 250-500 mg q24h (daily; on dialysis days, give after dialysis) **IV:** 400 mg q12h **PO:** 500 mg q12h
Ciprofloxacin (Cipro)	***Severe infections, P. aeruginosa PNA, Obese***		
	IV: 400 mg q8h **PO:** 750 mg q12h	10-29 HD CVVHD	**IV:** 400 mg q12h **PO:** 750 mg q24h **IV:** 400 mg q24h (daily; on dialysis days, give after dialysis) **PO:** 500 mg q24h (daily; on dialysis days, give after dialysis) **IV:** 400 mg q8h **PO:** 750 mg q12h

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Clarithromycin (Biaxin)	***H. pylori and MAC***		
	500 mg q12h	<30 HD	500 mg q24h 500 mg q24h (daily; on dialysis days, give after dialysis)
Colchicine (Colcrys)	0.6 mg PO q12h-24h; Maximum: 1.2 mg/day	<30 HD CVVHD	0.3 mg PO q24h; use caution if dose titrated 0.3 mg PO twice weekly 0.3 mg PO q24h
Colistimethate (Colistin) ***NOTE:*** *Dose based on IBW*	2.5 mg/kg IV q12h ***NOTE****: One time loading dose may be considered if appropriate*	10-50 <10 CVVHD	1.25 mg/kg IV q12h 1.5 mg/kg IV q24h Loading dose, then 2.5 mg IV q12h
Dabigatran (Pradaxa)	***DVT and PE treatment***		
	150 mg PO BID	<30	No published recommendations* *Check for drug interactions
	DVT and PE prophylaxis		
	Initial (1-4 hrs post-op): 110 mg PO x 1 then 220 mg PO daily Maintenance: 220 mg PO daily	30-50 <30	75 mg PO x 1 (1-4 hr post-op), then 150 mg PO daily* No published recommendations* *Check for drug interactions
	Stroke and systemic embolism prophylaxis in nonvalvular atrial fibrillation		
	150 mg PO BID	15-30 <15	75 mg BID* No published recommendations *Check for drug interactions

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Daptomycin (Cubicin) ***NOTE:*** *Dose based on TBW*	***Complicated skin/soft tissue infection***		
	4 mg/kg IV q24h	<30 HD CVVHD	Administer q48h **Stable HD:** dose after HD 3 x weekly **Unstable HD:** q48h (on dialysis days, give after dialysis) Administer q24h
	Bacteremia, endocarditis		
	6-8 mg/kg IV q24h ***NOTE:*** *Higher does may be indicated*	<30 HD CVVHD	Administer q48h **Stable HD:** dose after HD 3 x weekly **Unstable HD:** q48h (on dialysis days, give after dialysis) Administer q24h
Didanosine Buffered Tablets (Videx)	**≥60kg:** 200 mg PO BID or 400mg PO daily **<60kg:** 125 mg PO BID or 250mg PO daily	30-59 10-29 <10 and HD	**≥60kg:** 200 mg PO daily or 100 mg PO BID **< 60kg:** 150 mg PO q24h or 75 mg PO q12h **≥60kg:** 150 mg PO q24h **< 60kg:** 100 mg PO q24h **≥60kg:** 100 mg PO q24h **< 60kg:** 75 mg PO q24h
Didanosine Enteric Coated Capsules (Videx EC)	**≥60kg:** 400 mg PO q24h **<60kg:** 250 mg PO daily	30-59 10-29 <10 and HD	**≥60kg:** 200 mg PO daily **< 60kg:** 125 mg PO q24h **≥60kg:** 125 mg PO q24h **< 60kg:** 125 mg PO q24h **≥60kg:** 125 mg PO q24h **< 60kg:** Formulation not suitable; use buffered tab.
Edoxaban (Savaysa)	***Treatment of DVT or PE***		
	Adults >60 kg • 60 mg PO q24h, following 5-10 days initial therapy with parenteral anticoagulant Adults ≤60 kg • 30 mg PO q24h, following 5-10 days initial therapy with parenteral anticoagulant	15-50 <15	30 mg PO q24h Call MD – Not Recommended
	Stroke and systemic embolism prophylaxis in nonvalvular atrial fibrillation		
	60 mg PO q24h	>95 15-50 <15	Call MD – Not recommended 30 mg PO q24h Call MD – Not Recommended
Emtricitabine (Emtriva)	200 mg PO q24h	30-49 10-29 <10 and HD	200 mg PO q48h 200 mg PO q72h 200 mg PO q96h
Enoxaparin (Lovenox) **Note:** *In obese patients, ok to use actual body weight*	***Treatment***		
	1 mg/kg SC q12h or 1.5 mg/kg SC q24h	<30	1 mg/kg SC q24h
	Prophylaxis		
	30 mg SC q12h or 40 mg SC q24h	<30	30 mg SC q24h

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ABW (adjusted) in kg:	= IBW +0.4(actual weight in kg-IBW)		

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Ertapenem (Invanz)	1 g IV q24h ***NOTE**: Not active against* P. aeruginosa *or* Enterococcus *spp.*	< 30 HD CVVHD	500 mg IV q24h 500 mg IV q24 (daily, on dialysis days, give after dialysis) ***NOTE**: 1 g IV pHD on dialysis days may be appropriate to assist with outpatient dosing if needed* 1 gram IV q24h
Ethambutol (Myambutol)	15-25 mg/kg PO q24h ***NOTE:** See current guidelines and literature for recommended doses for given indication*	10-50 < 10 HD CVVHD	Administer q24-36h Administer q48h 15-25 mg/kg (up to 1600 mg) after each HD Administer q24-36h
Famotidine (Pepcid)	20 mg IV/PO q12h	<50 HD CVVHD	20 mg IV/PO q24h 20 mg IV/PO q24h, dosed after dialysis on dialysis days 20 mg IV/PO q24h
Fluconazole (Diflucan), IV/PO **NOTE:** Fluconazole is not effective against *Candida krusei* *Candida glabrata* exhibits dose dependent susceptibility and often requires higher doses	***Vaginitis*:** 150 mg single dose		
	Candidiasis: 50 mg q24h (2nd line therapy in immunosuppressed patients)		
	Mild (oropharyngeal, symptomatic cystitis)		
	200 mg q24h	<50 and HD CVVHD	Give 200 mg x 1 then 100 mg q24h (daily; on dialysis days, give after dialysis) 100 mg q24h
	Moderate (esophageal, pyelonephritis)		
	400 mg q24h	<50 and HD CVVHD	Give 400 mg x 1, then 200 mg q24h (daily; on dialysis days, give after dialysis) Give 400 mg x1, then 200 mg q24h
	Candidemia		
Fluconazole (Diflucan), IV/PO	800 mg x 1, then: <60kg: 400 mg q24h 60-100kg: 600 mg q24h >100kg: 800 mg q24h	<50 HD CVVHD	Give usual LD x 1 then 50% of recommended dose q24h 50% of recommended dose q24h (daily; on dialysis days, give after dialysis) Give usual LD x 1 then: Dialysate rate < 2 L/min: 400 mg q24h Dialysate rate ≥ 2 L/min or treating Candida glabrata: 800 mg q24h
	Meningitis		
	800 mg q24h	<50 HD CVVHD	Give usual LD x 1 then 50% of recommended dose q24h 400 mg q24h 800 mg q24h
	Antifungal prophylaxis in autologous/allogeneic transplant and leukemia patients		
	400 mg q24h	<50 HD CVVHD	Give usual LD x 1 then 50% of recommended dose q24h 200 mg q24h (daily; on dialysis days, give after dialysis) 200 mg q24h

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Dosage Adjustment Protocol

Equations

CrCl in mL/min for male:	= (140-Age) IBW / (72)(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)		

- **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**

Flucytosine (Ancobon) ***NOTE**: Therapeutic drug monitoring is recommended with renal insufficiency* *Only use in combination with amphotericin B products*	***Candidiasis, Cryptococcosis***		
	25 mg/kg IV q6h	20-39 10-19 <10 HD	25 mg/kg IV q12h 25 mg/kg IV q24h 25 mg/kg IV q48h Administer 25 mg/kg after each HD session
Gabapentin (Neurontin) ***NOTE**: Only adjust if: initiated in past 48 hours, not a continuation of home, and/or not indicated for seizure disorder*	300 mg-1200 mg PO q8h	30-59 15-29 <15 HD	200 mg-600 mg PO q12h 200 mg-700 mg PO q24h 100 mg-300 mg PO q24h Give 100 mg-300 mg PO post HD supplemental dose
Ganciclovir (Cytovene) ***NOTE**: Higher doses may be required due to significant resistance*	***CMV induction***		
	5 mg/kg IV q12h	50-69 25-49 10-24 < 10 HD CVVHD	2.5 mg/kg IV q12h 2.5 mg/kg IV q24h 1.25 mg/kg IV q24h 1.25 mg/kg IV 3 times/week 1.25 mg/kg IV after each HD 5 mg/kg IV x 1, then 2.5 mg IV q12h
	CMV maintenance		
	5 mg/kg IV q24h	50-69 25-49 10-24 < 10 HD CVVHD	2.5 mg/kg IV q24h 1.25 mg/kg IV q24h 0.625 mg/kg IV q24h 0.625 mg/kg IV 3 times/week 0.625 mg/kg IV after each HD 5 mg/kg IV x 1, then 2.5 mg IV q24h

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Gentamicin (Garamycin) ***NOTE:*** *First dose adjustment only; all others based on pharmacokinetics* *Dose based on IBW, if > 120% IBW use AdjBW*	***High-dose, extended interval dosing***		
	7 mg/kg IV q24h ***NOTE:*** *Random level generally obtained 6-12 hours after the start of the infusion of 1st dose.*	> 50 30-49 < 30 CVVHD	Administer q24h. Physician to follow and monitor levels. Administer q36h. Physician to follow and monitor levels. Contact physician for orders for conventional dosing Administer q24-48h, adjust for goal trough
	Conventional dosing		
	Uncomplicated UTI 1.7 mg/kg IV ***Enterococcal endocarditis*** **(synergy dosing)** 1 mg/kg IV ***Pneumonia, sepsis, life-threatening infections*** 2-3 mg/kg IV ***NOTE:*** *Trough generally drawn before 3rd maintenance dose. Peak level drawn after end of the infusion of 3rd maintenance dose. Goal trough <1-2 mcg/Ml*	≥ 60 40-59 20-39 10-20 HD CVVHD	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 mg/kg post HD. Physician to follow and monitor levels. Administer q24h-48h, adjust for goal trough
Imipenem/ Cilastatin (Primaxin) ***NOTE:*** *for patients <70 kg refer to tables on package insert.* *Maximum total daily dose 50 mg/kg/day or 4g* *Not recommended if CrCl < 5 mL/min unless dialysis* *Consider use of merrem if clinically indicated*	***Moderate infections***		
	500 mg IV q6h	41-70 21-40 6-20 and HD CVVHD	500 mg IV q8h 250 mg IV q6h Consider meropenem if clinically appropriate 500 mg IV q12h
	Severe infections		
	1 g IV q8h	41-70 21-40 6-20 and HD CVVHD	500 mg IV q6h 500 mg IV q8h Consider meropenem if clinically appropriate 1 g IV x 1, then 500 mg IV q8h
	Life-threatening infections		
	1 g IV q6h	41-70 21-40 6-20 and HD CVVHD	750 mg IV q8h 500 mg IV q6h Consider meropenem if clinically appropriate 1 g IV x 1, then 500 mg IV q6h

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ABW (adjusted) in kg:	= IBW +0.4(actual weight in kg-IBW)		

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Ketorolac (Toradol)	**Single dose:** 60 mg IM x 1	< 50 kg or > 65 yr old or SCr ≥ 1.2 SCr >2	**Single dose:** 30 mg IM x 1 Call MD – Not recommended
	Maintenance dose: 30 mg IM/IV q6h PRN	<50 kg or > 65 yr old or SCr ≥ 1.2 SCr > 2	15 mg IM/IV q6h or q6h prn (max daily dose 60 mg) Call MD – Not recommended
Lamivudine (Epivir) **Lamivudine (Epivir)**	150 mg PO q12h or 300 mg PO q24h	30-49 15-29 5-14 <5 CVVHD	150 mg PO q24h 150 mg PO x 1, then 100 mg PO q24h 150 mg PO x 1, then 50 mg PO q24h 50 mg PO x 1, then 25 mg PO q24h 100 mg PO x 1, then 50 mg PO q24h
	HBV prophylaxis in oncology patients		
	100 mg PO q24h	30-49 15-29 5-14 <5 CVVHD	100 mg PO x 1, then 50 mg PO q24h 100 mg PO x 1, then 25 mg PO q24h 35 mg PO x 1, then 15 mg PO q24h 35 mg PO x 1, then 10 mg PO q24h 100 mg PO x 1, then 50 mg PO q24h
Leveiracetam (Keppra), IV/PO	Loading dose x 1 (max 4.5 g), then 500 mg-1500 mg q12h	50-80 30-49 <30 or HD CVVHD	500-1000 mg q12h 250-750 mg q12h 250-500 mg q12h Dose for normal renal function, consider at least 1000 mg q12h
Levofloxacin (Levaquin), IV/PO	***UTI (uncomplicated)***		
	250 mg q24h	20-49 < 20 HD CVVHD	No dosage adjustment 250 mg q48h 250 mg q48h (on dialysis days, give after dialysis) 250 mg q24h
	Prostatitis, chronic bronchitis, inhaled anthrax exposure		
	500 mg q24h	20-49 < 20 HD CVVHD	500 mg x 1, then 250 mg q24h 500 mg x 1, then 250 mg q48h 500 mg x 1, then 250 mg q48h (on dialysis days, give after dialysis) 500 mg x 1, then 250 mg q24h
	HAP/CAP/HCAP, pyelonephritis, intra-abdominal infection, complicated skin/skin structure infection		
	750 mg q24h	20-49 <20 HD CVVHD	750 mg q48h 750 mg x 1, then 500 mg q48h 750 mg x 1, then 500 mg q48h (on dialysis days, give after dialysis) 750 mg x 1, then 500 mg q24h
Memantine (Namenda)	5-20 mg PO daily	5-29	Starting dose: 5 mg PO daily; max 5 mg PO bid
Memantine (Namenda XR)	28 mg q24h	5-29	14 mg q24h

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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)		

- **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**

Meropenem (Merem) *Extended infusion (3 hours)*	***Skin/skin structure infections, genitourinary infections, UTI***		
	500 mg IV q8h	25-49 10-25 <10, HD CVVHD	500 mg IV q12h 500 mg IV q24h 500 mg IV q24h (daily; on dialysis days, give after dialysis) 1 g IV x 1, then 500 mg IV q8h
	Intra-abdominal infections, pneumonia, bacteremia, ICU, febrile neutropenia, sepsis, ESBL positive organisms		
	1 g IV q8h	25-49 10-25 <10, HD CVVHD	1 g q12h 500 mg q12h 500 mg q24h (daily; on dialysis days, give after dialysis) 1 g IV q12h
	Meningitis, CF, organisms with a meropenem/imipenem MIC of 4 mg/L		
	2 g IV q8h	25-49 10-25 <10 HD CVVHD	2 g IV q12h 1 g IV q12h 1 g IV q24h 1 g IV q24h (daily; on dialysis days, give after dialysis) 2 g IV x 1, then 1 g IV q8h
Metformin (Glucophage, Glumetza, Riomet)	500 mg-850 mg PO TID with meals	eGFR 30-45 eGFR <30	Not recommended for initiation of therapy If continuation of therapy, give 50% of recommended dose Contraindicated, call MD
Oseltamivir (Tamiflu)	***Influenza, Treatment***		
	75 mg PO q12h	31-59 11-29 ≤10 HD PD CVVHD	30 mg PO q12h 30 mg PO q24h Not recommended 30 mg after each hemodialysis session 30 mg x 1 (given immediately after dialysis exchange) 30 mg PO q24h
	Influenza, Prophylaxis		
	75 mg PO q24h	31-59 11-29 ≤10 HD PD CVVHD	30 mg PO q24h 30 mg PO q48h Not recommended 30 mg after alternate hemodialysis sessions 30 mg once weekly (given immediately after dialysis exchange) 30 mg PO q48h
Penicillin G (Pfizerpen)	***Bacterial endocarditis, meningococcal, Streptococcal meningitis***		
	4 million units IV q4h	10-50 < 10 HD CVVHD	2 million units IV q4h 1 million units IV q6h Give normal LD then 2 million units IV q6h 4 million units IV x 1, then 2 million units IV q4h

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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)		

- **Consider using ABW when patient's actual body weight is >20% IBW**
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- **In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding SCr to 1**

Piperacillin/ Tazobactam (Zosyn) *Extended infusion (4 hours)*	**Weight <100 kg**		
	3.375 g IV q8h	<20 HD CVVHD	3.375 g IV q12h 3.375 g q12h 3.375 g IV q8h
	Weight ≥ 100 kg, septic shock (ICU), CF, febrile neutropenia, *P. aeruginosa*		
	4.5 g IV q8h	<20 HD CVVHD	4.5 g IV q12h 4.5 g IV q12h 4.5 g IV q8h
Pregabalin (Lyrica) Only adjust if: initiated in past 48 hours, not a continuation of home, and/or not indicated for seizure disorder	150 mg-600 mg PO q8-12h	30-59 15-29 <15 HD	75 mg-300 mg PO q8-12h 25 mg-150 mg PO q12-24h 25 mg-75 mg PO q24h Give 25 mg-150 mg post HD supplemental dose
Ranitidine (Zantac)	150 mg PO q12h	<50/HD/CVVHD	150 mg PO q24h
	50 mg IV q8h	<50/HD/CVVHD	50 mg IV q24h
Rivaroxaban (Xarelto)	***Atrial fibrillation***		
	20 mg PO daily. Give with food.	15-50 <15	15 mg PO q24h Avoid use
	VTE prophylaxis in hip/knee replacement		
	10 mg PO daily	30-50 <30	Monitor for blood loss Avoid use
	Treatment of DVT/PE:		
	15 mg PO BID x 21 days then 20 mg daily. Give with food.	<30	Avoid use
Stavudine (Zerit)	≥ 60kg: 30-40 mg po q12h	10-50 or CVVHD < 10 and HD	Give 50% of dose PO q12h >60kg: 20 mg PO q24h <60kg: 15 mg PO q24h

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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)		

- **Consider using ABW when patient's actual body weight is >20% IBW**
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- **In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding SCr to 1**

Sulfamethoxazole /Trimethoprim IV/PO ***NOTE:*** *dose based on TBW and dose based on TMP component*	**UTI**		
	IV: 10 mL q12h (160 mg TMP = 10 mL) **PO:** 1 DS tablet q12h (160 mg TMP = 1 DS tablet)	15-29 <15 and HD	**IV:** 10 mL q24h **PO:** 1 DS tablet q24h Use is not recommended
	Skin/Skin Structure Infection		
	IV: 10-20 mL q12h (160 mg TMP = 10 mL) **PO:** 1-2 DS tablet q12h (160 mg TMP = 1 DS tablet)	15-29 <15 HD	**IV:** 10-20 mL q24h **PO:** 1-2 DS tablet q24h Use is not recommended Not recommended, but if necessary administer 1 SS tablet daily, give after dialysis on dialysis days
	Shigellosis		
	IV: 10 mL q12h (160 mg TMP = 10 mL) **PO:** 1 DS tablet q12h (160 mg TMP = 1 DS tablet)	15-29 <15 HD	**IV:** 10 mL q24h **PO:** 1 DS tablet q24h Use is not recommended Not recommended, but if necessary administer 1 SS tablet 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 5-10 mg/kg TMP daily, give after dialysis on dialysis days
	Pneumocystis treatment; *Stenotrophomonas maltophila* treatment		
	IV/PO: 15-20 mg/kg/day TMP divided q6-8h	15-29 <15 HD CVVHD	**IV/PO:** 15-20 mg/kg/day TMP divided q6h x 2 days, then 10 mg/kg TMP divided q12h **IV/PO:** 7-10 mg/kg/day TMP given q12-24h Not recommended, but if necessary administer 5-10 mg/kg TMP daily, give after dialysis on dialysis days 15-20 mg/kg/day TMP divided q6-8h

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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)		

- **Consider using ABW when patient's actual body weight is >20% IBW**
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- **In elderly patients or patients with low muscle mass who's SCr is <0.8, consider rounding SCr to 1**

Tenofovir disoproxil fumarate (Viread)	300 mg PO daily	30-49 10-29 < 10 and HD	300 mg PO q48h 300 mg PO q72h (i.e., every 3-4 days) 300 mg PO q7days (Administer following completion of dialysis)
Tenofovir alafenamide (Vemlidy)	25 mg PO daily	<15	Use is not recommended
Tobramycin (Nebcin) ***NOTE:*** *First dose adjustment only; all others based on pharmacokinetics* *Dose based on IBW, if > 120% IBW use AdjBW* *Goal trough < 1-2 mcg/mL* *Trough generally drawn before 3rd dose*	***High-dose, extended interval dosing***		
	7 mg/kg IV q24h ***CF patients*** 10 mg/kg IV q24h	> 50 30-49 < 30 CVVHD	Administer q24h. Physician to follow and monitor levels. Administer q36h. Physician to follow and monitor levels. Contact physician for orders for conventional dosing. Administer q24-48h, adjust for goal trough
	Conventional dosing		
	Uncomplicated UTI 1.7 mg/kg IV ***Enterococcal endocarditis*** **(synergistic dosing)** 1 mg/kg IV ***Pneumonia, sepsis, life-threatening infections*** 2-3 mg/kg IV ***NOTE****: Trough generally drawn before 3rd dose*	≥ 60 40-59 20-39 10-20 HD CVVHD	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 mg/kg post HD. Physician to follow and monitor levels. Administer q24-48h, adjust for goal trough

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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)		

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Vancomycin (Vancocin) ***NOTE:*** *First dose adjustment only; all others based on pharmacokinetics* *Dose based on TBW; if TBW > 110 kg, consider AdjBW* *Goal trough 10-20 mcg/mL, dependent upon indication* *Trough generally drawn before 4th dose* *Round doses to nearest 250 mg*	**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		
	20 mg/kg (max 2 g) preferred, especially in life-threatening infections	If patient is severely obese and the dose exceeds 2 g, initial doses should be staggered over a short period of time (clinical pharmacist consult suggested)	
		HD	No Δ
	Maintenance dose (below is a guide only; dosing & monitoring should be individualized for each patient)		
	15 mg/kg q8-12h	> 70 50-69 30-49 <30 HD CVVHD	Administer q8-12h. Administer q12h. Administer q24h. *Obtain random level and re-dose when level within goal trough range* 15 mg/kg post HD (on dialysis days only) 15 mg/kg q24h
	C. difficile treatment		
	125-250 mg **PO** q6h	****No renal dose adjustment necessary**** ****No therapeutic drug monitoring required for oral vancomycin****	
Zidovudine	300 mg BID or 200 mg TID	<15	100 mg PO q8h or 300 mg PO daily
Zoledronic Acid (Zometa) for Multiple myeloma/Bone Metastases/Solid Tumors	4 mg IVPB	>60 50-60 40-49 30-39 <30	No dose adjustment Reduce dose to 3.5mg Reduce dose to 3.3mg Reduce dose to 3mg Use not recommended due to lack of clinical data
Zoledronic Acid (Reclast) for Paget's disease/Osteoporosis-related indications	5 mg IVPB	≥35 <35	No dose adjustment needed Use is contraindicated