

Clinical Practice Guidelines

Chronic Kidney Disease

Objective

Guide the appropriate diagnosis and management of Chronic Kidney Disease.

Guideline

MDwise supports chronic kidney disease management recommendations from the National Kidney Foundation

National Kidney Foundation. [KDOQI Clinical Practice Guidelines for Chronic Kidney Disease: Evaluation, Classification and Stratification](#). Am J Kidney Dis 39:S1-S266, 2002

(suppl 1) [KDOQI Clinical Practice Guideline for Diabetes and CKD: 2012 Update](#)

Guidelines are included in the MDwise Provider Manual and posted on the MDwise Web site. They are available individually as requested.

Diagnosis and Staging

Asthma is a heterogeneous disease usually characterized by chronic airway inflammation.

It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and intensity, together with variable expiratory limitation.

Medication Options

DIAGNOSIS: (1) CKD defined as either kidney damage or GFR <60 mL/min/1.73m² for ≥ 3 months; kidney damage refers to pathological abnormalities or markers of damage, including lab abnormalities (2) definitive diagnosis: biopsy or imaging studies; usually only needed if not well-defined clinical presentation and minimal identified causal factors (3) factors that may guide diagnosis include: symptoms during urination, infections, diabetes, heart failure, cirrhosis, hypertension, other disease states, family history of kidney disease.

FIVE STAGES OF CKD:

Stage 1: (1) kidney damage with normal OR increased GFR (2) GFR ≥ 90 mL/min/1.73m² (3) diagnosis, slowing progression, treatment of comorbid conditions (4) clinical presentation: markers of damage such as nephritic syndrome, tubular syndromes, and urinary tract syndromes

Stage 2: (1) kidney damage with mild decrease in GFR (2) GFR 60-89 mL/min/1.73m² (3) evaluating extent of progression (4) clinical presentation: mild complications

Stage 3: (1) moderate decrease in GFR (2) GFR 30-59 mL/min/1.73m² (3) treating complications (4) clinical presentation: moderate complications

Stage 4: (1) severe decrease in GFR (2) GFR 15-29 mL/min/1.73m² (3) preparation for kidney replacement therapy (4) clinical presentation: severe complications

Stage 5: (1) kidney failure (2) GFR <15 mL/min/1.73m² (or dialysis) (3) kidney replacement therapy if uremia present (4) clinical presentation: uremia, cardiovascular disease

LAB EVALUATION: (1) proteinuria: untimed ("spot") urine samples/first morning specimens preferred (2) urine sediment examination or dipstick for red blood cells and white blood cells (3) imaging studies (4) blood pressure (5) serum creatinine to estimate GFR (6) serum electrolytes (sodium, potassium chloride, bicarbonate)

REFER TO NEPHROLOGIST IF GFR <30 ML/MIN/1.73 m² AND/OR IF UNABLE TO PREPARE/PERFORM THE FOLLOWING: (1) clinical action plan (2) evaluation of patient (3) recommended treatment

Table 5. Potentially Modifiable Risk Factors for Development and Progression of Chronic Kidney Disease According to Stage

Stage	Description	Risk Factors																	
		Lack of Awareness	Proteinuria	Hypertension	Dyslipidemia	Hyperglycemia	Anemia	Nutritional Factors	Thrombogenic Factors	Oxidative Stress	Elevated Homocysteine	Menopause	Smoking	Infection/Inflammation	Other Uremic Toxins	Depression/ Poor Mental Health	Poor Physical Functioning	Vocational Disability	Poor Social Functioning
	At increased risk																		
1	Kidney damage with normal or ↑ GFR																		
2	Kidney damage with mild ↓ GFR																		
3	Moderate ↓ GFR																		
4	Severe ↓ GFR																		
5	Kidney Failure																		

KDOQI Guidelines

Treatment General Approach

APPROACH BASED ON SLOWING PROGRESSION OF KIDNEY DISEASE

	Strict Glycemic Control	ACEIs or ARBs	Strict BP Control	Dietary Restriction
Diabetic Kidney Disease	Target HbA1c 7.0% or less to prevent or delay progression of the microvascular complications of diabetes except in patients with comorbidities or limited life expectancy and risk of hypoglycemia	- BP control decreases development of microalbuminuria in type 2 diabetes - ACEIs and ARBs slow progression of CKD	<125/<75 mm Hg	No recommendations pending further KDIGO research and review
Nondiabetic Kidney Disease	None noted	ACEIs and ARBs slow progression of CKD	<130/85 mm Hg & <125/<75 mm Hg if proteinuria	
Kidney Disease in Transplant	Data supporting changes to target HbA1c from what is noted above are very limited therefore no changes recommended at this time	In the absence of adequate clinical trials, it is not known whether ACEIs or ARBs prolong recipient or allograft survival	<130/85 mm Hg & <125/<75 mm Hg if proteinuria	

KDOQI Guidelines

Treatment and Prevention

APPROACH BASED ON SLOWING PROGRESSION OF KIDNEY DISEASE

Blood Pressure	<ul style="list-style-type: none"> - Treat according to established guidelines with appropriate pharmacologic therapy - ACEI or ARB (KDOQI) - Meet specified target levels - Elevated blood pressure is associated with worse outcomes for CKD patients and strict BP control decreases progression of CKD
Lab Values	<ul style="list-style-type: none"> - Evaluate and treat serum creatinine to GFR at least twice annually for moderate and high risk members Stage 3 and higher - Monitoring proteinuria should be done via quantitative means i.e. protein-to-creatinine ratio or albumin-to-creatinine ratio - Two or more positive quantitative tests spaced by one to two weeks is persistent proteinuria and need for further evaluation and management for CKD - Hemoglobin (Hgb) annually - Monitor Lipids and treat with appropriate Statin or fibric acid derivative (KDOQI)
Anemia	<ul style="list-style-type: none"> - Assess for anemia at least annually for therapy and administer transfusions, EPOGEN, PROCRIT, iron supplements oral or intravenous (iron dextran, sodium ferric gluconate, and iron sucrose) (KDOQI)
Diabetes Mellitus	<ul style="list-style-type: none"> - If diabetic kidney disease, monitor for diabetic complications such as retinopathy, cardiovascular disease, neuropathy - Evaluate and manage according to established guidelines - Strict glycemic control shown to decrease progression of CKD
Nephrologist	<ul style="list-style-type: none"> - At least annually for moderate and high risk members Stage 3 and higher
Dietician	<ul style="list-style-type: none"> - Visit annually to review any need for changes in moderate and high risk members Stage 3 and higher
Vaccinations	<ul style="list-style-type: none"> - Immunization strategies should be formulated early in the course of progressive renal disease to maximize the likelihood of vaccine-induced immunity (ACIP) - Influenza annually - For adults 19 and older for Pneumonia never vaccinated: <ul style="list-style-type: none"> - Administer 1 dose of PCV13 first then - > 8 weeks later administer PPSV23 - 5 years later administer one dose of PPSV23
Renal Replacement Therapy	<ul style="list-style-type: none"> - Initiate preparation for renal replacement therapy (dialysis and transplantation), as well as vascular access care, when GFR <30 mL/min

References

- National Kidney Foundation, [*KDOQI Clinical Practice Guidelines for Chronic Kidney Disease: Evaluation, Classification and Stratification*](#). Am J Kidney Dis 39:S1-S266, 2002 (suppl 1)
- National Kidney Foundation, [*KDOQI Clinical Practice Guidelines for Diabetes and Chronic Kidney Disease: 2012*](#)
- Guidelines for Vaccinating Kidney Dialysis Patients and Patients with Chronic Kidney Disease: Recommendations of the Advisory Committee on Immunization Practices (ACIP) July 2015
- National Kidney Foundation, [*KDOQI Clinical Practice Guidelines on Hypertension and Antihypertensive Agents in Chronic Kidney Disease.: 2004*](#)
- KDOQI US Commentary on the 2009 KDIGO Clinical Practice Guideline for the Care of Kidney Transplant Recipients, American Journal of Kidney Diseases, Vol 56, No 2, August 2010
- KDOQI US Commentary on the 2012 KDIGO Clinical Practice Guideline for the Evaluation and Management of CKD, American Journal of Kidney Diseases, Vol 63, Issue 5, 713-735 May, 2014
- National Kidney Foundation. KDOQI Clinical Practice Guidelines and Clinical Practice Recommendations for Anemia in Chronic Kidney Disease. Am J Kidney Dis 47:S1-S146, 2006 (suppl 3)
- National Kidney Foundation. KDOQI Clinical Practice Guidelines and Clinical Practice Recommendations for Anemia in Chronic Kidney Disease 2007 KDOQI update of Hemoglobin Target. Am J Kidney Dis 50: No 3 September S471-S530, 2007
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