

*Too much acid,  
Too little blood, and  
Perplexing calcium, phosphorus  
and PTH levels in CKD:  
What you can do in primary care!*

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# Objectives

Review common CKD complications & their management in primary care

- Acidosis
- Anemia
- Calcium
- Phosphate
- PTH

65 year old woman, routine 3 month follow-up

- Coronary artery disease, CABG x 3 vessels
- DM with retinopathy
- HTN
- Stage 4 CKD, eGFR = 20 mL/min

65 year old woman, routine 3 month follow-up

- ASA
- Carvedilol
- Valsartan
- Chlorthalidone
- Insulin

65 year old woman, routine 3 month follow-up

- BP: 136/76
- HR: 68
- 1+ edema
- Rest of exam normal

65 year old woman

- Stage 4 CKD, eGFR = 20 mL/min
- Regarding her CKD:
- What common complications?

# Complications of CKD

- Hypertension
- Proteinuria
- Edema
- Vascular disease
- Dialysis
- Infection
- Hospitalization
- Death

# Other complications of CKD

- Routinely monitored by Nephrologist
- Anemia
- Acidosis
- Mineral Bone Disease (MBD)
  - Calcium
  - Phosphate
  - PTH



# Acidosis

- Commonly diagnosed when serum bicarbonate  $< 22$  mmol/L
- Do you need ABG?
- If serum bicarbonate consistently  $< 22$ 
  - Dietary changes
    - Increase alkali (fruits/vegetables)
    - Reduce acid (protein)
  - Sodium bicarbonate
    - Start 650 mg po bid
    - Titrate to bicarbonate of  $\sim 24$  mmol/L

# Anemia

- Check hemoglobin
  - Every 6 months stage 3 CKD
  - Every 3 months stage 4/5 CKD
- If Hb below normal range
  - Check iron studies, B12, folate
- If iron deficient
  - Replace iron
    - IV better than PO
    - Iron sucrose 300 mg IV q week x 3
- If B12, folate deficient
  - Replace

# Anemia

- If iron, B12, folate ok
- AND
- Hb < 10
- Replace with erythropoiesis stimulating agent
  - Start with darbepoietin 25 mcg SC q 2 weeks
  - Check Hb prior to each injection
  - Stop once Hb  $\geq$  10
- Should continue to monitor iron, B12, folate

# PTH - Hyperparathyroidism

- Acceptable PTH levels
  - CKD stage 3: 35 – 70
  - CKD stage 4: 70 – 110
  - CKD stage 5: < 600
- If PTH above acceptable level
  - Start calcitriol 0.25 mcg po tiw if not hypercalcemic
  - Monitor PTH every 3 months
  - Titrate up to 0.5 mcg po qd
  - Monitor Ca (hypercalcemia)
  - Vitamin D normalization → minimal PTH reduction

# Hyperphosphatemia

- Goal phosphate = 3.5 to 5.5 mg/dL
- If phosphate > 5.5 mg/dL
  - Dietary phosphate restriction
    - Dietitian
    - Milk, cheese, brown colored sodas
  - Medications
    - $\text{CaCO}_3$  650 mg with meals (up to 1300 mg with meals)
      - Monitor Ca and phosphorus
    - Calcium acetate
    - Sevelamer carbonate 800 – 1600 mg with meals
    - Lanthanum carbonate 500 – 1500 mg with meals (chew)