



# Kidney stones



*The foundation of kidney care.*

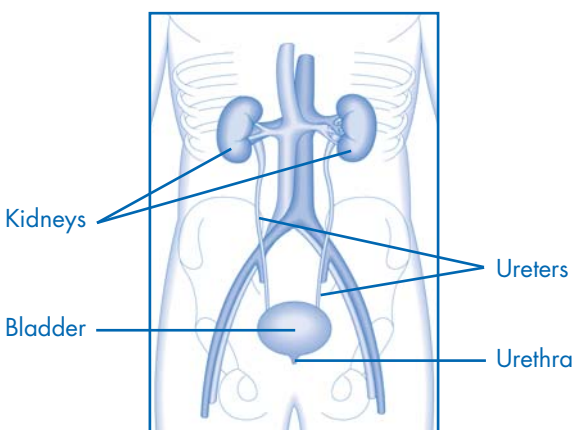
# Kidney stones

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## ■ What are the kidneys?

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The kidneys are the master chemists of the body. Normally, there are two of them, one on either side of the spine under the lower ribs. They are reddish brown in colour and shaped like kidney beans. Each kidney is about the size of your clenched fist.



**THE URINARY SYSTEM**

## ■ How does the urinary system work?

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The urinary system is made up of the kidneys, the ureters, the bladder, and the urethra. Each plays an important role in helping your body to eliminate waste products in the form of urine.

The main job of the kidneys is to remove wastes from the blood and return the cleaned blood back to the body. The ureters carry the waste products, as urine, from the kidneys to the bladder. Urine is stored in the bladder until you urinate. It passes out of the body through a tube called the urethra.

## ■ What is a kidney stone?

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A kidney stone can develop when certain chemicals in your urine form crystals that stick together. The crystals may grow into a stone ranging in size from a grain of sand to a golf ball. Small stones can pass through the urinary system without causing problems. However, larger stones might block the flow of urine or irritate the lining of the urinary tract.

Most stones form in the kidney. Some travel to the ureter or bladder.

Most stones (70 to 80 percent) contain mainly *calcium oxalate* crystals. A smaller number are *uric acid* stones or *cystine* stones.

## ■ Who is affected by kidney stones?

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One out of ten Canadians will have a kidney stone at some point in their life. Kidney stones occur much more commonly in men than in women. They tend to affect people in middle age, and occur more frequently in hot climates.

## ■ What causes kidney stones to form?

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Normally, urine contains chemicals which prevent crystals from forming. However, some people seem to be more prone to kidney stones than others.

If you **are** prone to kidney stones, there are several factors which contribute to their formation:

- Recurrent urinary tract infections
- Drinking too little fluid
- Blockage of the urinary tract
- Limited activity for several weeks or more
- Consuming too much calcium oxalate or uric acid in your diet
- Consuming too much Vitamin C or D
- Certain medications
- Certain metabolic diseases

Sometimes, stones can also develop if you have a persistent kidney infection.

## ■ What are the symptoms of kidney stones?

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- Severe pain that usually starts suddenly in the small of the back under the ribs or in the lower abdomen, and which may move to the groin; the pain may last for minutes or hours, followed by periods of relief.
- Blood in the urine
- Nausea and vomiting

If you have a urinary tract infection, you may also experience:

- Burning during urination and the urge to urinate frequently
- Cloudy or foul-smelling urine
- Fever, chills and weakness

## ■ How are kidney stones diagnosed?

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Kidney stones are diagnosed by a complete medical examination, X-rays and other tests. Your doctor will start by giving you a physical examination and asking you questions about past kidney illness, your diet, use of medications, your lifestyle and family background.

An X-ray of the kidneys, ureters and bladder can reveal the presence of most stones. Sometimes, stones which are less common can be seen using dye injections or an ultrasound test.

Blood and urine tests may be needed to find out what is causing the stones to form.

## ■ How are kidney stones treated?

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Most small stones pass through your body by themselves within hours or a few days. To help this process, your doctor will advise you to drink a lot of fluids and follow a special diet.

Medications may also be prescribed. Certain types of stones can be dissolved using medication. However, the most common stones (those containing calcium) cannot be dissolved.

Stones that do not pass by themselves are treated with *Extra-corporeal Shock Wave Lithotripsy (ESWL)*. This treatment is a non-surgical technique which uses high energy shock waves to break the stones into small fragments (about the size of grains of sand). You can then pass them when you urinate during the next few weeks. This treatment is successfully used in many cases where the stones are less than two centimetres in size.

When stones are larger than two centimetres, a surgical procedure is often needed.

The stones that you pass at home and those which are surgically removed should be sent to a laboratory for analysis.

## ■ How can you help prevent the formation of kidney stones?

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Kidney stones recur in about 50 percent of cases. There are steps you can take, in consultation with your doctor and a dietitian, to help prevent this from happening to you.

- Drink a glass of water every hour during the day and whenever you get up at night. Be sure to drink plenty after meals and exercise.
- If you have calcium oxalate stones, do not consume very large amounts of dairy products or foods high in oxalate content (such as tea or chocolate). Do not take very large doses of Vitamin C (4 grams or more daily) and avoid heavy use of antacids.
- If you have uric acid stones, cut down on the amount of red meat you eat.

# The Kidney Foundation

## OUR VISION

Kidney health, and improved lives for all people affected by kidney disease.

## OUR MISSION

The Kidney Foundation of Canada is the national volunteer organization committed to reducing the burden of kidney disease through:

- funding and stimulating innovative research;
- providing education and support;
- promoting access to high quality healthcare; and
- increasing public awareness and commitment to advancing kidney health and organ donation.

Since 1964, our fundraising campaigns have allowed us to contribute millions of dollars to research, and to provide services to individuals living with chronic kidney disease and related conditions.

For further information, or if you wish to help us in our efforts, please contact The Kidney Foundation of Canada office in your area. You can also visit our Web site at **[www.kidney.ca](http://www.kidney.ca)**.

*With acknowledgement to D.G. Oreopoulos MD, PhD, FRCPC, FACP, Professor of Medicine, University of Toronto, and Director, Kidney Stone Clinic, Toronto Western Hospital, for his assistance in compiling this information.*

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