URINALYSIS AND KIDNEY DISEASE

What You Need To Know

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.

What is a urinalysis (also called a "urine test")?

A urinalysis is a simple test that looks at a small sample of your urine. It can help find conditions that may need treatment, including infections or kidney problems. It can also help find serious diseases in the early stages, like chronic kidney disease, diabetes, or liver disease. A urinalysis is also called a **"urine test."**

Who should have a urine test?

Everyone can have a simple urine test. Ask your healthcare provider about having one. A urine test is very important if you are at risk for kidney problems, diabetes, or other health conditions. Finding a health problem is the first step toward making it better.

How is a urine test done?

You will be asked to pee into a clean cup called a "specimen cup." Only a small amount of your urine is needed (about 2 tablespoons) to do the test. Some of the urine is tested right away with a dipstick — a thin, plastic strip that is placed in the urine. (See "Dipstick test" below.) The rest is examined under a microscope.

Is a urine test expensive?

The test does not cost very much. Most health insurance plans will cover the cost.

What does a urine test include?

A urine test has three parts:

1. **Visual exam.** The urine will be looked at for color and clearness. Blood may make urine look red or the color of tea or cola. An infection may make urine look cloudy. Foamy urine can be a sign of kidney problems.

2. **Dipstick test.** A dipstick is a thin, plastic stick with strips of chemicals on it. It is dipped into the urine. The strips change color if a substance is present at a level that is above the normal range. A dipstick checks for the following:

- **Acidity (pH)** is a measure of the amount of acid in the urine. A pH that is above the normal range may mean you are at risk for a kidney stone, urinary infection, kidney problem, or other disorder.

- **Protein** is an important building block in the body. Everyone has protein in their blood. But it should only be in your blood, not in your urine. Your kidneys play a role in this process. Healthy kidneys remove waste products and extra water from your blood, but leave behind the things your body needs, like protein. When your kidneys are injured, protein leaks into your urine. Having protein in your urine suggests that your kidneys' filtering units are damaged by kidney disease.

- **Glucose (sugar)** is usually a sign of diabetes.

- **White blood cells (pus cells)** are signs of infection.

- **Bilirubin** is a waste product from the breakdown of old red blood cells. It is normally removed from the blood by the liver. Its presence in the urine may be a sign of liver disease.

- **Blood** can be a sign of an infection, a kidney problem, certain medicines, or even heavy exercise. Finding blood in the urine requires further testing. It does not always mean you have a serious medical problem.

3. **Microscopic exam.** A small amount of urine will be looked at under a microscope. Some of the things that may be seen include:
    - **Red blood cells**, which may be a sign of kidney disease, kidney stones, infections, or bladder cancer.
    - **White blood cells (or pus cells)**, which are a sign of an infection.
    - **Casts**, which are tube-shaped forms made of protein, and may have red or white blood cells or other cells inside. Casts may form as the result of certain kidney disorders.
    - **Crystals**, which are formed from chemicals in the urine. If they become large enough, they become kidney stones.

How long does it take to get my results?

A urine test can be done right in your healthcare provider's office. The test takes only a few minutes to do. You can discuss the results with your healthcare provider right away.

A urine test can also be sent to a laboratory. A lab can provide results for routine testing within one to two days.

Can any drugs or vitamins affect the results?

Yes, some drugs and vitamins can affect the results of a urine test. This includes over-the-counter medications and supplements. For example, vitamin C pills can cause you to test positive for a problem you do not have. This is called a "false positive." It means you do not have the problem, even though your test indicates that you do. Be sure to tell your healthcare provider about all the medications and vitamins you take before you have a urine test.

What if my urine test shows an infection?

Many people get urinary tract infections (UTIs). This can happen if bacteria (germs) get into the urinary tract (the bladder) and multiply. UTIs are treated with pills called "antibiotics." If a UTI is not treated, the bacteria can travel up to the kidneys and cause a more serious type of infection, called pyelonephritis. Pyelonephritis is an actual infection of the kidney and it is very important to get treatment for it.

Do UTIs lead to kidney disease?

Not usually. In most cases, UTIs can be treated successfully without causing kidney problems.

What does it mean if my urine test shows blood or protein?

It could mean you have kidney disease. Your healthcare provider will repeat your test and confirm the results.

- **Blood in the urine.** Finding blood in the urine requires further testing. It may be a sign of kidney disease or other disorders.
- **Protein in the urine**. Having protein in the urine for three months or more is a sign of kidney disease.

If kidney disease is suspected, you will be given follow-up tests to confirm your diagnosis, check your kidney function, and plan your treatment, if needed.

There are two simple tests for kidney disease:

- **A blood test to estimate GFR.** GFR stands for "glomerular filtration rate." Your GFR number tells you how well your kidneys are working. Your GFR is estimated from a simple blood test for a waste product called creatinine. Your creatinine number is used in a math formula along with your age, race, and gender to find your GFR.
- **A test called ACR.** ACR stands for "albumin-to-creatinine ratio." A sample of your urine will be sent to a lab. The lab will check your urine for albumin. Albumin is a type of protein that is normally found in your blood. Having albumin in your urine (three positive results over three months or more) is a sign of kidney disease.

You may also be given:

- **Imaging tests (ultrasound or CT scan).** This produces a picture of your kidneys and urinary tract. It shows whether your kidneys are

too small or too large. It can also show kidney stones, tumors, or other problems.

- **A kidney biopsy.** This can help find out what caused your kidney disease and how much damage to the kidneys has happened. A biopsy is a procedure to remove tiny pieces of kidney tissue, which are looked at under a microscope. You are given medication to keep you from feeling pain during the procedure. Not everyone will need to have a kidney biopsy.

What if my tests confirm that I have chronic kidney disease?

You will be given a treatment plan to follow. Your treatment plan will be based on many things, including what caused your kidney disease, how much kidney function you have, and whether you have other health problems. It may include taking medicine, changing your diet, limiting salt, getting exercise, and more.

What is chronic kidney disease?

Chronic kidney disease is a life-long condition. If you have it, it means your kidneys cannot work as well as they used to. This can happen if kidneys become damaged.

Kidneys can become damaged from a physical injury or from a disease like diabetes, high blood pressure, or other disorders.

Healthy kidneys do many important jobs. They remove waste products and extra water from your body, help make red blood cells, and help control blood pressure. But if your kidneys are damaged, they cannot do these jobs well. That's why you need a treatment plan. A treatment plan will help you feel better and stay as healthy as you can.

The good news? For many people, a treatment plan can help stop kidney disease from getting worse. It might even make some problems better.

Will I get kidney failure?

Not everyone with kidney disease will get kidney failure. With early treatment, you can help keep your kidney disease from getting worse. If kidney disease is not treated, it can get worse. It can lead to kidney failure. Once kidneys fail, treatment with dialysis or a kidney transplant is needed. That's why it's so important to find kidney disease early and get treatment for it.

Who is at risk for kidney disease?

Anyone can get kidney disease at any age. But some people have a higher risk than others. You may have a higher risk for kidney disease if you:

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

People who are at risk for kidney disease are tested for protein in their urine. This is included in a standard urine test. Having protein in the urine

(three positive tests for protein over 3 months or more) is one of the earliest signs of kidney disease.

Have you had a simple urine test?

Having a simple urine test can help find kidney disease and other health conditions early. Finding kidney disease early is important because treatment can help keep it from getting worse. It may even make some problems better.

Where can I get more information?

If you have questions, speak to your healthcare team. 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 help answer your questions.

Where can I learn more?

If you want to learn more about kidney disease, the National Kidney Foundation has many other publications that cover many subjects:

- *What kidney disease is and who is at risk for getting it*
- *GFR (glomerular filtration rate)*
- *Diabetes and your kidneys*
- *High blood pressure and your kidneys*
- *Urinary tract infections*
- *Nutrition and diet*
- Lifestyle issues, including:
  - *Staying fit*
  - *Coping with kidney disease and kidney failure*

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

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.

Help fight kidney disease.
Learn more at **www.kidney.org**

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Awareness. Prevention. Treatment.