

# Kidney Stones

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Your kidneys remove waste and fluid from your blood to make urine. Sometimes, when you have too much of certain wastes and not enough fluid in your blood, these wastes can build up and stick together in your kidneys. These clumps of waste are called kidney stones.

Kidney stones are one of the most common kidney problems. They are usually caused by a buildup of certain minerals that clump together inside your kidneys. Large kidney stones cause pain when they move through your urinary tract. You may not feel anything if you have a small kidney stone that moves easily through your urinary tract. When a kidney stone moves through your urinary tract and out of your body with your urine, it is called passing a kidney stone.

## What are the causes and risk factors of kidney stones?

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Anyone can get a kidney stone, but some people are more likely than others to have them. Men get kidney stones more often than women do. Kidney stones are also more common in non-Hispanic white people than in people of other ethnicities. You may also be more likely to have kidney stones if:

- You have had kidney stones before.
- Someone in your family has had kidney stones.
- You don't drink enough water.
- You follow a diet high in protein, sodium and/or sugar.
- You are overweight or obese.
- You have had gastric bypass surgery or another intestinal surgery.

- You have polycystic kidney disease or another cystic kidney disease.
- You have a certain condition that causes your urine to contain high levels of cystine, oxalate, uric acid or calcium.
- You have a condition that causes swelling or irritation in your bowel or your joints.
- You take certain medicines, such as diuretics (water pills) or calcium-based antacids.

## What are the symptoms of kidney stones?

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If you have a very small kidney stone that moves easily through your urinary tract, you may not have any symptoms, and may never know that you had a kidney stone.

If you have a larger kidney stone, you may notice any of the following symptoms:

- Pain while urinating
- Blood in your urine
- Sharp pain in your back or lower abdomen
- Nausea and vomiting

If you are having any of these symptoms, contact your health care provider.

## What are the treatments for kidney stones?

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The treatment for a kidney stone depends on the size of the stone, what it is made of, whether it is causing pain and whether it is blocking your urinary tract. To answer these questions and to figure out the right treatment for you, your doctor might ask you to have a [urine test](#), [blood test](#), x-ray and/or CT scan. A CT scan

sometimes uses contrast dye. If you have ever had a problem with contrast dye, be sure to tell your doctor about it before you have your CT scan.

If your test results show that your kidney stone is small, your doctor may tell you to take pain medicine and drink plenty of fluids to help push the stone through your urinary tract. If your kidney stone is large, or if it is blocking your urinary tract, additional treatment may be necessary.

One treatment option is shock wave lithotripsy. This treatment uses shock waves to break up the kidney stones into small pieces. After the treatment, the small pieces of the kidney stone will pass through your urinary tract and out of your body with your urine. This treatment usually takes 45 minutes to one hour and may be done under general anesthesia, which means you will be asleep and unable to feel pain.

Another treatment option is ureteroscopy. This treatment is also done under general anesthesia. The doctor uses a long tool shaped like a tube to find and remove the stone or to find and break the stone into small pieces. If the stone is small, the doctor may be able to remove it. If it is large, it may need to be broken into pieces. In this case, a laser will be used to break the stone into pieces that are small enough to pass through your urinary tract.

In rare cases, a surgery called percutaneous nephrolithotomy is needed to remove a kidney stone. During the surgery, a tube will be inserted directly into your kidney to remove the stone. You will need to be in the hospital for two to three days to have and recover from this treatment.

# How can I prevent kidney stones?

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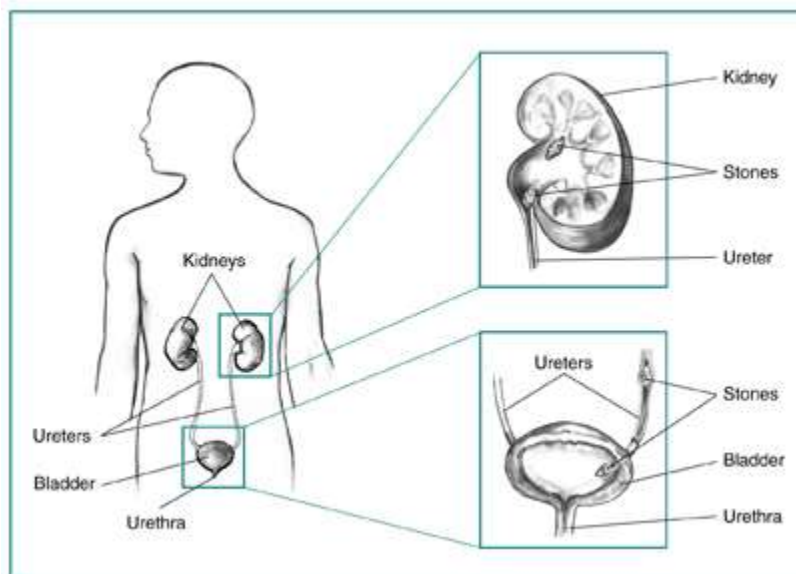
The best way to prevent most kidney stones is to drink enough fluids every day. Most people should drink eight to 12 cups of fluid per day. If you have kidney disease and need to limit fluids, ask your doctor how much fluid you should have each day. Limiting sodium and animal protein (meat, eggs) in your diet may also help to prevent kidney stones. If your doctor can find out what your kidney stone is made of, he or she may be able to give you specific diet recommendations to help prevent future kidney stones.

If you have a health condition that makes you more likely to have kidney stones, your doctor might tell you to take medicine to treat this condition.

Never start or stop any treatment or diet without talking to your doctor first!

## Types of kidney stones

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- Calcium stones are the most common type of kidney stones. They are usually made of calcium and oxalate (a

natural chemical found in most foods), but are sometimes made of calcium and phosphate.

- Uric acid stones form when your urine is often too acidic. Uric acid can form stones by itself or with calcium.
- Struvite stones can happen when you have certain types of urinary tract infections in which bacteria make ammonia that builds up in your urine. Struvite stones are made of magnesium, ammonium and phosphate.
- Cystine stones are made of a chemical that your body makes naturally, called cystine. Cystine stones are very rare, and happen in people who have a genetic disorder that causes cystine to leak from the kidneys into the urine.

Kidney stones can be as small as a grain of sand or as large—sometimes larger than—a pearl. They can stay in your kidneys or travel through your ureters (the tubes that go from your kidneys to your bladder), and out of your body with your urine. When a kidney stone moves through your ureters and out your urethra with your urine, it is called passing a kidney stone. A kidney stone can also get stuck in your urinary tract and block urine from getting through. When you pass a kidney stone or a large kidney stone blocks the flow of your urine, it can be very painful.