

Kidney Stones

What are kidney stones?

Kidney stones are gravel-like collections of chemicals that may appear in any area of the urinary system, from the kidney to the bladder. They may be small or large. You may have just one stone or many.

Your kidneys filter your blood and excrete waste products and excess water as urine. They are located on either side of your spine, just above your waist.

Kidney stones are most common in middle-aged people and are 3 times more common in men than in women. They tend to recur.

How does this occur?

There are several types of urinary stones, but most stones are calcium stones. They occur when there is too much calcium in the urine. If your kidneys don't work properly or if too much calcium is absorbed from your stomach and intestines, you may have excess calcium in your urine.

Some calcium stones are caused by too much of a chemical called oxalate that is found in many foods including spinach, rhubarb, leafy vegetables, coffee, chocolate, and tomatoes. Oxalate binds easily with calcium to form a stone. Also, the risk of forming calcium stones increases if you have certain medical conditions such as an overactive parathyroid (a gland in that neck that regulates calcium in the body) or inflammatory bowel disease.

A second type of kidney stone occurs because you have too much uric acid in your urine. Uric acid stones might result if you become dehydrated, for example, during strenuous exercise on a hot day or during an illness. Uric acid stones are common in people who have gout, a disease that causes high uric acid levels in the blood.

A third type, struvite stones, are also called infection stones because they form in urine that is infected with bacteria.

Finally, a rare type of kidney stone is a cystine stone. It occurs if you have the genetic disease called cystinuria. This disease results from a birth defect that causes the kidney to allow too much cystine into the urine. This type of stone formation is almost always diagnosed during childhood.

What are the symptoms?

The symptoms of kidney stones are:

- severe, crampy pain in your back or abdomen (the most common symptom)
- nausea and vomiting (sometimes).

Sometimes the presence of kidney stones causes a urinary tract infection. If you have a urinary tract infection, your symptoms may include fever, chills, sweats, and pain when you urinate.

Kidney stones and urinary tract infection can cause blood to be in the urine. Usually the blood is seen only with a microscope, but occasionally it is more obvious.

Some people have no symptoms until they pass 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?

We will ask about your symptoms and examine you. Samples of your urine and blood will be tested. To catch the stone you will need to urinate through a special strainer until we catch the stone.

Sometimes the pattern of pain over time is helpful in the diagnosis. The pain may move from the upper to the lower abdomen over a few hours. As the stone moves lower, the pain may be felt in the genitals, especially the testicles in men and the labia in women.

We usually use a limited CT scan to see and follow the stones. Ultrasounds can be used.

How is it treated?

Treatment depends on the size and location of the stone(s), whether one or more stones are blocking urine flow out of the kidney, and whether there are signs of infection.

You may be treated at home by drinking lots of liquids and taking pain medication. Kidney stones usually pass on their own. Your health care provider may ask you to strain all urine until the stone is passed. This allows the type of stone to be identified with lab tests.

You may need to be in the hospital if:

- You are vomiting too much to drink liquids.
- You have signs of urinary infection or a kidney abnormality.
- You need surgery to remove a large stone.

If you have a stone in the lower urinary tract that requires surgery, it may be removed, under anesthesia, through a slim, lighted, flexible, fiber-optic ureteroscope which is passed

through the urethral opening into the bladder then higher up the urinary tract. Tiny tools can be passed through that to trap and remove the stone.

If that doesn't get it, sometimes a specialized machine called a lithotripter can be used to break up stones with shock waves. This is called extracorporeal shock wave lithotripsy. Sound waves create strong vibrations which are focused on the stones which hopefully break into tiny pieces that are then passed in your urine. The procedure creates a loud noise and can cause moderate pain, so you may be under sedation or light anesthesia to make you comfortable

If you have a stone that is too high in your urinary tract or very large, you may need to have surgery to remove it. Afterwards a stent may be left inside you for a little while. The stent is a flexible hollow tube that keeps the ureter open. One end of the stent curls up into the kidney, while the other end curls into the bladder. The stent has several holes in it that allow urine to drain from the kidney into your bladder.

How long will the pain last?

Usually you have pain off and on for several hours up to 1 or 2 days. However, a stone may take days or even weeks to pass. Sometimes weekly x-rays will be taken to track the progress of the stone as it moves down the urinary tract. If a stone has not passed after a month or so, it may need to be surgically removed.

How can I take care of myself?

- Make sure you drink enough liquids.
- Watch for signs of kidney infection, such as fever, chills, sweats, and worsening back or abdominal pain.
- Take the pain medicine when needed.
- Contact us if any problems or questions arise or if you are feeling worse instead of better.

What can be done to help prevent kidney stones?

- Follow treatments for any other health problems that may be causing kidney stones.
- Drink plenty of water daily. The goal should be to urinate at least 2 liters every day. Make sure you avoid getting dehydrated.
- Follow any changes in your diet recommended after the stone has been tested in the lab.

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