To Pee or Not to Pee...
What GFR are We?
Medication Safety with Renal Inpatients

GFR <30
Think critically about fluid and medications

<table>
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<th>Table 1. Stages of chronic kidney disease.</th>
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<td>Stage</td>
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Potential complications of reduced GFR (in alphabetical order):
- Anemia, including functional iron deficiency
- Blood pressure increases
- Calcium absorption decreases
- Diabetes (insulin resistance)
- Hyperkalemia
- Hyperparathyroidism
- Hypersensitivity
- Kidney stones
- Lower extremity edema
- Metabolic acids
- Myocardial infarction
- Nutritional deficiencies
- Osteoporosis
- Proteins
- Renal failure

Source: Adapted from Identification, Evaluation and Management of Chronic Kidney Disease
(www.health.gov/kidney/pubs/pack/pack08.pdf)

Medications that Require Renal Dosage
- Decrease medication dose for GFR <30
  - Gravol
  - Gabapentin
  - Inquire about all antibiotic dosages in renal patients with GFR <30
  - Pip-Taz, Vancomycin, Gentamycin, Tobramycin, Ciprofloxacin, Anecef

Medications you Should Absolutely not Give to Renal Patients without a Discussion
- New anticoagulants (NOAC)
  - dabigatran
  - rivaroxaban
  - apixaban
- Low molecular weight heparins
  - enoxaparin
  - dalteparin
  - nadroparin
  - tinzaparin

Fluid is a Drug!!
How much fluid is the patient getting?
How much have they already received?
How much are they peeing?
What type of fluid is it?
- IV Fluid
- Normal saline
- Ringers Lactate (contains potassium)

Commonly Prescribed Renal Medications
Phosphate Binders (PB) to be taken WITH MEALS to prevent absorption of dietary phosphate
- Calcium Carbonate (TUMS) 1250-2500mg PO TID or QID with meals
- Non-calcium based PB
  - Sevelamer (Renagel) 800-2400mg PO TID with meals
  - lanthanum (Forsenol) 500-1000mg PO TID with meals

Activated Vitamin D
- Alfalcaldiol (one alpha) 0.25mcg PO 3X/wk to 1.0 mcg PO Daily

Erythropoiesis-Stimulating Agents (ESA)
- Stimulate production of renal blood cells
- Take approx. 2 months to reach steady state
  - darbepoetin (Aranesp) q1-2 weeks
  - epoetin (Eprex) 2-3x/wk

Hemoglobin target with these meds is 95-115

If you have a Question, who can you Contact?
- Renal Nurses (ext 2260)
- Pharmacist (ext 2444)
- MRP
- Nephrologist
- PCC
- Educator

NOW THE ANSWER YOU HAVE ALL BEEN WAITING FOR!!
Yes, give all medications in the morning before hemodialysis (HD) unless nephrologist orders otherwise.

Managing Admitted HD Patients
- EPO and IV Iron are given during HD
- Water soluble medications such as Replavit should be given post dialysis
- Oral iron supplements should never be given with phosphate binders and should be given at bedtime
- Application of nitro patch is patient specific but should not be on for HD
- If Afb are ordered to be given in HD, they will be given post HD at the RDU.

References

Fluid is a Drug!!

Baseline rate of decline in GFR
ESRD
Contrast for coronary cath
GFR
CHF with diuretics leading to AKI and low BP
NSAID for Gout
Gentamycin for UTI
Contrast for coronary cath

Hemoglobin target with these meds is 95-115