

## Patient information

# Kidney Stones

## Urology Department

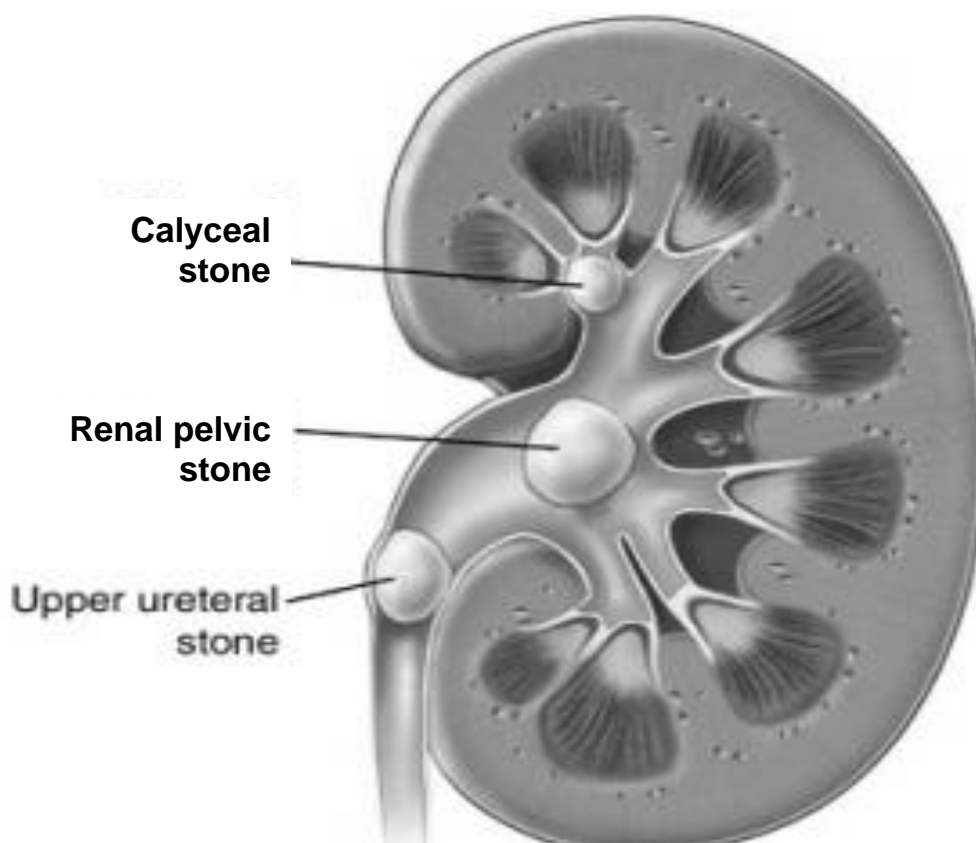
Kidney stones are a common health problem that can affect people of all ages. Their incidence is increasing due to their link to health problems associated with modern diet and lifestyle such as obesity and diabetes.

They can cause significant pain or infection and may lead to loss of kidney function. About half of people who have a kidney stone will develop another one at a later time in their life. Kidney stones cause a major economic burden on the healthcare system and society in general.

### What is a kidney stone?

Kidney stones form when dissolved mineral salts in your urine crystallise. Sometimes these tiny crystals can become lodged in the drainage part of the kidney and slowly grow to form stones.

Most kidney stones contain calcium and less commonly they contain uric acid, struvite or cystine. Approximately three in twenty men and one in twenty women develop kidney stones at some point of their life.

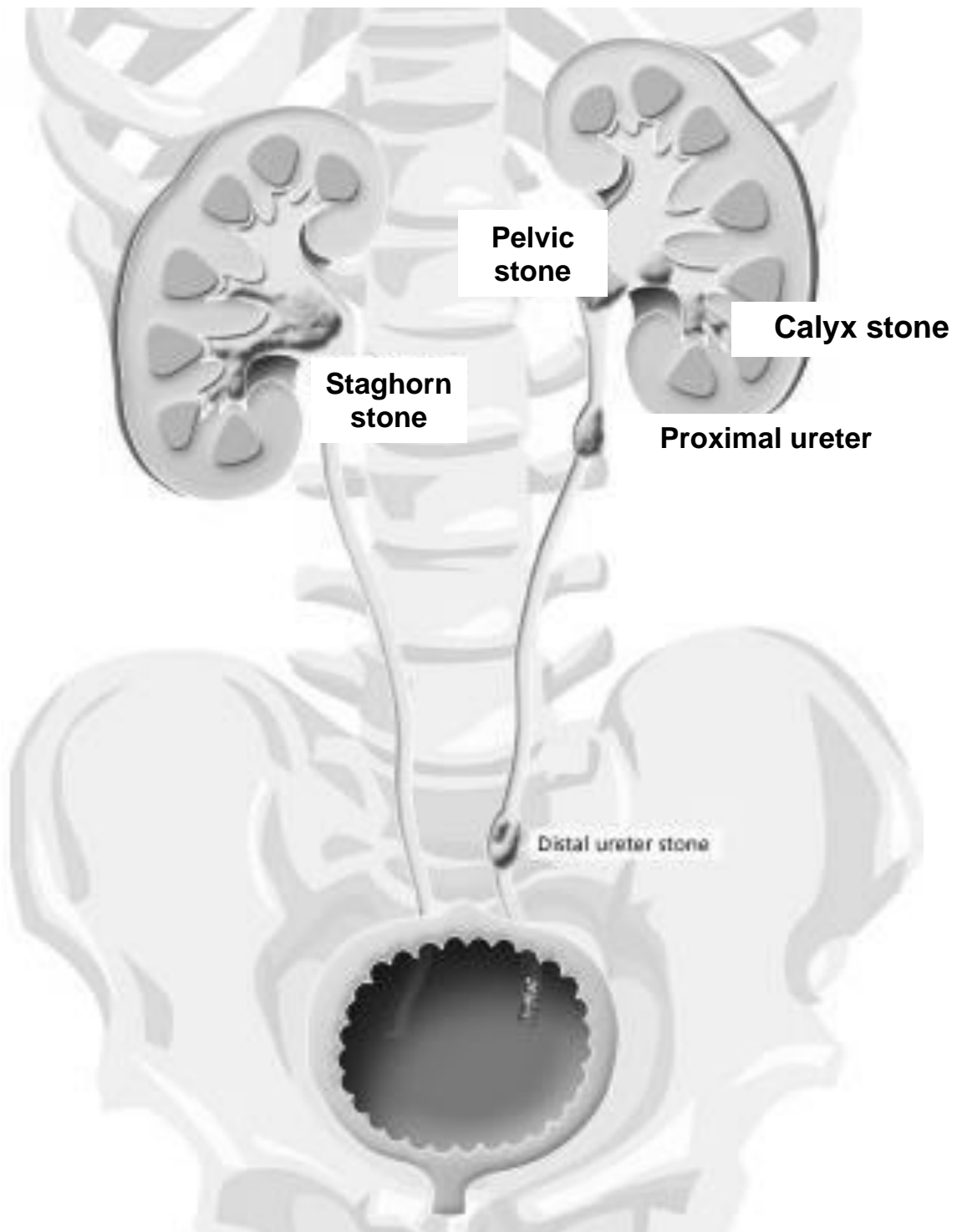


## What are the symptoms of kidney stones?

Not all kidney stones cause symptoms and some people may never find out they have them. Sometimes kidney stones are found incidentally on a scan carried out for another reason.

Symptoms can depend on where the stone is in your urinary system and whether it causes blockage of urine flow.

Sometimes kidney stones can drop from the kidney into the ureter, which is the narrow tube draining urine to your bladder. They can get stuck and cause back pressure on the kidney which can be very painful (renal colic)

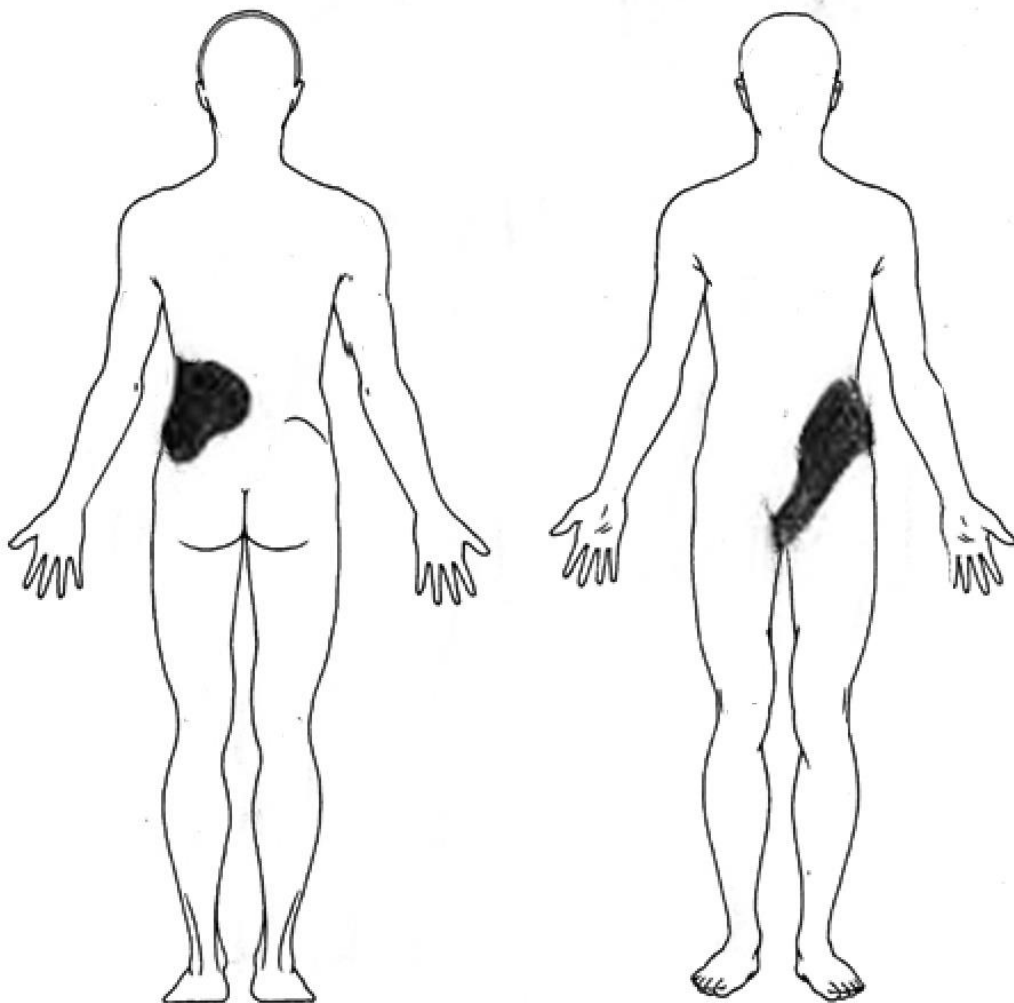


Sometimes the stone irritate the kidney directly. Many other medical conditions can cause pain similar to kidney stone pain. E.g. back pain.

**The symptoms may include:**

- pain around your back, abdomen and groin
- nausea or vomit
- blood in your urine
- fever
- need to urinate more often or burning sensation when urinating.

**Pain in shaded areas maybe caused by a kidney stone**



## **What are the causes of kidney stones?**

A number of factors related to diet, lifestyle, genetics, the shape of your kidneys and other health problems determine your risk of getting kidney stones. In some people, there are no obvious risk factors.

### **Risk factors include**

- Not drinking enough fluid.
- Eating too much salt or meat.
- Being overweight or obese.
- High blood pressure, diabetes or gout.
- A kidney with abnormal anatomy or shape.
- Have a family history of kidney stones.
- Medications such as acetazolamide, topirimate and high doses of Vitamin C.
- Some rarer conditions such as Crohn's disease, Hyperparathyroidism, Cystinuria, Spina bifida, Cystic Fibrosis and Sarcoidosis.

### **Diagnosis of kidney stones**

Your doctor will ask you about your symptoms, examine you, and ask you about your medical history. There may be further tests to confirm the diagnosis and to show the size, location and type of your kidney stone.

### **These may include**

- Blood tests - to identify excess amounts of certain chemicals in blood or urine which cause kidney stones.
- Urine analysis – to look for blood in the urine and signs of infection.
- X-ray image – stones that contain calcium usually show up white on X-ray images.
- CT (computed tomography) scan – a series of X-rays which build detailed images of inside your body.
- Ultrasound scan – this uses high frequency sound waves to produce an image of the kidney.
- Enhanced metabolic screens are used in recurrent stone formers or people with significant risk factors and may include 24 hour urine collections or fluid diaries.

### **How will my doctor find out what kind of stone I have?**

The best way for your doctor to find out what kind of stone you have is to test the stone itself. If you know that you are passing a stone, try to catch it in a strainer.

Your doctor may ask for a urine sample or take blood to find out what caused your stone. You may need to collect your urine for a 24-hour period. These tests will help your doctor find ways for you to avoid stones in the future.

### **Why do I need to know the kind of stone?**

The therapy your doctor gives you depends on the type of stone you have. For example the diet changes that help prevent uric acid stones may not work to prevent calcium stones. Therefore, careful analysis of the stone will help guide your treatment.

### **What treatment is available?**

Stones can be fragmented using Shock Wave Lithotripsy (SWL), Ureteroscopy and Percutaneous Nephrolithotomy (PCNL). Your treatment may depend upon the actual size of the stone and where it is situated within the urinary tract. Your surgeon will discuss with you the best options for stone removal at your consultation.

Another option for a stone made purely from uric acid (about 1 in 20 stones) is to try to dissolve the stone. This can be done by drinking plenty and making the urine alkaline with medication.

### **What can I do to help prevent a recurrence of a kidney stone?**

About half of people who have a kidney stone develop another one within five to ten years. Sometimes stones can be prevented from forming.

#### **1. Drink plenty of fluids**

- One of the best ways of reducing the risk of forming more stones is by drinking two to three litres (four to six pints) of fluid each day (unless your doctor advises otherwise). The aim is to keep your urine dilute – a pale yellow in colour.

#### **2. Look at your diet**

- Reduce your intake of animal proteins e.g. meat, fish and eggs. These proteins appear to increase risks of stone formation.
- Reduce the amount of salt intake and try to use pepper, herbs and vinegar as alternative flavouring. A high salt intake (e.g. tinned food, processed food, salted crisp) can contribute to calcium stone formation.
- People with calcium oxalate stones should reduce the oxalate content of their diet. Oxalates are found in foods such as chocolate, nuts, peanut butter, strawberries, rhubarb, celery, spinach, beetroot and parsley.
- In the past it was believed that dietary calcium (e.g. milk) should be restricted in patients with calcium kidney stones. In fact, scientific studies showed that inadequate dietary calcium intake increases the risk of stone formation.

### 3. Medication

- Depending on your condition or the type of stone, you may be prescribed different medication e.g. to reduce uric acid level or to alkalinise urine.
- In general, a normal calcium, low salt and low protein diet, along with keeping your urine pale in colour by drinking lots of fluid can reduce risk of another stone forming.

### Points to Remember

- Most stones will pass out of the body without a doctor's help.
- See your doctor if you have severe pain in your back or side that will not go away.
- See your doctor if you have blood in your urine -urine will appear pink or red.
- When you pass a stone, try to catch it in a strainer to show your doctor.
- Drink lots of water to prevent more kidney stones from forming.
- Talk with your doctor about other ways to avoid more stones.
- Reduce the intake of oxalate rich foods (grouped here by colour for ease of memory):

<b>Five 'Brown'</b>	<ul style="list-style-type: none"><li>• Instant Black Coffee</li><li>• Stewed Tea</li><li>• Chocolate</li><li>• Coca-cola</li><li>• Nuts</li></ul>
<b>Five 'Red'</b>	<ul style="list-style-type: none"><li>• Beetroot</li><li>• Strawberries</li><li>• Rhubarb</li><li>• Radishes</li><li>• Red Meat</li></ul>
<b>One 'Green'</b>	<ul style="list-style-type: none"><li>• Spinach</li></ul>

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Your feedback is important to us and helps us influence care in the future.

Following your discharge from hospital or attendance at your outpatient appointment you will receive a text asking if you would recommend our service to others. Please take the time to text back, you will not be charged for the text and can opt out at any point. Your co-operation is greatly appreciated.

If you have accessed this patient information leaflet via a QR code can you please take the time to complete a short questionnaire by clicking [here](#).

## **Further Information**

**For queries about your appointment, contact the hospital you have been referred to**

**Royal Liverpool Hospital  
Urology Department  
Tel: 0151 282 6877/6788  
Text phone number: 18001 0151 282 6877/6788**

**Aintree Hospital  
Patient Appointment Centre  
Tel: 0151 529 4550  
Text phone number: 18001 529 4550**

### **Urology Specialist Nurses**

**Royal Liverpool Hospital  
Stone Specialist Nurse  
Tel: 0151 282 6819  
Text phone number: 18001 0151 282 6819**

**Urology Benign Condition Specialist Nurse  
Tel: 0151 282 6819  
Text phone number: 18001 0151 282 6819**

**Aintree Hospital  
Urology Specialist Nurses  
Tel: 0151 529 529 3484  
Text phone number: 18001 0151 529 3484**

**For clinical questions specific to your case, telephone the secretary of your Urology Consultant.**

**Author: Urology Department  
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