Automatic Renal Dosing Protocol

Our Lady of the Lake Regional Medical Center (Revised August 2022)

Creatinine Clearance (CrCl) will be calculated based on the Cockcroft-Gault equation for all renal dose adjustments

- If patient weighs less than Ideal Body Weight (IBW) use Actual Body Weight (ABW) for calculating CrCl
- If patient weights >120% of IBW then use Adjusted Body Weight (AdjBW) for calculating CrCl

$$\text{CrCl (male)} = \frac{(140-\text{Age}) \times \text{IBW}}{72 \times \text{SCr}} \qquad \text{CrCl (female)} = \frac{(140-\text{Age}) \times \text{IBW}}{72 \times \text{SCr}} \;(\times 0.85)$$

Modify the order in the EMR, place the comment "Renally adjusted per P&T approved dosing protocol for CrCl < * mL/min"** or use dot phrase .RAPP

HD: Hemodialysis, CAPD: Continuous ambulatory peritoneal dialysis, CRRT: Continuous renal replacement therapy, SLED: sustained low-efficiency dialysis, PIRRT: prolonged intermittent renal replacement therapy, IBW: Ideal body weight, SCr: Serum creatinine, IV: intravenous, PO: oral, CVVH: Continuous venovenous hemofiltration, CVVHD: Continuous venovenous hemodialysis, CVVHDF: Continuous venovenous hemodiafiltration, LD: Loading dose, CF: Cystic fibrosis, FN: Febrile neutropenia, PNA: Pneumonia, NF: Non-formulary or restricted, 2g-2g-3g: give dose only post HD (M-W-F or T-R-S in fashion 2g-2g-3g), TIW: Three times weekly, 4-4-6: 4mg/kg-4mg/kg-6mg/kg TIW post HD, 8-8-10: 8mg/kg-8mg/kg-10mg/kg TIW post HD, 10-10-12: 10mg/kg-10mg/kg-12mg/kg TIW post HD, SSTI: skin and soft tissue infection, PCP: Pneumocystis pneumonia, Steno: *Stenotrophomonas*, OM: Osteomyelitis, DFI: Diabetic foot infection, NR: Not recommended, CI: Contraindicated

Antimicrobials

Medication		SLED	CRRT
Acyclovir (IV) [IBW] HSV	See **Antimicrobial Stewardship Program - Our Lady of the Lake (sharepoint.com)** for renal dose adjustments besides SLED & CRRT	5 mg/kg q12-24h	CVVH: 5 mg/kg q24h CVVHD/HDF: 5 mg/kg q12-24h
HSV Encephalitis, Zoster		10 mg/kg q12-24h	CVVH:10 mg/kg q24h CVVHD/HDF: 10 mg/kg q12-24h
Acyclovir (PO) Varicella zoster		No data	No data
Amikacin			
Amoxicillin/ clavulanate		No data	500 mg q12h
Ampicillin (IV)		2 g q8h	CVVH: 2 g q12h CVVHD/HDF: 2 g q8h
Bacteremia, Endocarditis, Meningitis		2 g q6h	CVVH/CVVHD: 2 g q8h CVVHDF: 2 g q6h
Ampicillin/ sulbactam		3 g q12h	CVVH: 3 g q12h CVVHD/HDF: 3 g q8h
Aztreonam		2 g q12h	CVVH: 1 g q12h CVVHD/HDF: 2 g q12h

Antimicrobials			
Medication		**SLED**	**CRRT**
Cefazolin	**See [Antimicrobial Stewardship Program - Our Lady of the Lake (sharepoint.com)] for renal dose adjustments besides SLED & CRRT**	2 g q12h	CVVH: 1 g q12h CVVHD/HDF: 2 g q12h
Cefepime		2 g q12h	2 g q12h
FN, Critically Ill, Meningitis, Pseudomonas, CF, Endocarditis, PNA		2 g q12h	2 g q12h
Ceftazidime/ Avibactam (NF)		1.25 g q8h	1.25 g q8h
Ceftolozane/ Tazobactam (NF)		750 mg q12h	750 mg q8h
Pneumonia		750 mg 8h	1.5 g q8h
Ceftaroline (NF)		400 mg q12h	400 mg q12h
MRSA bacteremia		600 mg q12h	600 mg q12h
Cefdinir (PO)		No data	No data
Cefuroxime (PO)		No data	No data
Cephalexin		No data	No data
Ciprofloxacin (IV)		400 mg q12h	400 mg q12h
Meningitis, Pseudomonas		400 mg q12h	400 mg q12h
Ciprofloxacin (PO)		250 mg q12h	250 mg q12h
Meningitis, Pseudomonas		500 mg q12h	500 mg q12h

Antimicrobials			
Medication		**SLED**	**CRRT**
Daptomycin Non-severe infections: SSTI	See Antimicrobial Stewardship Program - Our Lady of the Lake (sharepoint.com) for renal dose adjustments besides SLED & CRRT	6 mg/kg q24h	6 mg/kg q48h
Serious infections: OM, Bacteremia, Fournier's gangrene, DFI, Endocarditis		8 mg/kg q24h	8 mg/kg q48h
Enterococcal Bacteremia or Endocarditis		10 mg/kg q24h	10 mg/kg q48h
Ertapenem		1 g q24h	1 g q24h
Fluconazole (IV/PO)		LD: 800 mg; 400 mg q24h	LD: 800 mg; 200-800 mg q24h
Flucytosine		No data	25 mg/kg q12h
Gentamicin			
Levofloxacin (IV/PO)		500 mg q48h	500 mg q48h
Pneumonia, Complicated SSTI, Osteomyelitis, Intra-abdominal infection		750 mg q48h	750 mg q48h

Antimicrobials

Medication	SLED	CRRT
Meropenem	1 g q12h	1 g q12h
CNS, eye, GNR MIC≥4	1 g q12h	1 g q12h
Oseltamivir Treatment	30 mg q24h	30 mg q24h
Piperacillin/ Tazobactam LD: 4.5 g 30 mins; **4-h infusion***	4.5 g q8h	4.5 g q8h
*Pipera … infusion protocol		
Piperacillin/ Tazobactam 30-min infusion	3.375 g q8h	3.375 g q6h
Sulfamethoxazole/ Trimethoprim IV/PO Dose based on trimethoprim PCP, Steno	5 mg/kg q8h	5 mg/kg q8h
Tobramycin		
Vancomycin		

See Antimicrobial Stewardship Program - Our Lady of the Lake (sharepoint.com) for renal dose adjustments besides SLED & CRRT

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Anticoagulants							
Medication	**Indication**	**Usual dose**	**Renal Adjustment**	**HD**	**CAPD**	**SLED**	**CRRT**
Apixaban (Eliquis)	DVT/ PE Treatment	10 mg q12h x 7 days; then 5mg q12h	No dosage adjustment is recommended Note that patients with SCr >2.5 mg/dL or CrCl <25 were excluded from trials	Not studied, use not recommended. Note that patients with ESRD on dialysis were excluded from trials. May consider reduced dose of 5 mg q12h for 7 days; then 2.5 mg q12h			
	Nonvalvular Atrial fibrillation (A Fib)	5 mg q12h	Any 2 of the following: Age ≥80, weight ≤60 kg, SCr ≥1.5 mg/dL: 2.5 mg q12h	Not studied, use not recommended. Note that patients with ESRD on dialysis were excluded from trials. May consider reduced dose of 2.5 mg q12h			
	Post-op VTE prophylaxis (hip/knee replacement surgery)	2.5 mg q12h	No dosage adjustment is recommended by the manufacturer. Note that patients with CrCl <30 were excluded from trials	Not studied, use not recommended. Note that patients with ESRD on dialysis were excluded from trials.			
Dabigatran (Pradaxa)	Nonvalvular Atrial fibrillation (A Fib)	150 mg q12h	CrCl 15-30: 75 mg q12h CrCl <15: not recommended	Not recommended. Patients on dialysis were excluded from clinical trials.			
	Treatment and reduction in the risk of recurrence of DVT and PE	150 mg q12h after 5-10 days of parenteral anticoagulation	CrCl <30: not recommended	Not recommended. Patients on dialysis were excluded from clinical trials.			
	Post-op VTE prophylaxis (hip/knee replacement)	110 mg given 1 to 4 hours post–op; 220 mg q24h maintenance dose x 10 -14 days at least	CrCl <30: not recommended Note that patients with CrCl <30 were excluded from trials	Not studied, use not recommended.			

Anticoagulants							
Medication	**Indication**	**Usual dose**	**Renal Adjustment**	**HD**	**CAPD**	**SLED**	**CRRT**
Rivaroxaban (Xarelto)	DVT/PE Treatment, reduction of risk of recurrent DVT/PE	15 mg q12h with food x 21 days; then 20 mg q24h with food	CrCl <15: not recommended	Use not recommended			
	Nonvalvular Atrial fibrillation (A Fib)	20 mg q24h with dinner	CrCl 15-50: 15 mg q24h with food CrCl <15: not recommended				
	PCI with Atrial fibrillation (A Fib)	15 mg q24h with meal plus clopidogrel or aspirin	CrCl 30-50: 10 mg q24h plus clopidogrel or aspirin CrCl <15: Avoid use				
	Post-op VTE prophylaxis (hip/knee)	10 mg q24h	<15: not recommended				
	VTE prophylaxis in acutely ill medical patients	10 mg q24h	<15: not recommended				
	CAD or PAD	2.5 mg q12h	<15: Avoid use	Avoid use ESRD patients on dialysis were not enrolled in clinical studies.			
Enoxaparin (Lovenox)	DVT prophylaxis (general)	40 mg q24h	CrCl <30: 30 mg q24h	Not recommended--unfractionated heparin preferred. If enoxaparin is used, consider monitoring anti-Xa levels.			
	DVT prophylaxis (abdominal surgery)	40 mg q24h	CrCl <30: 30 mg q24h				
	DVT prophylaxis (bariatric surgery) unlabeled	40 mg q12h	CrCl <30: 30 mg q24h				
	DVT prophylaxis (hip/knee replacement)	30 mg q12h or (40 mg q24h)	CrCl <30: 30 mg q24h				
	DVT prophylaxis (Trauma)	30 – 40 mg q12h *may see up to 50 mg q12h initiated in extreme weight*	CrCl <30: 30 mg q24h				
	DVT/PE treatment, NSTEMI/STEMI treatment	1 mg/kg q12h	CrCl <30: 1 mg/kg q24h				
	DVT/PE treatment option	1 mg/kg q12h or 1.5 mg/kg q24h	CrCl <30: 1 mg/kg q24h				
	Atrial fibrillation (A Fib) (unlabeled)	1 mg/kg q12h or 1.5 mg/kg q24h	CrCl <30: 1 mg/kg q24h				

Miscellaneous Medications								
Medication	**Usual dose**	**CrCl <50mL/min**	**CrCl <30mL/min**	**CrCl <10mL/min**	**HD**	**CAPD**	**SLED**	**CRRT**
Famotidine (IV) Stress ulcer prophylaxis	20 mg BID	20 mg daily (CrCl<60)	20 mg every other day	20 mg every other day	20 mg every other day	20 mg every other day	20 mg every other day	20 mg every other day
Rosuvastatin	5-40 mg daily	5-40 mg daily	5 mg daily (10 mg/day maximum)	5 mg daily (10 mg/day maximum)	May consider 5-10 mg daily	Not studied		
Simvastatin*	5-80 mg daily	5-80 mg daily	Initiate 5 mg daily	Initiate 5 mg daily	Not studied			
*80 mg simvastatin reserved for patients taking for >12 consecutive months								
Zoledronic acid (Zometa) Bone metastases from solid tumors, multiple myeloma, prostate cancer (androgen deprivation), breast cancer (adjuvant or aromatase inhibitor)	4 mg once *See zoledronic acid protocol*	3.5 mg once (CrCl<60) 3.3 mg once (CrCl<50) 3.0 mg once (CrCl<40)	NR	NR	NR			
Hypercalcemia	4 mg once	Mild to moderate impairment: no dosage adjustment. Severe impairment (SCr >4.5): risk versus benefit.						
Zoledronic Acid (Reclast) [ABW CrCl] Non-oncology	5 mg once	5 mg once	CI (CrCl<35)	CI	CI			

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