

Urine: What Your Pee Says About Your Health

Reviewed By: [Melissa Conrad Stöppler, MD](#)
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What Does Your Pee Say About Your Health?

It's such a common thing you may not think much about it. But every time you pee, your body is doing some pretty amazing things. Do you know why you pee? And do you know what your urine is made of?

Why We Pee

At the microscopic level, your body is constantly working to keep you healthy, even while you sleep. Complex chemical processes take place throughout the body, including the breakdown of proteins known as amino acids. When your body breaks down amino acids, ammonia is left over as waste. That's not something you want in your body for long—ammonia is toxic to human cells.

Since ammonia is toxic to your body, you need a way to remove it. That happens partly in the liver, where the ammonia is broken down into the less-toxic chemical, urea. Urea then combines with water and gets flushed into your bladder through the kidneys as urine, protecting your body from its own chemical processes.

What Is Urine Made of?

In the simplest terms, urine is about 95% water and 5% urea and other solids. But urine is much more complex than this simple formula suggests. Urine contains five to 10 times the number of chemical compounds found in other common body fluids like saliva—more than 3,000 different chemical compounds in total. Your pee contains the remnants of the various foods you eat, as well as drug byproducts, bacterial waste, cosmetics, and chemicals found in your environment.

Why Study Urine?

You may be wondering why your doctor asks you to pee in a cup. This test could be ordered to look for signs of a specific disease or condition. But it can also be used to provide general information about your health.

The exact contents of your urine can tell doctors a lot about you. Medical professionals use a diagnostic tool called urinalysis to take a careful look at the chemical makeup of your urine. Urinalysis can reveal warnings signs for various diseases and conditions, such as hyperglycemia (high blood sugar), diabetes, kidney stones and many others. In the following slides, learn more about the clues left in your pee that can tip you off to your urinary health.

Bloody Pee (Hematuria)

If you have blood in your urine, the color of your pee may change to red, pink, or dark brown like cola. Doctors call this hematuria, and while it isn't usually painful, it can be a sign of serious health problems.

Hematuria Causes

There are many, many potential causes for blood in the urine. Some of them are moderately serious, while others are life-threatening. Potential causes of bloody urine include:

- Bladder stones
- Cancer of the bladder, kidney, or prostate
- Enlarged prostate (BPH)
- Kidney problems, including kidney stones and kidney disease
- Medications such as penicillin, aspirin, and cyclophosphamide, which is a cancer treatment
- Strenuous exercise, particularly running
- Urinary tract infections (UTIs)

Anytime you notice bloody urine, take it seriously. You should contact your doctor right away, as many of the causes are serious.



Red, But Not Bloody

Urine color can sometimes be misleading. Sometimes your pee will come out red, but it's not actually bloody. Some medicines can make urine red, including the laxative Ex-lax. Certain red foods can stain the color of your urine too, including rhubarb, beets, and some berries. Most people can't tell the difference, but your doctor can determine whether your urine looks red because of blood or something else.



Why Does My Pee Smell Funny?

If your pee smells unusual, there may be several reasons. Vitamins can change the smell of urine, and so can pharmaceuticals. Certain foods are infamous for making pee smell stronger, such as asparagus, Brussels sprouts, garlic, coffee, and foods with lots of vitamin B-6 such as bananas and salmon. Also, if you aren't drinking enough water your pee can smell stronger than usual.

Serious health problems can also affect the smell of urine. Infections in the bladder or kidneys, diabetes, and liver failure can all influence the smell. These problems leave a persistent smell, so if your urine changes odor and it stays that way no matter what you eat, tell your doctor.



Red Pee? Could be a Urinary Tract Infection (UTI)

Urinary tract infections are as painful and irritating as they are common. They can make your urine look red, brownish-red, or cloudy. UTIs can also change the smell of your pee, and it may burn when you pee if you have one. Many people with UTIs also feel the need to urinate more frequently. Women are about four times more likely to get UTIs than men. Most UTIs are caused by bacteria. If a UTI is suspected, your doctor may order a leukocyte esterase test. This method of urinalysis reflects how many white blood cells are in your pee—esterase is an enzyme produced by white blood cells. If you have an infection, esterase may show up in your urine. Your test may also be positive for pus in the urine (pyuria), another sign of infection.

UTIs (including bladder infections) can bring other symptoms as well. Signs of bladder infection include exhaustion, shakiness, fever, back pain, and pressure in the lower abdomen. Tell your doctor if you think you might have a UTI. If that's the cause of your trouble, it can be treated with antibiotics. Your doctor may also prescribe phenazopyridine, a drug that relieves the burning pain and irritation of urinary tract infections.



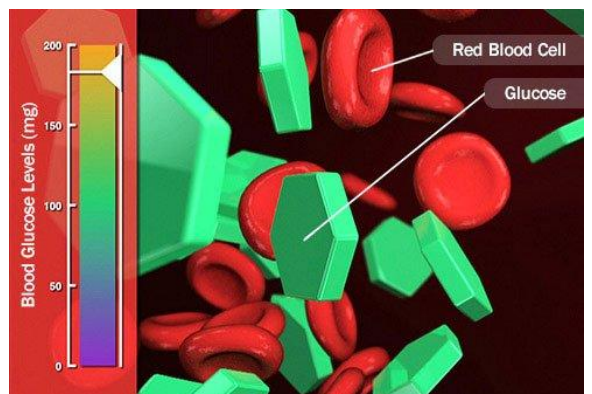
UTI-Causing Bacteria

High Blood Sugar (Hyperglycemia)

One of the many chemicals that may appear in urine is glucose, the sugar that fuels your body. How much glucose is found in your pee can be a clue to your health. That's because your kidneys start to eliminate glucose through your urine if your blood sugar level is too high. High blood sugar, also called hyperglycemia, is a telltale symptom of diabetes. While a urine glucose test can be a helpful indicator of hyperglycemia, it is usually performed with additional testing to provide a more reliable result.

Limitations of Urine Glucose Tests

When your urine tests positive for high glucose, this may be accurate, but it may not. Several factors can throw off a urine glucose test. For one, the test can only reflect what your blood glucose was a few hours ago. Some medicines including vitamin C can throw off the test as well. And when the test is being evaluated, certain lights can even throw the result off. For these reasons, you can expect further testing if high levels of glucose are found in your urine.

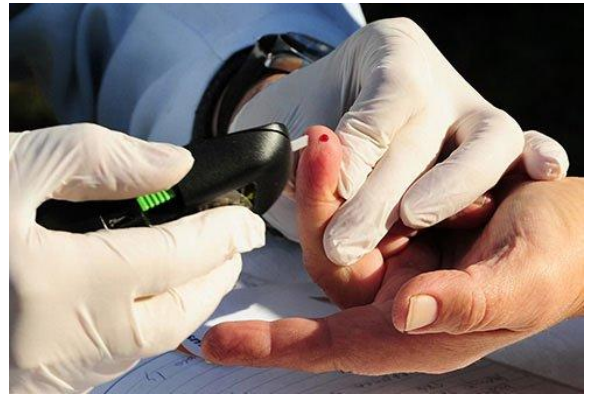


Does Diabetes Evidence Appear in Pee?

While glucose is one urine testing method that suggests diabetes, it's not the only sign of diabetes in the urine. People with diabetes have difficulty converting sugar for the fuel the body needs. The body needs to use a different fuel source in this case. Fat becomes a substitute for glucose, and ketones result.

Small amounts of ketones in the body are normal. But high amounts can lead to serious health problems—even death. The medical term for ketones in the urine is “ketonuria.” So it is important to test for ketones in your urine, especially if you have other symptoms of diabetes such as inexplicable thirst, frequent urination, and unusual levels of hunger and fatigue.

Some things can provoke a high ketone reading in your pee without diabetes. Spikes in ketones can also be caused by excessive exercise. Some medicines can bring it on, too. Following a very-low-carb diet or a high-fat diet can send ketone levels soaring as well.



Dark Urine? Could Be Dehydration

Your pee will typically range in color from clear to dark yellow when you are healthy. The darker the urine, the less water it typically contains. So if you find your urine is darker than usual, this can indicate that you need to hydrate.

Sometimes, though, urine is dramatically darker in color. If your urine is dark like syrup or brown ale, this can be a sign of severe dehydration. Of course that means you should drink some water, and soon. The color of your urine should then return to a normal range. If it does not, however, see a doctor—very dark urine can also be a sign of liver disease.

Another way that doctors can detect dehydration from your urine comes from a specific gravity test. This test compares your urine's density to that of water. It can provide helpful clues about how well your kidneys are filtering, and can also indicate both dehydration and over-hydration.



Pregnancy Signs in Urine

For many couples, a home urine test brings the first news of pregnancy. Here's how a home urine pregnancy test works. The test is designed to find a hormone called human chorionic gonadotropin (hCG). Your placenta produces hCG in abundance during the first few days when a pregnancy begins.

To perform this pregnancy test, you will need to collect your urine sample in a cup. After you have the urine, you will use a dipstick or an eyedropper depending on the test. Some tests also call for placing a dipstick in a stream of urine. Typically you will want to wait until the first day of your missed period to test your urine. Tests vary, so be sure to carefully follow the instructions given for any particular test.

When taken correctly, home urine pregnancy tests are estimated to be accurate 97% of the time. But not everyone takes these tests correctly. If your test shows up negative but you find other symptoms of pregnancy such as breast tenderness, nausea, and missed periods, give it a week and test again or ask your doctor for a blood test.

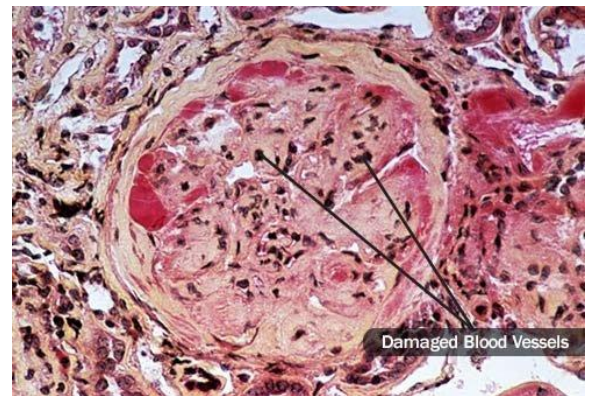


Kidney Problems

Your kidneys produce your urine, so using urine to find kidney problems shouldn't be surprising. Indeed, a variety of clues to the health of your kidneys can be found in a urine sample.

Kidney infections like glomerulonephritis, bacteriuria, and pyelonephritis can be discovered through urinalysis. So can atheroembolic renal disease, which occurs when cholesterol and other tiny bits of fat spread into the kidney's small blood vessels. Kidney problems due to excess protein in the urine (proteinuria) can be diagnosed by looking at the ratio of protein to creatinine in your pee. At other times a urine sample can reveal clues about kidney scarring (glomerulosclerosis), prerenal kidney injury, and kidney inflammation. The most severe kidney problem is kidney failure. Symptoms include:

- Dry, itchy skin
- Exhaustion
- Loss of appetite
- Vomiting and nausea
- Sleep difficulty and cramping at night



What Is Glomerulonephritis?

Glomerulonephritis is a big word that refers to several diseases that cause kidney injury. That monstrous word takes its name from the glomeruli, the tiny filters the kidneys use to clean your blood of waste.

These diseases are divided into two types: acute and chronic. Acute kidney injury comes on suddenly, and can be caused by throat and skin infections, as well as other disorders. It may get better all by itself, but it may also cause your kidneys to stop working without proper medical treatment. There are several symptoms of acute glomerulonephritis:

- Less frequent urination
- Brown or bloody urine
- Facial puffiness
- Shortness of breath and coughing due to fluid buildup in lungs
- High blood pressure (hypertension)

If you have these symptoms, contact your doctor immediately.

Chronic glomerulonephritis can develop over several years without showing symptoms, and often causes complete kidney failure. There may be symptoms, however, which include:

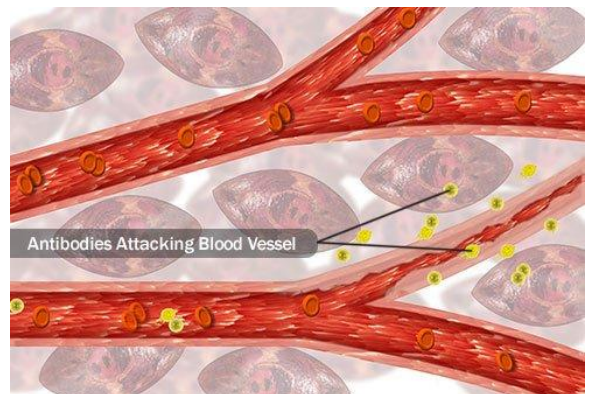
- Pee that is consistently foamy or bubbly
- Needing to pee at night frequently
- Facial and ankle swelling (edema)
- High blood pressure
- Bloody or high-protein urination



Inflamed Blood Vessels (Vasculitis)

When your blood vessels are inflamed, this may affect your kidneys. To find out if this is the case, a doctor will often order a urinalysis. Your physician will be looking for three clues to determine if your kidneys have been inflamed as well as your blood vessels. They look for high levels of protein (proteinuria), red blood cells (hematuria), and red blood cell clumps (casts).

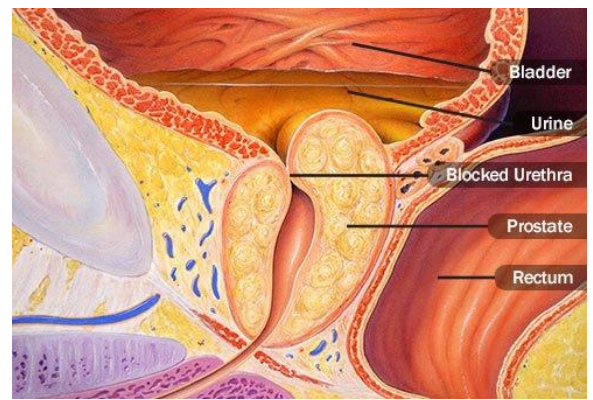
If your doctor suspects kidney inflammation, you will likely receive more tests. This is because several other diseases mimic vasculitis, and also because treatment for this condition comes with serious risks. One other likely test will be a kidney biopsy. Since this procedure comes with a small but serious risk of bleeding, you will likely be monitored at the hospital for 24 hours.



Urinary Tract Obstruction

Your urinary system can become obstructed at several points. You could have a blockage at your kidneys, in the tube between your bladder and your kidneys (ureter), in the bladder itself, an enlarged prostate, or a blockage in the tube that carries your urine out of the body (urethra). Wherever the obstruction, some of its symptoms may appear in your pee.

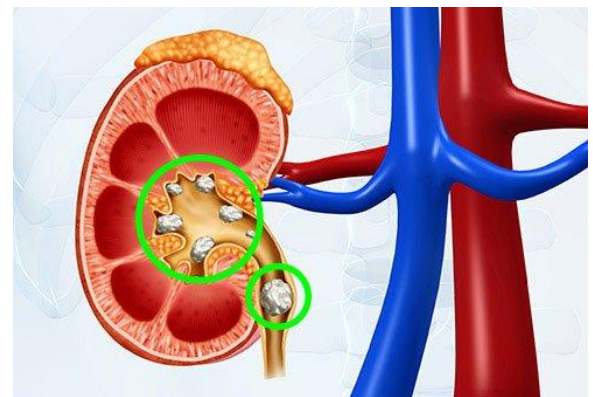
The standard place for a doctor to begin to assess urinary obstruction is with a urinalysis. In the case of this disorder, your doctor will actually be looking for a normal urinalysis to rule out other causes.. If your urinary tract is obstructed you may also notice that the force of your pee is weak or interrupted, or that urine cannot be passed at all. Blood may also appear in your pee.



Ouch! Kidney Stones

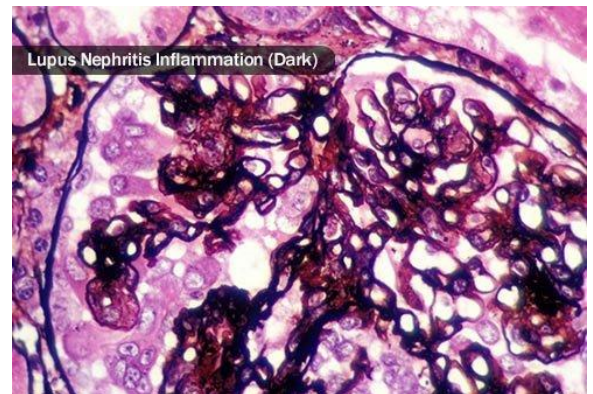
If you don't cringe at the thought of kidney stones, perhaps you don't know how they are passed. Kidney stones are bits of material that form in the kidneys, and they can be as large as a pearl in the worst cases. These are eventually passed through the urethra, a process that is frequently very painful.

Once again, hints that you have kidney stones may be revealed by your pee. If you find that it is bloody, this may indicate kidney stones. The same is true if it is cloudy or smells awful. In addition, a urinalysis may reveal too much calcium in your pee, a condition known as hypercalciuria.



Lupus Nephritis

Lupus is an autoimmune disease wherein your body attacks itself. This can harm your healthy body tissue, and when the autoimmune reaction targets your kidneys, the condition is called lupus nephritis. The cause of this condition is unknown, but women are much likelier to develop it than men. The clues for this disease found in your pee may include blood or excessive protein. That's why urinalysis is commonly used as a test for patients with lupus.



Gallbladder and Liver Problems

If your pee is consistently dark and you've had plenty of water, this may indicate liver or gallbladder problems. Damage from certain drugs like acetaminophen (Tylenol), cancer, stones, and viruses are some of the many causes of these health problems.

Your pee turns dark because of a yellow fluid called bilirubin. Urobilinogen and other liver and gallbladder diseases can cause bilirubin to leak from your liver into your blood. If it's severe enough, this can also turn your skin and eyes yellow, a condition known as jaundice.



What Does Blue Urine Indicate?

Is your urine blue? Blue urine is a key indicator of an inherited disorder known as familial benign hypercalcemia. It's also called blue diaper syndrome since that's the color it leaves diapers of babies with this condition. It's generally not harmful, though fetuses with two sets of the responsible gene may suffer from severe neonatal primary hyperparathyroidism.



Collecting a Urine Sample

You've probably given a urine sample before. But did you know there's a wrong way and a right way? Though it's a common myth, urine is not actually sterile. It has low levels of bacteria even in healthy people. But too much bacteria indicates a potential infection in your urinary tract.

To rule out a urinary tract infection, it's essential to prevent a misreading of the number of bacterial clusters in your urine. To do this, you need to provide the sample in a special way. This is called the "midstream" or "clean-catch" urine collection method, which was developed in the 1950s.



What Is the Clean-Catch Method?

The point of clean-catch urine collection is to avoid germs. So the first step is to wash your hands thoroughly with hot, soapy water. Women should wash the area between their labia by sitting on the toilet, spreading their labia between two fingers and cleaning the inner folds, then the urethra where urine exits. Keeping the labia spread, you then pee into the toilet bowl, stop peeing, hold the cup a few inches from the urethra and fill the cup halfway.

Men have a different method. The first step is still hand-washing. Then clean the head of your penis. For uncircumcised men, pull the foreskin back before cleaning the head. Next, pee a bit and stop the flow, and then collect the pee in the cup until its half full. By following this method, you can assure your medical team has a more accurate understanding of your health.

Sources:

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