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


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

DIAGNOSIS AND STAGING

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) treated 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>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>Lack of Awareness</th>
<th>Proteinuria</th>
<th>Hyper tension</th>
<th>Diabetic kidney</th>
<th>Hypertension</th>
<th>Anemia</th>
<th>Nutritional Factors</th>
<th>Thrombotic Factors</th>
<th>Oxidative Stress</th>
<th>Elevated Hematocrit</th>
<th>Hypertension</th>
<th>Smoking</th>
<th>Infection/Inflammation</th>
<th>Other Uremic Toxins</th>
<th>Depression</th>
<th>Poor Mental Health</th>
<th>Poor Physical Functioning</th>
<th>Poor Physical Disability</th>
<th>Poor Social Functioning</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Kidney damage with normal or ↑ GFR</td>
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<td>Kidney damage with mild ↓ GFR</td>
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<td>Moderate ↓ GFR</td>
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<td>Severe ↓ GFR</td>
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<td>Kidney Failure</td>
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KDOQI Guidelines
TREATMENT GENERAL APPROACH

APPROACH BASED ON SLOWING PROGRESSION OF KIDNEY DISEASE

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

TREATMENT AND PREVENTION

Treatment is based on diagnosis, comorbidities, slowing loss of renal function, prevention and treatment of complications and cardiovascular disease, preparation for renal replacement therapy if appropriate, and assessing if signs and symptoms of uremia are present to determine the need for dialysis and transplantation.

Blood Pressure
- 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
- 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
- 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
- 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
- At least annually for moderate and high risk members Stage 3 and higher

Dietician
- Visit annually to review any need for changes in moderate and high risk members Stage 3 and higher

Vaccinations
- 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:
  - Administer 1 dose of PCV13 first then
  - > 8 weeks later administer PPSV23
  - 5 years later administer one dose of PPSV23

Renal Replacement Therapy
- 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 Diabetes and Chronic Kidney Disease: 2012*


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


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