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Quality Innovation Network -  
Quality Improvement Organizations  
*CENTERS FOR MEDICARE & MEDICAID SERVICES*  
*QUALITY IMPROVEMENT & INNOVATION GROUP*




# Understanding Chronic Kidney Disease

## A Conversation Starter for Patients and Their Healthcare Team






**Chronic Kidney Disease  
Awareness and Prevention  
Program (CKD-APP)**

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<b>STAGES OF CHRONIC KIDNEY DISEASE</b>		<b>STAGE 1</b>	<b>STAGE 2</b>	<b>STAGE 3A</b>
		<b>Normal Kidney Function</b>	<b>Mild Loss of Kidney Function</b>	<b>Mild to Moderate Loss of Kidney Function</b>
	<b>Kidney Damage</b>	<b>0–10% Damage</b> 	<b>11–40% Damage</b> 	<b>41–55% Damage</b> 
<b>TESTS</b>	<b>Glomerular Filtration Rate (GFR) Blood Test</b>	<b>90 or Higher</b>	<b>89 to 60</b>	<b>59 to 45</b>
	<b>Albumin to Creatinine Ratio (ACR) Urine Test</b>	Normal to Mildly Increased Amounts of Protein in Urine - ACR: < 30 mg/g		Moderately Increased Amounts of Protein in Urine - ACR: 30–300 mg/g If three months or more, may indicate CKD.
	<b>ACR Range</b>	<b>Normal Range</b> →		<b>Moderate Range</b> →
	<b>Symptoms</b>	<b>STAGE 1</b> Symptoms you have may or may not be related to chronic kidney disease. <b>You won't know unless you have both the GFR and ACR tests done.</b>	<b>STAGE 2</b> Symptoms you have may or may not be related to chronic kidney disease. <b>You won't know unless you have both the GFR and ACR tests done.</b>	<b>STAGE 3A</b> <ul style="list-style-type: none"> <li>• Changes in urination</li> <li>• Blood in urine</li> <li>• Protein in urine</li> <li>• Swelling of hands, face, feet, ankles</li> <li>• Fatigue</li> <li>• Sleeping problems</li> </ul>
	<b>Complications</b>	<b>STAGE 1</b> ..... Complications you have may or may not be related to chronic kidney disease. <b>You won't know unless you have both the GFR and ACR tests done.</b>	<b>STAGE 2</b> ..... Complications you have may or may not be related to chronic kidney disease. <b>You won't know unless you have both the GFR and ACR tests done.</b>	<b>STAGES 3A, 3B, 4, 5</b> ..... ANEMIA HIGH POTASSIUM (Hyperkalemia) HIGH PHOSPHORUS & BONE DISEASE (Hyperphosphatemia) HEART DISEASE FLUID ACCUMULATION

**Self-management Tips...** Eat healthy and keep blood pressure and blood sugar under control. ....

	<b>STAGE 3B</b> Moderate to Severe Loss of Kidney Function	<b>STAGE 4</b> Severe Loss of Kidney Function	<b>STAGE 5</b> Kidney Failure
	<b>60–70% Damage</b> 	<b>71–85% Damage</b> 	<b>More than 85% Damage</b> 
	<b>44 to 30</b>	<b>29 to 15</b>	<b>Less than 15</b>

Severely Increased Amounts of Protein in Urine - ACR: > 300 mg/g

**Severe Range** 

<b>STAGE 3B</b>	<b>STAGE 4</b>	<b>STAGE 5</b>
<ul style="list-style-type: none"> <li>• Changes in urination</li> <li>• Blood in urine</li> <li>• Protein in urine</li> <li>• Swelling of hands, face, feet, ankles</li> <li>• Fatigue</li> <li>• Sleeping problems</li> </ul>	<b>SAME AS STAGES 3A AND 3B, PLUS...</b> <ul style="list-style-type: none"> <li>• Unpleasant breath</li> <li>• Nausea/vomiting</li> <li>• Changes in appetite</li> <li>• Poor concentration</li> <li>• Nerve problems</li> </ul>	<b>SAME AS STAGE 4, PLUS...</b> <ul style="list-style-type: none"> <li>• Headaches</li> <li>• Changes in skin</li> <li>• Chronic Itching</li> </ul>

- Kidneys don't make enough blood cells to supply enough oxygen to the body.
- Kidneys can't keep the right amount of minerals like potassium, in the body.
- Kidneys can't remove wastes, like extra potassium, from the blood.
- Kidneys can't keep the right amount of minerals in the body.
- Kidneys can't activate vitamin D.
- Kidneys can't keep the amount of calcium and phosphorus balanced; therefore, bones can get weak.
- Damage to kidney blood vessels makes it hard for the kidneys to get enough blood and oxygen.
- CKD makes it hard for the kidneys to release hormones that regulate blood pressure.
- The heart has to work harder to pump enough blood for the kidneys and body.
- Kidneys can't keep the right amount of water in the body. Feet, ankles, hands and face can swell.
- Too much fluid can lead to heart and breathing problems. More blood volume can increase blood pressure.

..... **Work with a Nephrologist and Registered Dietitian Nutritionist (RDN) to support your kidney health.** .....

## Questions to Ask Your Healthcare Team

### Primary Care Doctor:

- What are my risk factors for chronic kidney disease (CKD)?
- What are the most recent results of my **GFR** (Glomerular Filtration Rate) **blood test** *and* **ACR** (Albumin-to-Creatinine Ratio) **urine test**?
- Should I be referred to a **Registered Dietitian Nutritionist** (RDN) or **Certified Diabetes Care and Education Specialist** (CDCES)?
- Should I make an appointment with a Nephrologist? The National Institute for Health and Care Excellence (NICE) 2021 guideline suggests the use of kidney failure risk equation (KFRE) to estimate the 5-year risk of needing renal replacement therapy. You should see a nephrologist if your risk score is 5% or higher.
- Review your Kidney Failure Risk Calculator: <https://kidneyfailurerisk.com> results with your doctor.



### Pharmacist:

- How can I prevent experiencing adverse drug events while taking my current medications?

### Registered Dietitian Nutritionist or Certified Diabetes Care and Education Specialist:

- How do my **blood and urine** test results influence my dietary needs?
- How can I use food to help manage my medical conditions and prevent health complications?
- What can I do to **improve my physical activity** level?

### Social Worker:

- Can you help me coordinate my **kidney care services**, follow-up appointments, and referrals to specialists?
- Can you connect me to social service resources and support programs available in my community?

### Counselor, Psychologist, or Psychiatrist:

- How do my **emotions** affect my **physical symptoms**?
- How can chronic kidney disease affect my emotional and **mental health**?

## If you are referred to a Nephrologist, you can ask these questions:

- Do I have chronic kidney disease (CKD)? If yes, what stage of CKD do I have?
- What are my **treatment** options?
- Should I be referred to a **Renal Dietitian Nutritionist**?
- How can I start preparing for a kidney transplant (especially if my GFR is 20 or below)?
- What options are available to me for at-home *and* in-center hemodialysis or peritoneal dialysis treatment?

## My notes and next steps are: