

GFR (GLOMERULAR FILTRATION RATE)

A Key to Understanding How Well Your Kidneys Are Working



National
Kidney
Foundation™

www.kidney.org

National Kidney Foundation's Kidney Disease Outcomes Quality Initiative

Did you know that the National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (NKF-KDOQI)[™] has guidelines that help your doctor and health care team make important decisions about your medical treatment? The information in this booklet is based on the NKF-KDOQI recommended guidelines.

Stages of Kidney Disease

There are five stages of kidney disease. They are shown in the table below. Your doctor knows your stage of kidney disease based on the presence of kidney damage and your glomerular filtration rate (GFR), which is a measure of your kidney function. Your treatment is based on your stage of kidney disease. Speak to your doctor if you have any questions about your stage of kidney disease or your treatment.

STAGES OF KIDNEY DISEASE

Stage	Description	Glomerular Filtration Rate (GFR)*
1	Kidney damage (e.g., protein in the urine) with normal GFR	90 or above
2	Kidney damage with mild decrease in GFR	60 to 89
3a	Moderate decrease in GFR	45 to 59
3b	Moderate decrease in GFR	30 to 44
4	Severe reduction in GFR	15 to 29
5	Kidney failure	Less than 15

*Your GFR number tells your doctor how much kidney function you have. As chronic kidney disease progresses, your GFR number decreases.

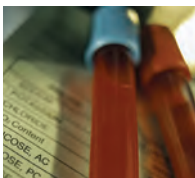
Why GFR is Important

Most people are aware that their blood pressure and cholesterol numbers are important in knowing their risk for heart and blood vessel disease. Yet few know about glomerular filtration rate (GFR), one of the numbers that tells them about the health of their kidneys. This brochure explains what GFR is, how it is measured, and why it is important in understanding chronic kidney disease (CKD).

How do doctors check for chronic kidney disease?

Kidney disease can be found with two simple tests:

1. A urine test for protein (protein is a sign of kidney damage)
2. A blood test for creatinine (used to estimate glomerular filtration rate (GFR))



Even if these tests are normal now, they should be repeated in the future, especially if you are at increased risk for kidney disease. (see page 8)

Wouldn't I know if something was wrong with my kidneys?

Not always. Early kidney disease can be silent, without pain or other symptoms. Most people do not know that they have early kidney disease. When kidney disease gets worse, some people do notice problems such as swelling, high blood pressure, nausea, poor appetite, and vomiting.

What is the glomerular filtration rate (GFR)?

When your kidneys are working well, they filter out wastes and excess fluid that become part of the urine your body makes each day. When kidneys aren't working well, you do not remove enough wastes and fluids to keep you healthy. You also cannot make important hormones for your blood and bones. Your GFR number is an estimate of how well your kidneys are working and keeping you healthy.

If your GFR number is low, your kidneys are not working as well as they should. Early detection will allow for early treatment. Early treatment may keep kidney disease from getting worse.

How is GFR checked?

Having a simple blood test for creatinine is the first step in checking your GFR. Creatinine is a waste product made by your body's muscles. Your kidneys usually keep the level of creatinine just right. The level of creatinine in your blood and your age, race and gender are used to estimate your GFR.

Do you know what your GFR is?

Your doctor or testing lab usually calculates your GFR number. Be sure to talk with your doctor about the result.

What is a normal GFR number?

In adults, the normal GFR number is more than 90. For more information, see chart on the bottom of page 2.

Age (years)	Average estimated GFR
20-29	116
30-39	107
40-49	99
50-59	93
60-69	85
70+	75

GFR declines with age, even in people without kidney disease.

If your GFR is between 60 and 89...

People with mildly low GFR (between 60 and 89) may not have kidney disease if there is no sign of kidney damage, such as protein in their urine. These people should have their GFR checked more often. They may be asked to avoid medications that can damage the kidneys (such as ibuprofen) or reduce the dose of medicines that are removed by the kidneys.

If there is kidney damage, such as protein in the urine, a result between 60 and 89 may mean early kidney disease. Even a GFR over 90 with protein in the urine is a sign of kidney disease. GFR must remain low for three months for CKD to be diagnosed.

If your GFR is below 60...

When GFR is below 60 for more than three months, this is moderate-to-severe chronic kidney disease. You may be referred to a nephrologist (kidney doctor) for evaluation and treatment.

If your GFR is below 15...

A GFR below 15 means kidney failure. If kidney failure occurs, dialysis or a kidney transplant will be needed to survive.

Does age affect GFR?

Yes. GFR gets lower with age, even in people without kidney disease.

The older you are, the lower your GFR. The GFR calculation accounts for age.

At any age, a GFR below 60 for three months or more indicates kidney disease.

If my GFR is not normal, what are the next steps?

More tests will be done to understand why it is low. The results of these tests may provide clues about what is happening. Examples of tests that might be ordered are:

- Urine tests that look for:
 - The type and amount of protein (a sign of kidney damage)
 - Red blood cells (a sign of bleeding in the urinary system)
 - White blood cells (a sign of infection).

- Ultrasound or CT scan to get a picture of your kidneys and urinary system. These pictures show the size of your kidneys and whether or not tumors, kidney stones, or cysts are present.
- A biopsy to remove a tiny piece of the kidney for evaluation. The sample is studied under a microscope to see what kind of kidney damage is happening.

Am I at increased risk for kidney disease?

Some people are more likely than others to develop kidney disease. You may be at increased risk for kidney disease if you:

- Have diabetes
- Have high blood pressure
- Have a family history of kidney disease
- Are over 60 years of age
- Are African American, Hispanic, Asian or American Indian.

Are there free kidney health screenings near me?

Yes! The National Kidney Foundation offers free health screenings throughout the United States. You can search by zip code for the local Kidney Early Evaluation Program (KEEP®) screenings at: **www.kidney.org/KEEP** This program offers free screening tests for: anyone 18 years and older with high blood pressure, diabetes or a family history of diabetes, high blood pressure or kidney disease. Each person receives a health risk assessment, blood pressure measurement, and blood and urine tests. They also have the opportunity to discuss their health and review test results with on-site healthcare professionals.



The National Kidney Foundation offers free health screenings throughout the United States.

If the tests find chronic kidney disease (CKD), what does it mean for my health?

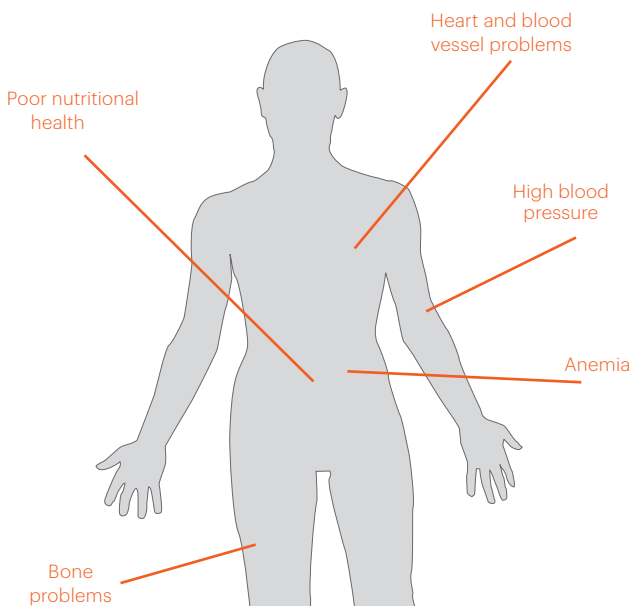
If you have CKD, your kidneys have lost some of their ability to keep you healthy. They aren't able to do their jobs: filter the blood, make important hormones and maintain the healthy balance of calcium, sodium and other substances.

The most common causes of CKD are diabetes and high blood pressure.

There are also problems caused by kidney disease like high blood pressure, anemia, weak bones, malnutrition and heart disease.

Can treatment keep kidney disease from getting worse?

The earlier your kidney disease is found, the better. If it is found and treated early, you may be able to keep it from getting worse. That is why it is so important for people with risk factors to be evaluated for kidney disease. (see page 8)



Kidney disease affects many areas of the body.

The success of treatment depends on a number of things:

- Your stage of kidney disease when you start treatment. The earlier you start, the better you are likely to do.
- How carefully you follow your treatment plan. Learn all you can about chronic kidney disease and its treatment. Talk to your doctor about what you can do.

How is kidney disease treated?

Treatment depends on your stage of kidney disease and other health problems you may have. If you follow your treatment plan carefully, you are doing your part to help your kidneys work as well as they can for as long as possible.

Control high blood pressure

If you have CKD, the target blood pressure is usually 130/80 mm Hg or lower. There are different targets for some people, based on other factors or diseases they have, so ask your doctor what your target is.

High blood pressure is treated with:

- Blood pressure medicines. In people with kidney disease, these are usually angiotensin-converting enzyme (ACE) inhibitors or angiotensin-receptor blockers (ARBs). Studies have shown that these medicines help protect your kidneys. Your doctor may find that you also need other types of blood pressure medicines.
- Exercise
- Weight control if you are overweight
- Low salt diet

Treat other health problems such as:

- High cholesterol
- Anemia (low red blood cell count)
- Bone disease

Follow a healthy lifestyle

- Lose weight if you are overweight.
- Exercise regularly.
- Do not smoke.
- Make healthy food choices.
- Use only the medicines, vitamins and supplements that your doctor recommends. Some medicines without a prescription can hurt the kidneys.
- Visit your doctor or clinic regularly. Any changes in your GFR, protein in the urine or blood pressure should be caught early.

Control high blood sugar if you have diabetes

- Monitor your blood sugar often. Discuss the results with your doctor.
- Make food choices recommended by your doctor or dietitian.
- Take medicines and/or insulin as prescribed by your doctor.

- Exercise regularly.
- Visit your doctor regularly.

What is kidney failure?

Some people with CKD may get kidney failure (GFR less than 15). This means they do not have enough kidney function to survive. They will need either dialysis treatment or a kidney transplant.

- Dialysis is a treatment that removes wastes and excess fluid from your blood. Two types of dialysis are available: hemodialysis or peritoneal dialysis.
- A kidney transplant is an operation to replace damaged kidneys with a donated kidney. The kidney may come from a living donor (usually a relative or friend) or someone who has died and wanted to be an organ donor.

NOTES

The National Kidney Foundation is the leading organization in the U.S. dedicated to the awareness, prevention and treatment of kidney disease for hundreds of thousands of healthcare professionals, millions of patients and their families and tens of millions of Americans at risk.



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30 East 33rd Street
New York, NY 10016



Awareness. Prevention. Treatment.

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800.622.9010