



National Institute of  
Diabetes and Digestive  
and Kidney Diseases

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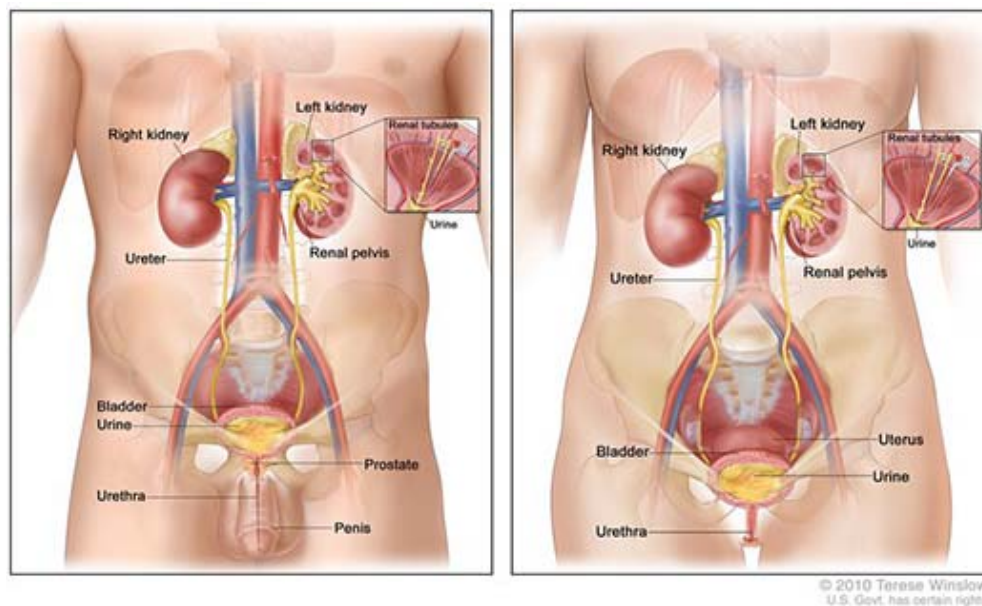
*By Chris Tighe at 10:10 am, Jan 04, 2018*

# Hematuria (Blood in the Urine)

## What is hematuria?

Hematuria is the presence of blood in a person's urine. The two types of hematuria are

- gross hematuria—when a person can see the blood in his or her urine
- microscopic hematuria—when a person cannot see the blood in his or her urine, yet it is seen under a microscope



The male and female urinary tracts

## What is the urinary tract?

The urinary tract is the body's drainage system for removing wastes and extra fluid. The urinary tract includes

- two kidneys
- two ureters
- the bladder
- the urethra

The kidneys are two bean-shaped organs, each about the size of a fist. They are located just below the rib cage, one on each side of the spine. Every day, the kidneys filter about 120 to 150 quarts of blood to produce about 1 to 2 quarts of urine, composed of wastes and extra fluid. Children produce less urine than adults. The urine flows from the kidneys to the bladder through tubes called ureters. The bladder stores urine until releasing it through urination. When the bladder empties, urine flows out of the body through a tube called the urethra at the bottom of the bladder.

## What causes hematuria?

Reasons people may have blood in the urine include

- infection in the bladder, kidney, or prostate
- trauma
- vigorous exercise
- viral illness, such as hepatitis—a virus that causes liver disease and inflammation of the liver
- sexual activity
- menstruation
- endometriosis—a problem in women that occurs when the kind of tissue that normally lines the uterus grows somewhere else, such as the bladder

More serious reasons people may have hematuria include

- bladder or kidney cancer
- inflammation of the kidney, urethra, bladder, or prostate—a walnut-shaped gland in men that surrounds the urethra and helps make semen
- blood-clotting disorders, such as hemophilia
- sickle cell disease—a genetic disorder in which a person's body makes abnormally shaped red blood cells
- polycystic kidney disease—a genetic disorder in which many cysts grow on a person's kidneys

## Who is more likely to develop hematuria?

People who are more likely to develop hematuria may

- have an enlarged prostate
- have urinary stones
- take certain medications, including blood thinners, aspirin and other pain relievers, and antibiotics
- do strenuous exercise, such as long-distance running
- have a bacterial or viral infection, such as streptococcus or hepatitis

- have a family history of kidney disease
- have a disease or condition that affects one or more organs

## What are the symptoms of hematuria?

People with gross hematuria have urine that is pink, red, or brown. Even a small amount of blood in the urine can cause urine to change color. In most cases, people with gross hematuria do not have other signs and symptoms. People with gross hematuria that includes blood clots in the urine may have bladder pain or pain in the back.

## How is hematuria diagnosed?

A health care professional diagnoses hematuria or the cause of the hematuria with

- a medical history
- a physical exam
- urinalysis
- additional testing

### Medical History

Taking a medical history may help a health care professional diagnose the cause of hematuria. He or she will ask the patient to provide a medical history, a review of symptoms, and a list of prescription and over-the-counter medications. The health care professional will also ask about current and past medical conditions.

### Physical Exam

During a physical exam, a health care professional most often taps on the abdomen and back, checking for pain or tenderness in the bladder and kidney area. A health care professional may perform a digital rectal exam on a man to look for any prostate problems. A health care professional may perform a pelvic exam on a woman to look for the source of possible red blood cells in the urine.

**Digital rectal exam.** A digital rectal exam is a physical exam of a man's prostate and rectum. To perform the exam, the health care professional has the man bend over a table or lie on his side while holding his knees close to his chest. The health care professional slides a gloved, lubricated finger into the patient's rectum and feels the part of the prostate that lies in front of the rectum. The digital rectal exam is used to check for prostate inflammation, an enlarged prostate, or prostate cancer.

**Pelvic exam.** A pelvic exam is a visual and physical exam of a woman's pelvic organs. The health

care professional has the woman lie on her back on an exam table and place her feet on the corners of the table or in supports. The health care professional looks at the pelvic organs and slides a gloved, lubricated finger into the vagina to check for problems that may be causing blood in the urine.

## Urinalysis

The health care professional can test the urine in the office using a dipstick or can send it out to a lab for analysis. Sometimes urine tests using a dipstick can be positive even though the patient has no blood in the urine, which results in a “false-positive” test. The health care professional may look for red blood cells by examining the urine under a microscope before ordering further tests.

Prior to obtaining a urine sample, the health care professional may ask a woman when she last menstruated. Sometimes blood from a woman’s menstrual period can get into her urine sample and can result in a false-positive test for hematuria. The test should be repeated after the woman stops menstruating.



The health care professional may confirm the presence of red blood cells by examining the urine under a microscope before ordering further tests.

## Additional Testing

Sometimes, a health care professional will test the patient’s urine again. If the urine samples detect too many red blood cells, a health care professional may order additional tests:

- **Blood test.** A blood test involves drawing blood at a health care professional’s office or a commercial facility and sending the sample to a lab for analysis. A blood test can detect high levels of creatinine, a waste product of normal muscle breakdown, which may indicate kidney disease. Other blood tests may detect signs of autoimmune diseases, such as lupus, or

other diseases, such as prostate cancer, which can cause hematuria.

- **Computed tomography (CT) scan.** CT scans use a combination of x-rays and computer technology to create images of the urinary tract, especially the kidneys. A health care professional may give the patient a solution to drink and an injection of contrast medium. CT scans require the patient to lie on a table that slides into a tunnel-shaped device that takes the x-rays. An x-ray technician performs the procedure in an outpatient center or a hospital, and a radiologist interprets the images. The patient does not need anesthesia. CT scans can help a doctor diagnose stones in the urinary tract, obstructions, infections, cysts, tumors, and traumatic injuries.
- **Cystoscopy.** Cystoscopy is a procedure that a urologist—a doctor who specializes in urinary problems—performs to see inside the patient's bladder and urethra using a cystoscope, a tubelike instrument. The health care professional performs cystoscopy in his or her office, in an outpatient center, or in a hospital. The patient may need pain medication. A cystoscopy can detect cancer in a patient's bladder.
- **Kidney biopsy.** [Kidney biopsy](#) is a procedure that involves taking a small piece of tissue from the kidney. A health care professional performs the biopsy in an outpatient center or a hospital. The health care professional will give the patient light sedation and local anesthetic. In some cases, the patient will require general anesthesia. A pathologist—a doctor who specializes in diagnosing diseases—examines the tissue in a lab. The biopsy can help diagnose if the hematuria is due to kidney disease.
- **Magnetic resonance imaging (MRI).** MRI is a test that takes pictures of the patient's internal organs and soft tissues without using x-rays. A specially trained technician performs the procedure in an outpatient center or a hospital, and a radiologist interprets the images. The patient does not need anesthesia, although patients with a fear of confined spaces may receive light sedation. An MRI may include the injection of contrast medium. With most MRI machines, the patient will lie on a table that slides into a tunnel-shaped device that may be open-ended or closed at one end. Some machines allow the patient to lie in a more open space. During an MRI, the patient should remain perfectly still while the technician takes the images. During the procedure, the patient will hear loud mechanical knocking and humming noises coming from the machine. An MRI can help diagnose problems in individual internal organs, such as the bladder or kidney.

More information is provided in the NIDDK health topic, [Imaging of the Urinary Tract](#).

## How is hematuria treated?

Health care professionals treat hematuria by treating its underlying cause. If no serious condition is causing a patient's hematuria, he or she typically does not need treatment.

## Eating, Diet, and Nutrition

Researchers have not found that eating, diet, and nutrition play a role in causing or preventing hematuria.

## Points to Remember

- Hematuria is the presence of blood in a person's urine. Gross hematuria is when a person can see the blood in his or her urine, and microscopic hematuria is when a person cannot see the blood in his or her urine, yet a health care professional can see it under a microscope.
- The causes of hematuria include vigorous exercise and sexual activity, among others.
- More serious causes of hematuria include kidney or bladder cancer; inflammation of the kidney, urethra, bladder, or prostate; and polycystic kidney disease, among other causes.
- People who are more likely to develop hematuria may have a family history of kidney disease, have an enlarged prostate, or have bladder or kidney stones, among other reasons.
- People with gross hematuria have urine that is pink, red, or brown.
- Most people with microscopic hematuria do not have any symptoms.
- Taking a medical history may help a health care professional diagnose the cause of hematuria.
- Health care professionals diagnose hematuria with a urine test called urinalysis.
- If two of three urine samples detect too many red blood cells, a health care professional may order one or more additional tests.
- Health care professionals treat hematuria by treating its underlying cause.
- Researchers have not found that eating, diet, and nutrition play a role in causing or preventing hematuria.

## Clinical Trials

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and other components of the National Institutes of Health (NIH) conduct and support research into many diseases and conditions.

### What are clinical trials, and are they right for you?

Clinical trials are part of clinical research and at the heart of all medical advances. Clinical trials look at new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses.

[Find out if clinical trials are right for you](#) [NIH](#).

### What clinical trials are open?

Clinical trials that are currently open and are recruiting can be viewed at [www.ClinicalTrials.gov](http://www.ClinicalTrials.gov) [NIH](#).

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## Additional Links

- [Kidney Biopsy](#)
- [Imaging of the Urinary Tract](#)

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