



ABSOLUTE SCOOP

DID YOU KNOW?

More than 50% of seniors over the age of 75 are estimated to have kidney disease.

- Absolute consultant pharmacists routinely monitor renal lab values and recommend dosing adjustments based on kidney function.



RENAL DOSING

Written by Marina Saunders, PharmD, RPh, BCGP, Consultant Pharmacist

More than 60% of drugs are renally cleared. These medications require dosing adjustments for patients with decreased renal function. If not adjusted, patients could experience increased adverse effects and toxicity. Risk factors for renal dysfunction include increased age, diabetes, hypertension, and obesity. 1 in 3 diabetic patients and 1 in 5 patients with hypertension have chronic kidney disease. In seniors over 75, more than 50% are estimated to have kidney disease.

Renal clearance can be measured in several different ways. Estimated glomerular filtration rate (eGFR), creatinine clearance (CrCl), and serum creatinine are all values that help us determine a patient's kidney function. Each renally cleared medication has specific guidelines that outline which clearance value is appropriate to use and dosing recommendations based on those levels. Typically, no adjustment is needed until a patient's eGFR is less than 60. Doses can be adjusted by increasing the interval between doses, decreasing the dose, or a combination of both strategies.

Examples of renally cleared medications include Eliquis, Xarelto, Paxlovid, mirtazapine, gabapentin, venlafaxine, memantine, allopurinol, Myrbetriq, famotidine, fexofenadine, cetirizine, meloxicam, and many antimicrobials.

Vancomycin is an example of a medication that requires extensive consideration for renal function. We calculate a starting dose based on renal function and then closely monitor drug levels in the patient and adjust the dose based on those levels. It is important to carefully document the timing of vancomycin dosing as well as when blood samples are drawn in order to accurately adjust and monitor this medication. Without this documentation, it is extremely difficult to accurately recommend dosing adjustments.

Renal dosing is an excellent example of how beneficial it can be for healthcare providers to collaborate. It's only in working together that we can achieve the best patient outcomes. Absolute consultant pharmacists routinely monitor renal lab values and recommend dosing adjustments based on kidney function. Don't hesitate to reach out to your consultant pharmacist or the main pharmacy when renal function is a concern.



Some commonly prescribed renally cleared medications and their dosage adjustments.

Drug	Renal Dose Adjustment	Possible Toxicity
Apixaban (Eliquis)	AFib - 2.5mg BID if 2 of the following 1) Age \geq 80 years old 2) Body weight \leq 60kg 3) Serum creatinine \geq 1.5mg/dl	Bleeding
Gabapentin	CrCl 50-79ml/min, max of 1800mg/day in 3 divided doses CrCl 30-49ml/min, max of 900mg/day in 2-3 divided doses CrCl 15-29ml/min, max of 600mg/day in 1-2 divided doses CrCl <15ml/min, max of 300mg/day in 1 dose	Sedation, Dizziness, Confusion
Nitrofurantoin	CrCl 30 - <60mL/min: Contraindicated in manufacturer labeling, but limited data suggest it is safe for short term treatment CrCl <30mL/min: Avoid use	Pulmonary toxicity, Peripheral neuropathy
Mirtazapine	eGFR <30 mL/minute/1.73 m ² : Initial: 7.5 to 15 mg/day; titrate slowly & monitor	Tachycardia, hypertension, drowsiness
Cetirizine	5mg/day max in all patients \geq 77 CrCl 11- \leq 31 = 5mg/day CrCl \leq 10 = 5mg every 48 hours	Sedation, psychosis, urinary retention, dry mouth
Meloxicam	CrCl 30-60: monitor closely CrCl < 30: avoid use	Acute kidney injury

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 Nemecek B. Demystifying drug dosing in renal dysfunction. ASHP. 2016.
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About the Author



Outside of work, Marina can be found traveling (her favorite vacation spot is Croatia – where her parents grew up), scuba diving, and spending time with her husband, dogs, and cats!

Marina has been with Absolute Pharmacy for 6 years. She started as an operations pharmacist and is now part of our consultant pharmacist team. When asked about what she enjoys most about her job, her answer is "providing valuable help to our facilities and patients". Whether providing immunizations, solving medication-related problems, writing informative articles, or interacting with other healthcare professionals, Marina's passion for patient care is evident in all she does!

What did the failed kidney say to the donor kidney?

I'm out, urine!



Which side of the turkey has the most feathers?

The outside.