

GFR (Glomerular Filtration Rate)

A Key to Understanding How Well Your Kidneys Are Working



National
Kidney
Foundation™

www.kidney.org

About the Information in this Booklet

Did you know that the National Kidney Foundation (NKF) offers guidelines and commentaries that help your healthcare provider make decisions about your medical treatment? The information in this booklet is based on those recommended guidelines.

Stages of Kidney Disease

There are five stages of kidney disease. They are shown in the table below. Your healthcare provider determines 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 healthcare provider 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
3	Moderate decrease in GFR	30 to 59
4	Severe reduction in GFR	15 to 29
5	Kidney failure	Less than 15

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

Why is GFR 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 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.

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 around the ankles, puffiness around the eyes, high blood pressure, nausea, poor appetite, or vomiting.

What is glomerular filtration rate (GFR)?

Your GFR tells a lot about how well your kidneys are working. Your kidneys are important. They keep you healthy. They filter out waste and extra fluid from your blood, help make red blood cells, and keep your bones strong.

When kidneys aren't working well, wastes build up in your blood. Your bones can become weak. You may not have enough red blood cells for your body's needs. Your GFR number is an estimate of how well your kidneys are working.

If your GFR number is low, your kidneys are not working as well as they should. It's important to find this out early. Early treatment may help 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 healthcare provider 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.

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 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 kidney disease to be diagnosed.

If your GFR is below 60...

When GFR is below 60 for more than three months, it usually means you have moderate-to-severe 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 for you to stay alive.

Does age affect GFR?

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

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

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

GFR Declines with Age (even in people without kidney disease)	
Age (years)	Average estimated GFR
20-29	116
30-39	107
40-49	99
50-59	93
60-69	85
70+	75

If my GFR is low, 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 in your urine (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 failure
- Are age 60 or older
- Are Black, Hispanic, Asian, Pacific Islander, or American Indian

If the tests find kidney disease, what does it mean for my health?

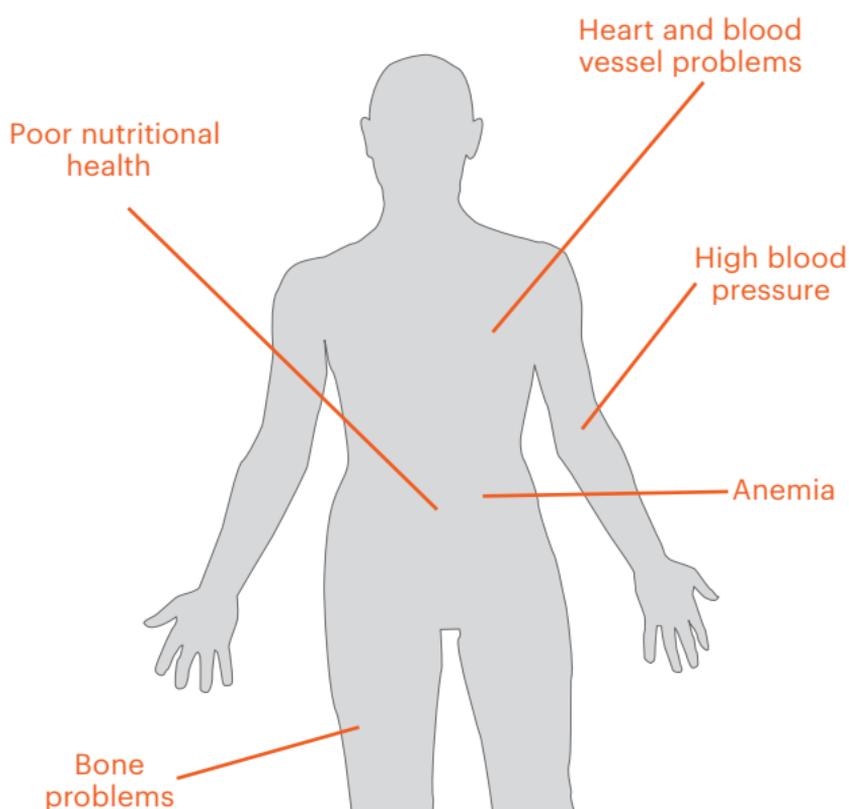
If you have kidney disease, your kidneys have lost some of their ability to keep you healthy. They aren't able to do their jobs: filter your blood, help make red blood cells, and keep bones strong.

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

There are also other problems caused by kidney disease like high blood pressure, poor nutrition, 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 tested for kidney disease.



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 kidney disease and its treatment. Talk to your doctor about what you can do.
- What caused your kidney disease. Some kidney diseases are more difficult to control.

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.

Your treatment may include:

- Controlling blood pressure
- Controlling blood sugar if you have diabetes
- Treating other health problems
- Following a healthy lifestyle

Control high blood pressure

If you have kidney disease, the target blood pressure is usually 140/90 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
- Exercise
- Weight control if you are overweight
- Low-salt diet

Control high blood sugar if you have diabetes

- Monitor your blood sugar often. Discuss the results with your healthcare provider.
- Make food choices recommended by your healthcare provider or dietitian.
- Take medicines and/or insulin as instructed by your healthcare provider.
- Exercise regularly.
- Visit your healthcare provider regularly.

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 healthcare provider recommends. Some over-the-counter medicines

and herbal supplements can hurt the kidneys.

- Visit your healthcare provider regularly. Any changes in your GFR, protein in the urine, or blood pressure should be caught early.

What is kidney failure?

If your kidney disease gets worse, you may get kidney failure (GFR less than 15). This means you do not have enough kidney function to survive. You will need either dialysis treatment or a kidney transplant.

- Dialysis is a treatment that removes wastes and extra 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.

Your healthcare provider can explain dialysis and kidney transplantation to you. If your kidneys fail, your healthcare provider will help you choose a treatment based on

your overall health, lifestyle, and preference. With treatment, it's possible to live a long and active life.

Where can I get more information?

If you have questions, speak to your healthcare team. They know you and can answer questions about you.

You can also call the National Kidney Foundation Cares Patient Help Line toll-free at **855.NKF.CARES** (855.653.2273) or email **nkfcares@kidney.org**.

A trained professional will listen to your concerns and answer your questions.

If you want to read more about kidney disease, the National Kidney Foundation has a lot of information on many topics, such as:

- Choosing a treatment for kidney failure
- Hemodialysis
- Peritoneal dialysis
- Kidney transplant
- Coping with kidney disease

Key Points to Remember:

- Two simple tests will find chronic kidney disease:
 1. A urine test for protein
 2. A blood test for creatinine to estimate GFR
- Get a blood pressure measurement.
- GFR is an important number that estimates how much kidney function you have.
- If you have kidney disease, a treatment plan will be developed especially for you. It will be based on your GFR, the cause of your kidney disease, and other health factors.
- Your doctor will monitor your stage of kidney disease using your GFR. You should keep track of it, too.
- You can keep kidney disease from getting worse by following your treatment plan carefully.
- If kidney disease progresses to kidney failure, you will need dialysis or a kidney transplant to stay alive.

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.

Help fight kidney disease.

Learn more at **www.kidney.org**



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Awareness. Prevention. Treatment.
