

Kidney Stone

What is a kidney stone?

A kidney stone is a solid piece of material that forms in your urinary system. The stones are formed from substances in the urine. You can get a stone in any part of the urinary tract, including the kidneys, ureters, bladder, and urethra. Stones may be small or large. You may have just 1 stone or many stones.

The kidneys are inside your belly, on either side of your spine just above your waist. They make urine by taking waste products and extra salt and water from the blood. The ureters are tubes that carry urine from the kidneys to the bladder. The bladder holds your urine until you urinate, and the urethra is the tube that drains urine from the bladder.

Kidney stones are most common in middle-aged people. They are more common in men than in women. You may get them more than once.

What is the cause?

There are different types of kidney stones.

- **Calcium stones:** Most kidney stones are calcium stones. You may get them when there is too much calcium in your urine. This may happen when your kidneys don't work properly or your stomach and intestines absorb too much calcium. The risk of having calcium stones is higher if you have certain medical conditions, such as an overactive parathyroid gland (a gland in the neck that controls calcium levels in the body) or inflammatory bowel disease, like Crohn's disease or ulcerative colitis. Some people have calcium stones from too much of a chemical called oxalate in their diet. Oxalate is in many foods, such as spinach, rhubarb, leafy vegetables, coffee, chocolate, and tomatoes.
- **Uric acid stones:** Uric acid stones happen when you have too much uric acid in your urine. This might happen when your body does not have enough fluid—for example, when you are exercising on a hot day or during an illness and you don't drink enough fluids. Uric acid stones are common in people who have gout, a type of arthritis caused by too much uric acid in the blood.
- **Struvite stones:** This type of stone is also called an infection stone because it forms in urine that is infected with bacteria.
- **Cystine stones.** This type of kidney stone is rare. It happens if you have a genetic disease called cystinuria. This disease results from a birth defect that causes the kidney to let too much cystine into the urine. This type of stone is almost always diagnosed during childhood.

What are the symptoms?

Some kidney stones don't cause any symptoms. When they do, the symptoms may include:

- Severe, crampy pain in your back or belly (the most common symptom)

- Nausea and vomiting
- Pink, red, or brown urine

Usually kidney stones cause pain off and on until the stone passes out of the body. The pain may move from the upper to the lower belly over a few hours. As the stone moves lower, the pain may be felt in the genital area.

Sometimes kidney stones cause a blockage and a urinary tract infection. If you have an infection, you may have fever, chills, sweats, and pain when you urinate.

Some people don't have any symptoms until they pass the gravel-like stones in their urine. Others never have any symptoms, and their stones are found during testing for other problems.

How is it diagnosed?

Your healthcare provider will ask about your symptoms and medical history and examine you. You will have urine and blood tests. Other tests you may have are:

- X-ray of your belly
- Ultrasound scan, which passes sound waves and their echoes through your body from a small device that is held against your skin to create pictures of organs inside your belly or pelvis
- Computed tomography (CT) scan, which is a series of X-rays taken from different angles and arranged by a computer to show thin cross sections of parts of the body

How is it treated?

Treatment depends on:

- The size, type, and location of the stone(s)
- If stones are blocking urine flow out of the kidney
- If you have signs of infection

You may be able to treat yourself at home by drinking lots of liquids and taking pain medicine. Kidney stones that are 3/16 of an inch (0.5 centimeters) or less in diameter usually pass on their own. Your healthcare provider may ask you to strain all urine until the stone is passed. When the stone is caught, it can be tested in the lab to see what kind of stone it is. Your provider may prescribe medicine that will help you pass stones or help keep you from getting more stones.

A stone may take days or even weeks to pass. If you have pain from a stone and it has not passed after a month or so, your healthcare provider may need to remove it.

You may need to be in the hospital if:

- Oral medicines are not relieving pain from the stones.
- You are vomiting too much to drink liquids.
- You have signs of infection in your bloodstream, such as fever, chills, and a high white blood cell count.

- You need surgery to remove a stone that is not passing and is causing severe problems.

Shock waves, ultrasound, or a laser may be used to break up the stones into smaller pieces. The pieces of stone may then be able to pass out of your body when you urinate. This is a procedure called lithotripsy.

If you have a stone in the bladder that needs to be removed with surgery, it may be broken up first with lithotripsy.

Two types of surgery may be done to remove kidney stones.

- One type of surgery uses a thin, lighted, usually flexible tube inserted into the urinary tract through the urethra. Tiny tools can be passed through the scope to remove stones.
- The other type requires a small cut in your back. A lighted tube and tools to remove the stone are inserted through the cut.

Sometimes a small tube called a stent may be placed in one of the ureters to help a stone pass. A stent may be used if:

- A stone is large.
- There is a risk of blockage by stones.
- You have an infection caused by blockage.

How can I take care of myself?

Make sure you drink enough liquids.

Take pain medicine as prescribed by your healthcare provider.

Follow your healthcare provider's instructions. Ask your provider:

- How and when you will hear your test results
- How long it will take to recover
- What activities you should avoid and when you can return to your normal activities
- How to take care of yourself at home
- What symptoms or problems you should watch for and what to do if you have them

Make sure you know when you should come back for a checkup.

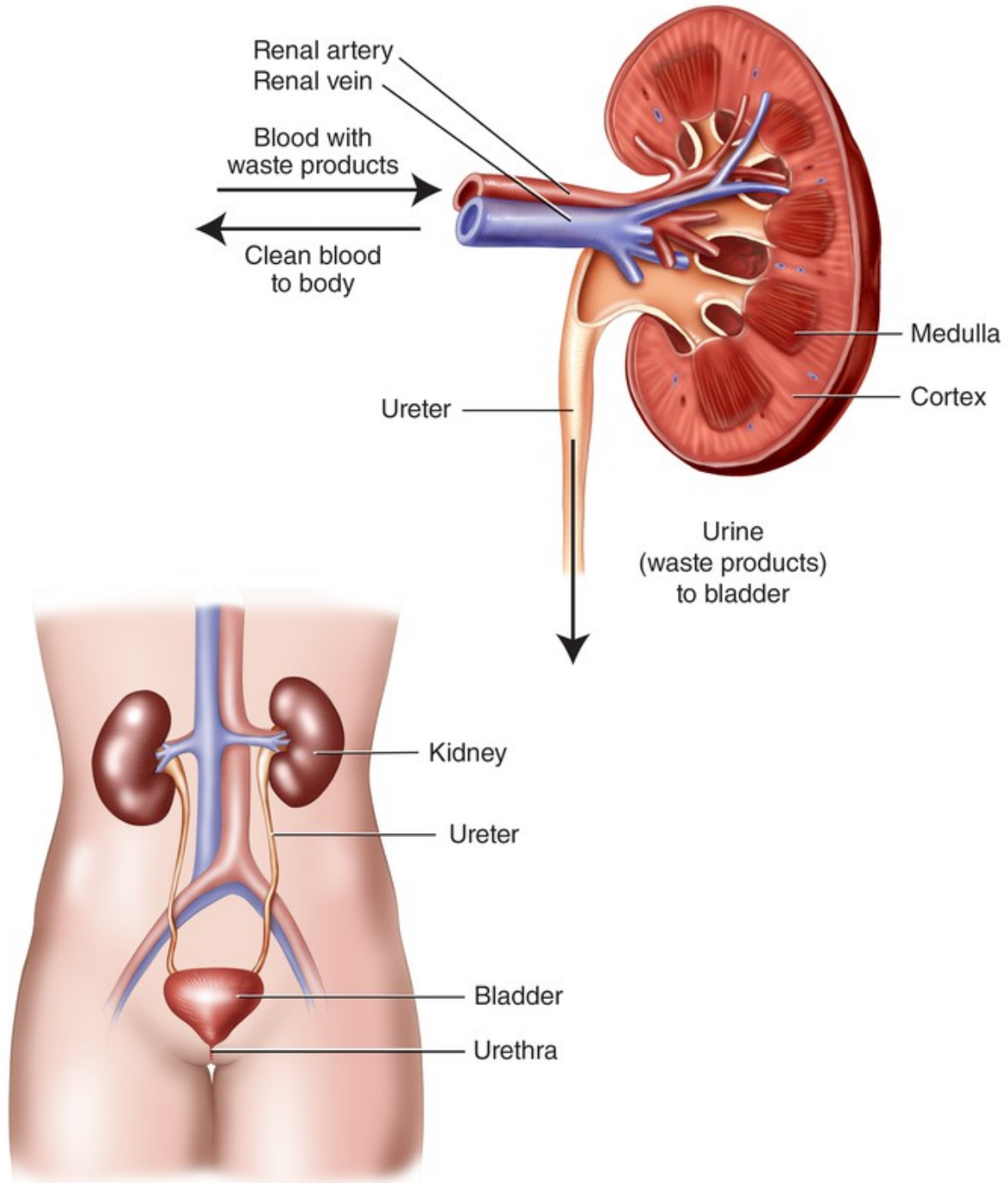
How can I help prevent kidney stones?

- Follow your healthcare provider's recommended treatment for any health problems that may be causing kidney stones.
- Drink plenty of fluids every day.
- Follow any changes in your diet recommended by your provider.
- Take any medicines your provider may prescribe to help prevent more stones.

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