

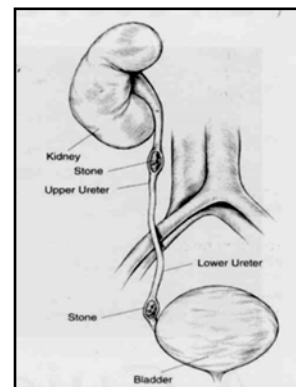


Kidney Stones

What are kidney stones?

Kidney stones (also known as calculi) are literally 'stones' that are situated either in the kidney or in the tube that leads from the kidney to the bladder (the ureter). They can be single or multiple and can range in size from millimetres to several centimetres.

Men are more prone to stones than women with ages 30 to 50 most commonly affected. People with a family history of kidney stones and people of European descent living in hot climates are also particularly at risk (thought to be due to dehydration).



How do stones form?

The kidneys act as the body's filtering system. By processing our circulating blood, the kidneys absorb the good chemicals and minerals and eliminate the unwanted ones in our urine. If certain chemicals and minerals such as calcium, oxalate, uric acid or phosphate build up in the kidneys or in the urine they can form a stone. Chemicals and minerals may build up for a variety of reasons including a lack of urine volume (found in people who do not drink enough fluids) or an excessive amount of certain foods.

Most stones start out small in size and grow larger over time. The stones may stay in the kidney or travel down the ureter into the bladder. The majority of stones are composed of **calcium oxalate**. Other types of stones include uric acid, struvite (infected stones) and rarely, cystine.

What are the symptoms?

In many cases, stones can be present without causing any symptoms whatsoever. Stones that stay in the kidney can produce mild to moderate pain in the side but it is the stone that moves from the kidney into the ureter that causes the most severe pain (known as renal colic). Renal colic is usually sudden, may come and go, and can be excruciating. The pain classically starts in the back and radiates to the groin / genitals. If you go on to develop fevers or cold chills with shakes (rigors), you require urgent medical attention.

Kidney stones may also cause all or only a few of the following symptoms:

- Blood in the urine
- Nausea
- A burning sensation when passing urine
- Restlessness
- Vomiting
- Frequent urination
- Loss of appetite
- Recurrent urinary infections

How are stones diagnosed?

In many situations, the symptoms alone allow an accurate diagnosis of kidney stones to be made. However, x-rays, a CT (computerised tomography) scan or ultrasound are often used to confirm the presence of a stone. A urine test looking for blood can also be helpful.

If you continue to form stones, further blood tests and a 24-hour collection of urine will be required. These tests will help to identify any specific risk factors that may be causing your stones to develop. This may lead on to advice from Renal and Dietary services.

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How are stones treated?

The majority of kidney stones pass through the urinary tract into the bladder where they will come out in the urine. During this time, you may experience renal colic that will generally be treated with strong painkillers from your general practitioner (GP) or emergency clinic. If the pain is controlled and your stone is known to be small, generally the best course of treatment is to wait for several days or weeks for the stone to pass into the bladder. If, however, the stone is too large to pass or doesn't pass with time, then treatment is needed. The choice of treatment is best made by your urologist, depending on many factors such as the size and position of the stone.


The treatment can either be in the form of:

Stone dissolution therapy - for uric acid stones. 5-10% of these stones may be managed with medication which alkalinises urine and dissolves uric acid stones.	
Ureteroscopy – a small, narrow 'telescope' is passed up through the bladder to the stone so that the stone can be removed or broken (sometimes with a laser).	Percutaneous surgery – a telescope is passed through the skin of the back (and into the kidney) to see and remove the stone. This is reserved for stones that are large and still in the kidney.
Lithotripsy – a special machine is used that sends 'shock waves' through the body to break up the stone into tiny pieces that will later pass in the urine.	Open surgery – nowadays it is very rare to require a 'cutting' operation to remove a stone but it is sometimes the best option

How can I avoid getting more kidney stones?

The most important thing you can do to prevent further stones forming is to **drink lots of fluid**.

- Drink fluid to ensure you are passing at least 2.5 litres of urine each day. Drink throughout the day and night if possible. Your urine should be a pale yellow to clear colour.
- While the best fluid is water, other fluids such as milk, coffee, tea, dilute fruit juice and artificially sweetened drinks will also help. It may help to dilute 100ml of lemon juice with water to drink over the course of the day.

Reduce salt (sodium) intake Keep salt in cooking to a minimum and do not add salt to meals. Avoid salty foods as much as possible e.g: Marmite; Bovril; Oxo ;salted chips; nuts; tinned and packet soups; tinned meats; ham; corned beef; smoked fish; processed frozen foods; fast food	Adequate calcium intake Surprisingly, a calcium restriction can encourage stone formation. As such, you should aim to have the recommended daily allowance for calcium. For adults the recommended daily allowance is approximately 800 milligrams which can be achieved by choosing three to four small to moderate servings of milk and dairy foods (e.g. one serve = a pottle of yoghurt, a glass of milk) per day.
 If you are taking any vitamin supplements please check with your health professional as these may increase your risk of forming stones.	

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