

What You Need to Know About Urinalysis



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A urinalysis is a simple, inexpensive test that can help to detect problems in many parts of your body including your kidneys and urinary tract, your heart and your liver. A urinalysis can help to detect many diseases before symptoms occur. Early detection and treatment can often prevent serious diseases from getting worse. More than 20 million Americans—one in nine adults—have chronic kidney disease, and most don't even know it. More than 20 million others are at increased risk for chronic kidney disease. Yet, a urinalysis can detect protein in the urine—one of the earliest signs of kidney disease—years before symptoms appear and at a time when treatment can make all the difference.

What is a urinalysis?

A urinalysis is an examination of a sample of urine that can help find medical problems like kidney disease, diabetes, liver disease and urinary tract infections.

Who should have a urinalysis?

Everyone should have a urinalysis as a child and then periodically as an adult. It's especially important for people who have an increased risk for kidney disease to be tested for protein in their urine. This is included in a urinalysis. Persistent protein in the urine (two positive tests for protein over several weeks) is one of the earliest signs of chronic kidney disease. You may be at increased risk for kidney disease if you:

- ❖ have **diabetes**
- ❖ have **high blood pressure**
- ❖ have a **family history** of chronic kidney disease
- ❖ are an **older adult**
- ❖ are an **African American, Hispanic American, Asian or Pacific Islander or American Indian.**



If you have any of these risk factors, or think you may be at increased risk for chronic kidney disease, speak to your doctor about having a urinalysis.

What does a urinalysis include?

A urinalysis has three parts:

1. **Visual examination** of the urine sample for color and clearness. Blood may make urine look red or the color of tea or cola. An infection may make urine look cloudy.
2. A **dipstick examination**, which uses a chemically treated strip to check for the following:
 - ❖ **pH** is a measure of the amount of acid in the urine. An abnormal pH may be a sign of kidney stones, urinary infections, chronic kidney disease or certain disorders that affect growth and development in children.
 - ❖ **Protein** is an important building block in the body. When your kidneys are damaged, protein leaks into your urine. Persistent protein in

protein in the urine suggests that the kidney's filtering units have been damaged by chronic kidney disease.

- ❖ **Urine Creatinine** gives an estimate of the concentration of your urine, which allows for a more accurate protein result. Creatinine is a by-product of normal muscle activity, which is found in the urine and blood.
- ❖ **Glucose (sugar)** is usually a sign of diabetes. In children, sugar in the urine may sometimes be related to a disorder that affects growth and development.
- ❖ **Bacteria** and white blood cells (pus cells) are signs of infection. Bacteria without white blood cells may suggest another type of problem such as vaginal or bladder disease.
- ❖ **Bilirubin** is a waste product from the breakdown of old red blood cells. It is normally removed from the blood by the liver and becomes part of bile. Its presence in the urine may be a sign of a liver disease.

3. Urinalysis also includes examining a small amount of urine under a **microscope**. Some of the things that may be seen include:

- ❖ **Red blood cells**, which may be a sign of kidney diseases that damage the filtering units of the kidneys, allowing blood cells to leak into the urine. Blood in the urine may also be a sign of problems like kidney stones,



infections, bladder cancer or a blood disorder like sickle cell disease. While enough blood may be present to cause a color change you can see, blood in the urine is usually so small that a microscope is needed to see it.

- ❖ **White blood cells** (or pus cells), which are a sign of an infection or inflammation in the kidneys, bladder or another area.
- ❖ **Bacteria**, or germs, which are usually a sign of an infection in the body.
- ❖ **Casts**, which are tube-shaped forms made of protein, and may have red or white blood cells or other cells inside. Casts form in certain kidney diseases because the kidneys are releasing a sticky type of protein that traps blood cells and other types of cells.
- ❖ **Crystals**, which are formed from chemicals in the urine. If they become large enough, they form kidney stones.

How is a urinalysis done?

Your urine is collected in a clean specimen cup. Some of the urine sample is tested right away with a dipstick. The rest is placed in a test tube and spun before being checked under the microscope. Only a **small amount** of your urine is needed (about 2 tablespoonfuls) to do the test. If possible, your **morning urine** is the best, but a random sample can also be used. The urine should be as fresh as possible and, therefore, should not be brought from home.

Can any drugs or vitamins affect my results?

Yes, many drugs and vitamins can affect the urinalysis. For example, vitamin C pills, antibiotics and certain drugs used to treat Parkinson's disease could cause you to have a "false" positive result, and you may need to have other tests to confirm



your result. Make sure to tell your doctor or clinic staff about all the medications and vitamins you take. Fever and heavy exercise can also give false results.

Is a urinalysis expensive? How long does it take to get my results?

A urinalysis is a **simple, inexpensive test**. Most insurance carriers cover part or all of a urinalysis test. A urinalysis can be done right in your doctor's office. The test takes only about 5 to 10 minutes to do, and you can discuss your results with your doctor right away. A urinalysis can also be done in a laboratory.

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

You may have kidney or urinary tract disease, but your doctor will need to confirm this. Persistent protein in the urine (two positive results over several weeks) is a sign of chronic kidney disease. Your doctor may do the following tests to confirm your diagnosis, check your kidney function and help plan your treatment:

- ❖ **A simple test for creatinine in your blood**, which can be used to estimate how much kidney function you have (see glomerular filtration rate). Creatinine is a by-product that comes from normal muscle activity. When your kidneys are damaged, your blood creatinine level may build to a high level.
- ❖ **Glomerular filtration rate (GFR)**, which tells your doctor how much kidney function you have. You do not need another test to check your GFR. Your doctor can calculate your GFR from your blood creatinine test, your age, gender and body size. Your GFR is the best way to track your kidney function.
- ❖ An **ultrasound** or **CT scan**, which gives your doctor a picture of your kidneys and urinary tract. This shows whether your kidneys are too small or too large or have kidney stones, tumors or other problems.
- ❖ A **kidney biopsy**, which is done in some cases to help identify a specific type of kidney disease and see how much kidney damage has occurred. To do the biopsy, the doctor removes small pieces of kidney tissue and looks at them under a microscope.

If my tests show kidney or urinary tract disease, what treatment will I need?

Your treatment plan is based on the type of kidney or urinary tract disease you have, your level of kidney function and other health problems you may have. Some diseases can be treated with medications. Others could require surgery. If severe kidney disease is found, dialysis or a kidney transplant may be needed.

Can treatment prevent chronic kidney disease from getting worse?

Yes. In many cases, early detection and treatment may keep chronic kidney disease from getting worse.

How can a urinalysis help to detect early signs of heart disease?

Studies show that people who have protein in their urine have an increased chance of developing heart disease as well as kidney disease. Many health problems that affect the kidneys, such as diabetes and high blood pressure, also affect the heart and blood vessels. Protein in the urine may be a sign that the blood vessels have already been damaged by these diseases, and organs such as the heart and kidneys have been affected.



Where can I get more information?

The National Kidney Foundation provides free community-based health programs through its Kidney Early Evaluation Program (KEEP). These programs include blood and urine tests for early detection of chronic kidney disease. Check with your local National Kidney Foundation affiliate or call the national toll-free number 1-800-622-9010 to find out if this program is available in your community.

If you have more questions about urinalysis, you should speak to your doctor. You may also be interested in the following publications available from the National Kidney Foundation:

- ❖ *Are You at Increased Risk for Chronic Kidney Disease?*
- ❖ *About Chronic Kidney Disease: A Guide for Patients and Their Families*
- ❖ *Your Kidneys: Master Chemists of the Body*
- ❖ *Warning Signs of Kidney and Urinary Tract Disease*
- ❖ *Diabetes and Kidney Disease* (available in English and Spanish)
- ❖ *High Blood Pressure and Your Kidneys* (available in English and Spanish)
- ❖ *Winning the Fight Against Silent Killers: A Guide for African Americans*
- ❖ *Diabetes and Kidney Disease: A Guide for American Indians and Alaska Natives.*

More than 20 million Americans—one in nine adults—have chronic kidney disease, and most don't know it. More than 20 million others are at increased risk for kidney disease. The National Kidney Foundation, a major voluntary health organization, seeks to prevent kidney and urinary tract diseases, improve the health and well-being of individuals and families affected by these diseases, and increase the availability of all organs for transplantation. Through its 51 affiliates nationwide, the foundation conducts programs in research, professional education, patient and community services, public education and organ donation. The work of the National Kidney Foundation is funded by public donations.

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