



Clinical Practice Guidelines for the Management for the Evaluation, Classification and Stratification of Chronic Kidney Disease

Source: K/DOQI Clinical Practice Guidelines for Chronic Kidney Disease; Evaluation, Classification, and Stratification, 2002. Clinical Practice Guidelines for Chronic Kidney Disease in Adults: Part I. Definition, Disease Stages, Evaluation, Treatment, and Risk Factors 2004, American Academy of Family Physicians 2004:70:869-76. AND KDOQI Clinical Practice Guideline and Clinical Practice Recommendations for Anemia in Chronic Kidney Disease: 2007 Update of Hemoglobin Target.

Definition of Chronic Kidney Disease (CKD):

Chronic kidney disease is defined as a glomerular filtration rate or GFR $<60 \text{ mL/min/1.73m}^2$ for >3 months with or without kidney damage. Kidney damage is defined as structural or functional abnormalities of the kidney, with or without decreased GFR, as manifested by either pathologic abnormalities or markers of kidney damage (proteinuria, hematuria, pyuria, abnormal imaging studies). GFR can be estimated (eGFR) using the serum creatinine and one of several formulas.

National Kidney Foundation Classification of Chronic Kidney Disease:

Stage 1: Kidney damage with normal or increased GFR (>90); Clinical presentations include nephrotic syndrome, nephritic syndrome, tubular syndromes, urinary tract syndromes, asymptomatic urinary or radiologic abnormalities, hypertension due to kidney disease. Diagnose and treat kidney disease and comorbid conditions to slow progression and reduce cardiovascular disease (CVD) risk.

Stage 2: Kidney damage with mild or decreased GFR (60-89); May present with mild complications. Estimate progression.

Stage 3: Moderately decreased GFR (30-59); May present with moderate complications. Evaluate and treat complications by assessing presence of anemia, nutritional status, bone metabolism and indices of functioning and well being.

Stage 4: Severely decreased GFR (15-29); May present with severe complications. Refer to nephrologists and prepare for kidney replacement therapy (KRT).

Stage 5: Kidney failure (GFR <15 or dialysis); May present with uremia and cardiovascular disease. Requires KRT.

Factors Affecting Individuals at Increased Risk for Chronic Kidney Disease:

Clinical factors

Diabetes
Hypertension
Autoimmune diseases
Systemic infections
Urinary tract infections or stones
Lower urinary tract obstruction
Neoplasia
Family history of CKD
Recovery from acute kidney failure
Reduction of kidney mass
Exposure to certain drugs
Low birth weight

Sociodemographic factors

Older age
US ethnic minorities (*African American, Native American, Hispanic, Asian, or Pacific Islander*)
Exposure to certain chemical and environmental conditions
Low income/education

Association of CKD with Cardiovascular Disease:

Patients with CKD are at increased risk of CVD including coronary heart disease, cerebrovascular disease, peripheral vascular disease and heart failure. They should be considered in the highest risk group for CVD and undergo assessment and reduction in risk factors accordingly.

Evaluation and Treatment of Chronic Kidney Disease:

- Evaluate patients' specific type of kidney disease, co-morbid conditions, disease severity (assessed by kidney function - GFR), complications (related to the level of kidney function), risk for loss of kidney function, and risk for the development of cardiovascular disease.
- Therapy is based on the specific kidney diagnosis, prevention, diagnosis, evaluation and treatment of co-morbid

conditions; measures to slow the progression of kidney damage.

- Review of patient medications should be performed at each office visit. Careful consideration should be rendered to dosages based on the level of kidney function. Assessment of potential drug interactions that can also lead to adverse effects of kidney function. If possible, therapeutic drug monitoring should be performed.
- Patients with chronic kidney disease should be referred to a nephrologist for consultation and/or comanagement if there is question about preparing a clinical action plan. Patients presenting with a GFR below 30mL per minute per 1.732 should also be referred to a nephrologist.

Follow-Up:

- Patient should have an action plan based on the stage of kidney disease and the presence of other risk factors and/or co-morbidities.
- Track patient's GFR regularly to determine the stage of disease, in accordance with the NKF Classification for Chronic Kidney Disease. Measurements of serum creatinine for estimation of GFR should be rendered at least yearly and more frequently in those patients with GFR <60mL/min/1.73m2.
- Ascertain risk factors for faster versus slow GFR decline including type (diagnosis) of kidney disease, non-modifiable and modifiable factors.
- Intervene accordingly to slow progression of kidney disease in all patients with chronic kidney disease.
- Interventions that have been proven effective include:
 - Strict glucose control in diabetics
 - Strict blood pressure control
 - Angiotensin-converting enzyme inhibitor or angiotensin-2 receptor blockade with close monitoring of serum potassium and creatinine levels
- Dietary assessment and evaluation; limitation dietary protein.
- Consider lipid lowering therapy as indicated.
- Correction of anemia (target hemoglobin level is 11-12 g/dL; target hematocrit level is between 33-36%).
- Consider all patients with chronic kidney disease to be at high risk for cardiovascular disease including coronary artery disease and cerebrovascular, peripheral vascular disease and heart failure and should be assessed routinely for cardiovascular risk factors.

Patient Education:

Patients should receive written management plans based on the staging of their kidney damage. The plans should include the following facets of care:

- Assessment and management of cardiovascular and cerebrovascular risk factors.
- Monitoring of dietary protein and/or nutrition therapy with referral to registered dietician as indicated.
- Pharmacology education regarding medications contraindicated with kidney damage.
- Instruct patients and their caregivers as appropriate on signs and symptoms for central and peripheral neurological involvement.

Physician Measurement and Assessment of Compliance with Guidelines:

The percentage of members identified with diabetes and hypertension who receive an annual eGFR based on their serum creatinine levels.

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