ACP Releases Guideline on Screening, Monitoring, and Treatment of Stage 1 to 3 Chronic Kidney Disease

Key Points for Practice

- Screening for CKD in asymptomatic adults without risk factors is not recommended.
- Monitoring for proteinuria in adults already taking an ACE inhibitor or an ARB is not indicated.
- ACE inhibitors and ARBs are the preferred therapies for patients with hypertension and stage 1 to 3 CKD.
- Statin therapy should be used to manage elevated low-density lipoprotein cholesterol levels in patients with stage 1 to 3 CKD.

From the AFP *Editors*

Chronic kidney disease (CKD) is commonly defined as abnormalities of the kidney structure or function that are present for longer than three months with implications for health. CKD is typically divided into five stages based on severity as defined by a patient's glomerular filtration rate (GFR). The breakdown of stages in increasing order of severity is as follows:

- Stage 1: kidney damage with GFR ≥ 90 mL per minute per 1.73 m^2
- Stage 2: kidney damage with GFR of 60 to 89 mL per minute per 1.73 m^2
- Stage 3: GFR of 30 to 59 mL per minute per 1.73 m^2
- Stage 4: GFR of 15 to 29 mL per minute per 1.73 m^2
- Stage 5: GFR < 15 mL per minute per 1.73 m^2, or kidney failure treated by dialysis or transplantation

Approximately 22.4 million adults in the United States have stage 1 to 3 CKD, which is considered early-stage CKD. Persons in the early stages are typically asymptomatic. However, these three stages, reduced GFR, and albuminuria are associated with mortality, cardiovascular disease, fractures, bone loss, infections, cognitive impairment, and frailty. Based on a systematic evidence review, this guideline from the American College of Physicians (ACP) presents recommendations on screening, monitoring, and treatment of stage 1 to 3 CKD in adults.

Interventions and Outcomes

The screening and monitoring tests evaluated for the guideline include estimated GFR, microalbuminuria, and proteinuria. The treatments evaluated include angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), beta blockers, calcium channel blockers, thiazide diuretics, statins, low-protein diet, intensive control of diabetes mellitus, and intensive multicomponent interventions. The outcomes included all-cause mortality, cardiovascular mortality, myocardial infarction, stroke, chronic heart failure, composite vascular outcomes, composite renal outcomes, end-stage renal disease, quality of life, physical function, and activities of daily living.

Benefits and Harms

No randomized controlled trials evaluated the benefits and harms of screening for stage 1 to 3 CKD or monitoring for disease progression, although indirect evidence was used to inform the guideline. Potential screening benefits would be derived from anticipated benefits of treatment. There was no evidence evaluating the benefits of early treatment on clinical outcomes of patients with screen-detected CKD. Evidence on the validity and reliability of monitoring tests is lacking.

The guideline identified the following benefits of screening, monitoring, and treatment of CKD:

- Screening: Early identification of undiagnosed or possibly asymptomatic CKD may help reduce mortality and morbidity (e.g., kidney failure, clinical cardiovascular events) associated with CKD
- Monitoring: Identification of progression to later stages of CKD may help reduce mortality and morbidity associated with CKD
- Treatment: Therapy reduces risk of mortality, end-stage renal disease, and other vascular or renal outcomes.

The guideline also identified the following harms:

- Screening: False-positive results, disease labeling, unnecessary tests and adverse effects, unnecessary treatments and adverse effects, financial and insurance ramifications
- Monitoring: Incorrect reclassification of CKD status, unnecessary tests and adverse effects, disease

labeling, adverse events associated with change of treatment, financial and insurance ramifications

- Treatment: Adverse effects vary depending on treatment but may include cough, hyperkalemia, hypotension, heart failure, fatigue, bradycardia, dizziness, and acute kidney failure requiring dialysis.

Recommendations

Recommendation 1: The ACP recommends against screening for CKD in asymptomatic adults without risk factors for CKD. (Weak recommendation, low-quality evidence)

Screening for CKD does not meet the criteria for population-based screening (i.e., improving important clinical outcomes while limiting harms); therefore, it is not recommended in asymptomatic adults without risk factors. The overall prevalence of CKD in this group is relatively low, and the accuracy of available screening measures is uncertain. There is no available evidence on the sensitivity or specificity of CKD screening tests in the general population. Although testing for albuminuria and measurement of GFR are widely available in primary care settings, the risk of false-positive results is high. There is also no evidence on the benefits of early treatment of CKD in those identified by screening; however, potential harms include false-positive results, disease labeling, and unnecessary testing and treatment.

Recommendation 2: The ACP recommends against testing for proteinuria in adults with or without diabetes who are currently taking an ACE inhibitor or an ARB. (Weak recommendation, low-quality evidence)

Treatment with ACE inhibitors or ARBs reduces the risk of end-stage renal disease. It is unknown whether testing for proteinuria in patients already taking these medications is beneficial. There is no evidence that monitoring for proteinuria levels in these patients is beneficial or that reduced levels of proteinuria lead to improved outcomes in patients with CKD.

Recommendation 3: The ACP recommends that physicians select pharmacologic therapy that includes an ACE inhibitor (moderate-quality evidence) or an ARB (high-quality evidence) in patients with hypertension and stage 1 to 3 CKD. (Strong recommendation)

Although treatment reduces the risk of end-stage renal disease in these patients, benefits were limited to those with macroalbuminuria and most patients also had diabetes and hypertension. Treatment with other drug monotherapy did not show a statistically significant reduction in the risk of end-stage renal disease. Additionally, ACE inhibitors and ARBs reduce composite renal outcomes, the risk of doubling of serum creatinine levels, and the progression from microalbuminuria to macroalbuminuria. Head-to-head trials between ACE inhibitors and ARBs showed no difference in outcomes. Evidence did not show a combination of the two therapies to be superior to monotherapy with either therapy alone, although the risk of adverse effects increased significantly with combination therapy. There was no difference in end-stage renal disease or mortality between strict blood pressure control (128 to 133/75 to 81 mm Hg) and standard control (134 to 141/81 to 87 mm Hg).

Recommendation 4: The ACP recommends that physicians choose statin therapy to manage elevated low-density lipoprotein cholesterol levels in patients with stage 1 to 3 CKD. (Strong recommendation, moderate-quality evidence)

In addition to reducing the risk of all-cause mortality, statins also lower the risk of myocardial infarction, stroke, and most cardiovascular outcomes in patients with stage 1 to 3 CKD. Studies included patients with mean low-density lipoprotein cholesterol levels of 142 mg per dL (3.68 mmol per L); the levels ranged from 109 to 192 mg per dL (2.82 to 4.97 mmol per L).

Guideline source: American College of Physicians

Evidence rating system used? Yes

Literature search described? Yes

Guideline developed by participants without relevant financial ties to industry? Yes

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