

CHRONIC KIDNEY DISEASE

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Week 10

Educational Objectives:

1. Outline an approach to assessing chronic kidney disease (CKD) in ambulatory settings
2. Apply a calculator to predict the risk of progression from CKD to kidney failure
3. Describe interventions that prevent progression of CKD and development of cardiovascular disease

CASE ONE:

You are seeing a 74-year-old male patient, Mr. G, who is new to your clinic. He has a history of poorly controlled hypertension. He takes chlorthalidone and amlodipine for his blood pressure. His home blood pressure readings are 140s/80s. Bloodwork from this morning shows a creatinine (Cr) of 2.5; on review of his prior medical records, you note his Cr has been stable for the past year.

Questions:

1. **How is chronic kidney disease (CKD) defined? Does Mr. G have chronic kidney disease, and how would his disease be classified?**
2. **What is the role of cystatin C measurement in estimating GFR?**

CASE ONE CONTINUED:

Mr. G's eGFRcr is 26 ml/min per 1.73 m² and his ACR is 1400 mg/g. Mr. G. asks if he will need to go on dialysis.

3. What are Mr. G's G and A classifications? How would you estimate his risk of progressing from CKD to kidney failure requiring renal replacement therapy?
4. Mr. G. asks what he can do to prevent progression to kidney failure. What is your next step?
5. You initiate lisinopril 5 mg daily. What monitoring and titration will you perform?
6. Should ACE inhibitors/ARBs be stopped in patients whose eGFR falls to less than 30 ml/min per 1.73 m²?

CASE ONE CONTINUED:

Mr. G is now on lisinopril 40 mg daily and has overall improved adherence to his medication regimen. His home blood pressures average 125/70. His eGFR is stable and his ACR has been reduced to 100 mg/g.

7. What additional renal protective agents should be added?
8. Mr. G asks you about his chances of having a heart attack. How can you assess cardiovascular risk in patients with CKD?

9. What can be done to reduce cardiovascular risk in patients with CKD?

CASE TWO:

Ms. V is a 56-year-old woman with diabetic nephropathy. Her eGFR is 35 ml/min per 1.73 m² and her ACR is 550 mg/g. She is on both an ACE inhibitor and an SGLT2 inhibitor, at maximally tolerated doses. She also takes low dose metformin for diabetes. She wishes to avoid kidney failure.

10. What additional agents have been shown to prevent progression of kidney disease in diabetic nephropathy?

11. When should patients with CKD be referred to nephrology? Should Ms. V be referred to a nephrologist?

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Knowledge Questions:

- 1. Mr. Q is a 27-year-old amputee with an eGFRcr of 110. What is your next step?**
 - a. Congratulate him on the amazing filtration properties of his kidneys
 - b. Check an albumin to creatinine ratio
 - c. Check cystatin C

- 2. Ms. Z is a 72-year-old woman with CKD. You've been titrating her ACE inhibitor and note her potassium is now 5.3. What is your next step?**
 - a. Call for a welfare check. Ask the police to confiscate her bananas.
 - b. Refer her to nutritionist to learn about a low potassium diet
 - c. Discontinue the ACE inhibitor

- 3. Ms. R is a 52-year-old woman with diabetes and CKD with severe albuminuria. What approach can prevent her progression to kidney failure?**
 - a. Intensive control of her BP to < 120/80
 - b. Control her sugar levels
 - c. RAAS inhibitors (ACE inhibitors and ARBs), SGLT2 inhibitors, GLP-1 receptor agonists, and non-steroidal mineralocorticoid receptor antagonists