

Blood in Urine

Blood in the urine is a common problem. The medical term for red blood cells in the urine is hematuria. Sometimes blood in the urine is a sign of a serious problem in the urinary tract, while other times it is not serious and requires no treatment. Only after a thorough evaluation by a healthcare provider should blood in the urine be attributed to a non-serious cause.

The urinary tract consists of the following structures:

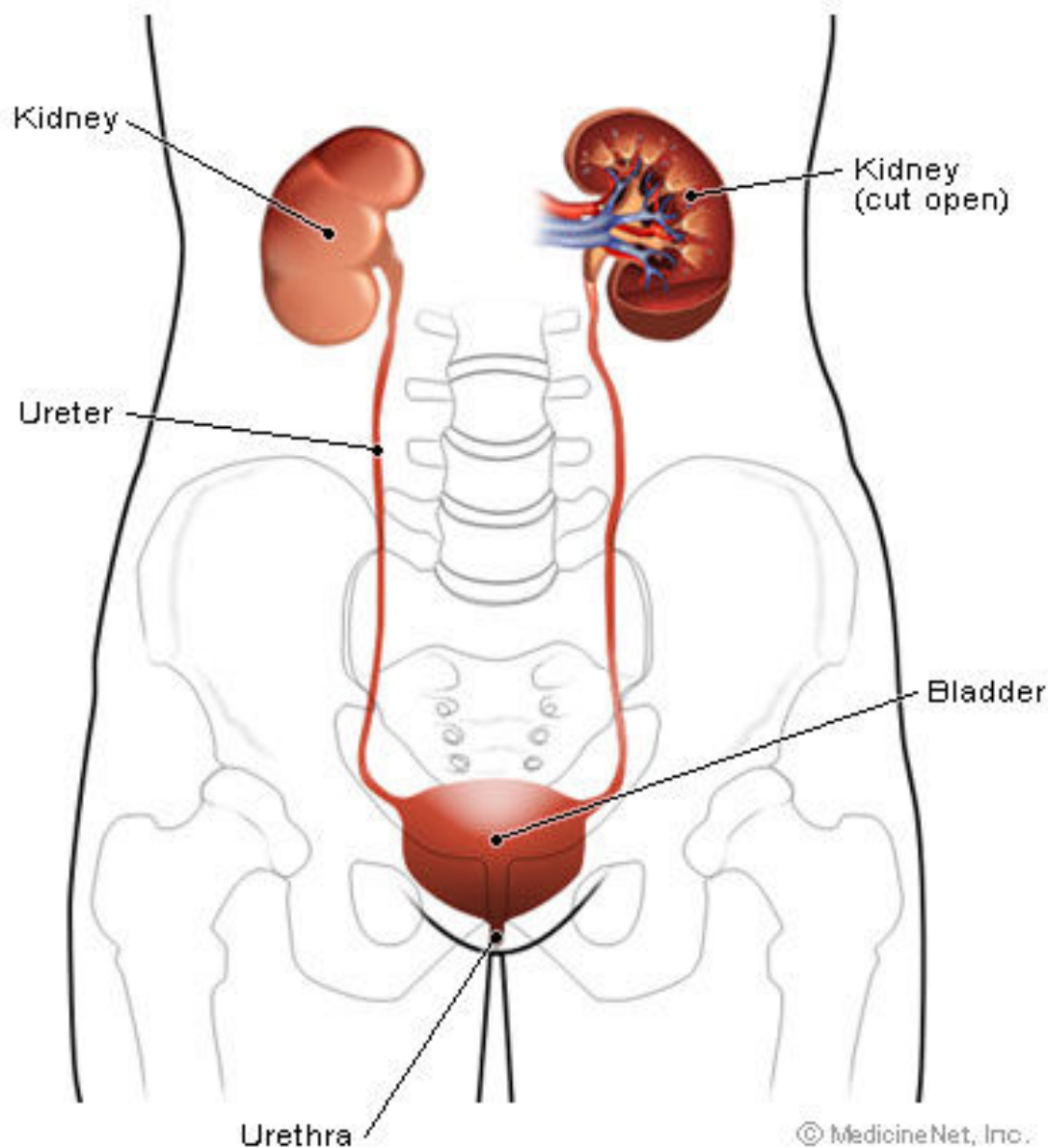
Kidneys: You have two kidneys, located closer to your back than your front at about waist level. The kidneys filter the blood in your body and produce urine.

Ureters: These narrow, hollow tubes carry urine from the kidneys to the bladder.

Bladder: The bladder is a balloon-like organ that holds urine until it is convenient for you to empty your bladder (urinate).

Urethra: This narrow, hollow tube carries urine from the bladder to the outside of your body. The flow of urine is controlled by internal and external sphincter muscles, which tighten or relax around the urethra, holding or releasing urine.

In men, the genitals and prostate are considered part of the urinary system. The prostate surrounds the urethra in men. It is made up of glands that secrete a fluid that is part of semen. The prostate often becomes enlarged in older men.



Blood in the urine is not always visible. If the amount of blood is small, the urine looks normal. This is called microscopic hematuria because the blood cells are visible only under a microscope. Typically, this is discovered when the patient has a urine test for some other reason.

When there is enough blood to be visible, the urine may look pinkish, red, or smoky brown (like tea or cola). This is called gross or frank

hematuria. It takes very little blood in urine to be visible —about one-fifth of a teaspoon in a half quart of urine.

A trace amount of blood in your urine is normal. The average person with a healthy urinary tract excretes about 1 million red blood cells (RBC) in the urine each day. This amount of blood is not visible. This is not considered to be hematuria.

An abnormal amount of blood in the urine can be acute (new, occurring suddenly) or chronic (ongoing, long term). Acute hematuria can occur just once, or it can occur many times.

Sometimes the urine can appear with a color indicating hematuria, but the urine actually does not contain red blood cells, but rather is discolored by medications or foods.

Up to 10% of people have hematuria. About 3% of people develop gross hematuria.

Women develop hematuria more than men because women are more likely to have urinary tract infections.

Older adults, especially men, have hematuria more often than younger people because they are more likely to take medications that can irritate the urinary tract, have enlargement of the prostate, or cancer.

Blood in the urine is itself a symptom rather than a disease. The appearance of the urine is usually not a clue as to the cause.

In gross hematuria, the urine appears pinkish, red, or smoky brown (like cola or tea). There may be small blood clots. The amount of blood in the urine does not indicate the seriousness of the condition.

In microscopic hematuria, the urine appears normal.

Many people with hematuria have no other symptoms. Other symptoms are related to the underlying cause of the bleeding.

Pain in the flank (side of the body between the ribs and the hips), back, or lower belly (abdomen) or groin

Burning sensation or pain when urinating (dysuria)

Fever

Nausea or vomiting

Weight loss

Decreased appetite

Kidney stones: Not all people with kidney stones have all of these symptoms.

Pain, often severe, in the flank, back, or lower abdominal pain that may radiate to the groin area

Nausea and vomiting

Usually a normal temperature

Frequent urination

Burning sensation with urination

Restlessness - constant moving around (writhing) to find relief from pain

Urinary tract infection: Symptoms may be similar to those of kidney stones.

Pain in lower back, flank, lower abdomen, or groin - may be severe but not enough to cause writhing

Fever with or without chills

More frequent urination

Sensation of having to urinate but little urine produced (urgency)

Burning sensation or pain with urination

Cloudy urine - due to pus in the urine

Causes of Blood in Urine

Hematuria has many different causes.

Blood in the urine can come from any condition that results in infection, inflammation, or injury to the urinary system.

Typically, microscopic hematuria indicates damage to the upper urinary tract (kidneys), while visible blood indicates damage to the lower tract (ureters, bladder, or urethra). But this is not always the case.

The most common causes in people younger than 40 years of age are kidney stones or urinary tract infections.

These may also cause hematuria in older people, but cancers of the kidney, bladder, and prostate become a more common concern in people older than 40 years of age.

Several conditions causing hematuria may exist at the same time.

Some causes of hematuria are serious, others are not.

The well-known causes of blood in the urine include the following:

Kidney stones

Infections of the urinary tract or genitals

Blockage of the urinary tract, usually the urethra - by a stone, a tumor, a narrowing of the opening (stricture), or a compression from surrounding structures

Cancer of the kidney, bladder, or prostate

Kidney disease

Blood clotting disorders

Injury to the upper or lower urinary tract, as in a car accident or a bad fall

Medications - Antibiotics [for example, rifampin (Rifadin)], analgesics such as aspirin, anticoagulants [blood thinners such as warfarin, (Coumadin)], phenytoin (Dilantin), quinine (Quinerva, Quinite, QM-260)

Benign (noncancerous) enlargement of the prostate - known as benign prostatic hypertrophy (BPH), a common condition in older men

Chronic diseases such as diabetes, hypertension, and sickle cell anemia

Viral infections

Inflammation of the kidney - usually of unknown cause

Strenuous exercise, especially running - results from repeated jarring of the bladder

Sometimes no cause is found for blood in the urine.

If serious conditions such as cancer, kidney disease, and other chronic diseases that cause kidney damage or bleeding are ruled out, the cause is usually not serious.

The hematuria will probably go away by itself or continue as a chronic condition without doing harm. Any changes should

immediately trigger a return visit and evaluation by your healthcare provider.

Urine can be colored pink, red, or brown for reasons that have nothing to do with bleeding in the urinary tract:

Foods - beets, berries, rhubarb in large amounts

Food coloring

Medications - Certain laxatives and pain medications

Menstrual blood

Liver diseases - also can be very serious

Exams and Tests

Regardless of whether you have microscopic or gross hematuria, your health care provider will ask questions to try to discover the cause.

You will be asked about your medical condition and history, particularly whether you have ever had blood in the urine before.

You will be asked about what medications you take or have taken in the past, including over-the-counter drugs, illegal drugs or drugs of abuse, herbs, supplements, and other alternative products.

You will be asked whether you have had any recent illnesses, accidents, surgeries, or medical procedures or tests.

You may be asked whether you have traveled outside the United States.

You will be asked about your work history and about exposures to toxic chemicals.

You will be asked about your lifestyle and habits, including smoking, diet, and exercise.

You will be asked about your urinary habits.

Laboratory tests: After the initial examination, laboratory and imaging studies may be performed.

Urine "dipstick": This will probably be the first test performed in the emergency department or medical office. A strip of chemically treated paper is dipped into a cup containing a sample of your urine. The paper will show different colors to indicate the presence of blood, protein, glucose, or infection. Under certain conditions the dipstick can give a false-positive result for blood.

Urinalysis: A formal urinalysis usually follows the dipstick test. Urinalysis is more accurate and gives a better idea of what is causing the bleeding. This is usually not done in the doctor's office, but at a laboratory where the doctor sends the urine. Protein in the urine, for example, signifies that a kidney problem is causing the hematuria. The urine is examined under a microscope to look for red blood cells and white blood cells, which signify infection.

Urine culture: A small amount of the urine is brushed on a special dish and placed in an incubator. Unusual bacterial growth indicates a urinary tract infection.

Imaging: There are several ways to visualize the urinary system, including ultrasound of the kidneys, intravenous pyelography, and CT scan.

Ultrasound, also known as sonography, uses high-frequency sound waves to "see" structures inside your body.

This likely will be one of the first imaging studies performed because it is simple and widely available.

Ultrasound is used in pregnancy because the test involves no radiation exposure that can damage the developing fetus.

It is useful in screening for kidney enlargement from an obstruction such as a stone, cancer, prostate enlargement, or strictures.

Intravenous pyelogram, or IVP, is an x-ray of the urinary tract.

A dye is first injected into your vein; the dye is filtered by your kidneys and provides contrast so the kidneys are easier to see.

A series of x-rays is taken over a 30-minute period, looking for blockages or problems.

This study is especially useful for evaluating the kidneys and ureter, but less effective for the bladder, prostate, or urethra.

It can localize obstruction, stones, or a tumor.

IVP should be performed with care in older people and people with diabetes or preexisting kidney disease, because the contrast dye may bring on kidney failure.

CT scan is like an x-ray but gives much better detail.

It is excellent for detecting stones in your urinary system.

The test can be performed without contrast dye and is especially useful in people with preexisting kidney disease.

If stones and infection are ruled out, other tests are needed to look for less common causes of hematuria. Older people are at especially increased risk for more serious causes of blood in the urine. Anyone aged 40 years or older should have a workup to determine if cancer is present in the urinary system. This workup usually can be done on an outpatient basis.

Cystoscopy: This test is most likely to be performed by a specialist dealing with the urinary system (urologist).

A thin tube with a tiny camera on the end is passed through the urethra to visualize the bladder, prostate (in men), and ureters. You are first given medication to relax you and relieve the discomfort of the procedure.

This procedure usually takes only 10 minutes.

Cystoscopy can identify most problems of the lower urinary system, especially cancers of the bladder and prostate.

Cytologic review: In this test, a pathologist examines a sample of urine for cells from the lower urinary tract.

If you have cancer, cells with features typical of a malignancy usually are present.

The pathologist examines these cells under a microscope and compares them with normal cells in the urinary system.

Medical Treatment

Many conditions can cause blood in the urine. Some of these have no medical significance and do not require treatment. They usually go away by themselves. Others can be serious and require immediate treatment. Treatment depends on the underlying cause of the bleeding. Anytime you notice blood in the urine you need to consult a healthcare provider for an evaluation.

Kidney stones: For most cases of kidney stones, you will be told to drink plenty of water and other fluids and to take pain relievers.

Most stones will pass through urinary system by themselves. In certain instances, more extensive measures may be required.

One form of therapy, called extracorporeal shock wave lithotripsy, uses sound waves to crush the stones. The smaller pieces can then pass through more easily, though some pain will remain.

Another form of therapy uses cystoscopy to find the stone in the ureter and then to grab and remove it with a small scoop.

Urinary tract infection: Treatment seeks to get rid of the bacteria responsible for the infection. If you have no other significant illness, you will take a course of antibiotics for 3-14 days, depending on the source of the infection.

Benign prostate enlargement: Sometimes eliminating certain foods and medications that irritate the prostate can help shrink the prostate. Sometimes medication is necessary.

Medications: If a medication is causing hematuria, the medication should be stopped. Some medications only discolor the urine without actually causing hematuria. Your healthcare provider should determine if these can be continued. Do not stop a medication without talking it over with your healthcare provider.

Urinary tract blockage: A blockage usually requires surgery or other procedure to correct or remove the block.

Injury: These may heal over time, or you may need surgery or another procedure to repair the injury or remove the damaged tissue.

The prognosis depends on the cause of the bleeding. The prognosis for most people is good, because the most common causes of blood in the urine can be cured. People who are otherwise healthy can be treated on an outpatient basis.

