

## Hematuria – Blood in the Urine

Seeing blood in your urine can cause anxiety. While in many instances there are benign causes, blood in urine (hematuria) can also indicate a serious disorder.

Blood that you can see is called gross hematuria. Urinary blood that's visible only under a microscope is known as microscopic hematuria and is found when your doctor tests your urine. Either way, it's important to determine the reason for the bleeding. Treatment depends on the underlying cause.

The visible sign of hematuria is pink, red or cola-colored urine — the result of the presence of red blood cells. It takes very little blood to produce red urine, and the bleeding usually isn't painful. If you're also passing blood clots in your urine, that can be painful. Bloody urine often occurs without other signs or symptoms.

It's possible to have blood in your urine that's visible only under a microscope (microscopic hematuria).

### When to see a doctor

Make an appointment to see your doctor anytime you notice blood in your urine.

Some medications, such as the laxative Ex-lax, and certain foods, including beets, rhubarb and berries, can cause your urine to turn red. However, blood in the urine looks distinctly different.

A change in urine color caused by drugs, food or exercise may go away within a few days. But you can't automatically attribute red or bloody urine to medications or exercise; that's why it's best to see your doctor anytime you see blood in your urine.

In hematuria, your kidneys — or other parts of your urinary tract — allow blood cells to leak into urine. A number of problems can cause this leakage, including:

- **Urinary tract infections.** Urinary tract infections often occur when bacteria enter your body through the urethra and begin to multiply in your bladder. Symptoms can include a persistent urge to urinate, pain and burning with urination, and extremely strong-smelling urine.

For some people, especially older adults, the only sign of illness may be microscopic blood.

- **Kidney infections.** Kidney infections (pyelonephritis) can occur when bacteria enter your kidneys from your bloodstream or move up from your ureters to your kidney(s).

Signs and symptoms are often similar to bladder infections, though kidney infections are more likely to cause fever and flank pain.

- **A bladder or kidney stone.** The minerals in concentrated urine sometimes precipitate out, forming crystals on the walls of your kidneys or bladder. Over time, the crystals can become small, hard stones. The stones are generally painless, and you probably won't know you have them unless they cause a blockage or are being passed. Then there's usually no mistaking the symptoms — kidney stones, especially, can cause excruciating pain. Bladder or kidney stones can also cause both gross and microscopic bleeding.
- **Enlarged prostate.** The prostate gland — located just below the bladder and surrounding the top part of the urethra — often begins growing as men approach middle age. When the gland enlarges, it compresses the urethra, partially blocking urine flow.

Signs and symptoms of an enlarged prostate (benign prostatic hyperplasia, or BPH) include difficulty urinating, an urgent or persistent need to urinate, and either visible or microscopic blood in the urine. Infection of the prostate (prostatitis) can cause the same signs and symptoms.

- **Kidney disease.** Microscopic urinary bleeding is a common symptom of glomerulonephritis, which causes inflammation of the kidneys' filtering system.

Glomerulonephritis may be part of a systemic disease, such as diabetes, or it can occur on its own. It can be triggered by viral or strep infections, blood vessel diseases (vasculitis), and immune problems such as IgA nephropathy, which affects the small capillaries that filter blood in the kidneys (glomeruli).

- **Cancer.** Visible urinary bleeding may be a sign of advanced kidney, bladder or prostate cancer. Unfortunately, you may not have signs or symptoms in the early stages, when these cancers are more treatable.
- **Inherited disorders.** Sickle cell anemia — a hereditary defect of hemoglobin in red blood cells — can be the cause of blood in urine, both visible and microscopic hematuria. So can Alport syndrome, which affects the filtering membranes in the glomeruli of the kidneys.
- **Kidney injury.** A blow or other injury to your kidneys from an accident or contact sports can cause blood in your urine that you can see.
- **Medications.** The anti-cancer drug cyclophosphamide (Cytosan) and penicillin can cause urinary bleeding. Visible urinary blood sometimes occurs if you take an anticoagulant, such as aspirin and the blood thinner heparin, and you also have a condition that causes your bladder to bleed.

- **Strenuous exercise.** Although it happens rarely, it's not quite clear why strenuous exercise may lead to gross hematuria. It may be linked to trauma to the bladder, dehydration or the breakdown of red blood cells that occurs with sustained aerobic exercise. Runners are most often affected, although almost any athlete can develop visible urinary bleeding after an intense workout.

Whatever the cause, contact your doctor right away if you see blood in your urine.

Almost anyone — including children and teens — can have red blood cells in the urine.

Factors that make this more likely include:

- **Age.** Many men older than 50 have occasional hematuria due to an enlarged prostate gland.
- **Your sex.** More than half of all women will have a urinary tract infection at least once in their lives, possibly with some urinary bleeding. Younger men are more likely to have kidney stones or Alport syndrome, a form of hereditary nephritis that can cause blood in the urine.
- **A recent infection.** Kidney inflammation after a viral or bacterial infection (post-infectious glomerulonephritis) is one of the leading causes of visible urinary blood in children.
- **Family history.** You may be more prone to urinary bleeding if you have a family history of kidney disease or kidney stones.
- **Certain medications.** Aspirin, nonsteroidal anti-inflammatory pain relievers and antibiotics such as penicillin are known to increase the risk of urinary bleeding.
- **Strenuous exercise.** Long-distance runners are especially prone to exercise-induced urinary bleeding. In fact, the condition is sometimes called jogger's hematuria. But anyone who works out strenuously can develop symptoms.

To find a cause for urinary bleeding, the following tests and exams play a key role:

- **Physical exam,** which includes a discussion of your medical history.
- **Urine tests.** Even if your bleeding was first discovered through urine testing (urinalysis), you're likely to have another test to see if your urine still contains red blood cells. Urinalysis can also check for urinary tract infection or the presence of minerals that cause kidney stones.
- **Imaging tests.** Often, an imaging test is required to find the cause of hematuria. Your doctor might recommend a computerized tomography (CT) scan, which uses radiation and a powerful computer to create cross-sectional images of the inside of the body; magnetic resonance imaging (MRI), which uses a magnetic field and radio waves instead of X-rays to produce images; or an ultrasound exam. Ultrasound uses a combination of high-frequency sound waves and computer processing to produce images of your kidneys and bladder.

- **Cystoscopy.** In this procedure, your doctor threads a narrow tube fitted with a tiny camera into your bladder to closely examine both the bladder and urethra for signs of disease.

Sometimes, the cause of urinary bleeding may not be found. In that case, your doctor may recommend regular follow-up tests, especially if you have risk factors for bladder cancer, such as smoking, exposure to environmental toxins or a history of radiation therapy.

Hematuria has no specific treatment. Instead, your doctor will focus on treating the underlying condition. This might include, for instance, taking antibiotics to clear a urinary tract infection, trying a prescription medication to shrink an enlarged prostate, or shock wave therapy to break up bladder or kidney stones.

If the underlying condition isn't serious, no treatment is necessary.

It's generally not possible to prevent hematuria, though there are steps you can take to reduce your risk of some of the diseases that cause it. Prevention strategies include:

- **Urinary tract infections.** To reduce your risk of urinary tract infections, try drinking plenty of fluids, urinating when you feel the urge and after intercourse, and wiping from front to back after urination (for women). Avoid feminine hygiene products that may irritate your genitals.
- **Kidney stones.** To help lower the likelihood of kidney stones, drink plenty of fluids and limit salt, protein and oxalate-containing foods, such as spinach and rhubarb.
- **Bladder cancer.** Stopping smoking, avoiding exposure to chemicals and drinking plenty of fluids can cut your risk of bladder cancer.
- **Kidney cancer.** To help prevent kidney cancer, stop smoking, maintain a healthy weight, eat a healthy diet, stay active and avoid exposure to toxic chemicals.