The British Association of Urological Surgeons

Patients
I think I might have...

Kidney Stones

Quick Links

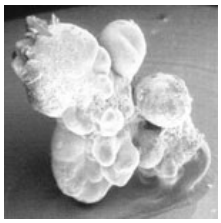
Pages in this section contain graphic images (including genitalia) that some may find upsetting.

What should I do if I think I have kidney stones?

Back to top

If you have pain in your loin, especially if you also have other urinary symptoms or features suggesting an infection in your urine, you should contact your GP for further advice

Whilst kidney stones (pictured) may cause pain in the loin with radiation down into your groin, there are many other causes for such pain. These include problems with your back and spine as well as a number of other non-urological conditions. The only way to find the cause of your symptoms is to have further investigations with your GP.



What are the facts about kidney stones?

Back to top

- Kidney stones are found in 2-3% of people and 0.5% of people present each year with an acute episode of pain due to stones; These rates have been rising steadily since the start of the 20th century;
- Men are more commonly affected than women. After the age of 50 when the sex distribution becomes equal;
- At the age of 70, you have a lifetime risk of 1 in 8 for forming a stone;
- Stones are responsible for more than 12,000 hospital admissions each year;
- Stone formation is governed by both **intrinsic** (heredity, age & sex) and **extrinsic** factors (geography, climate, water intake & diet);
- Poor fluid intake combined with a low-roughage, high protein diet containing a lot of refined sugar increases the risk of forming stones;
- There is an association with the "metabolic syndrome" (**Syndrome X***; and*
- Recurrence rates for stones are high (20% at 5 years, 35% at 10 years & 70% at 20 years).

What should I expect when I visit my GP?

Back to top

Your GP should work through a recommended scheme of assessment for suspected kidney stones. This will normally include one or all of the following:

1. A full history
2. A physical examination
3. Additional tests

What could have caused my kidney stones?

Back to top

There are many causes of kidney stones and it is unusual to have just one causative factor

The main reasons for forming stones are:

- **Anatomical (structural) abnormalities** (inherited or acquired);
- **Excess stone-forming substances in the urine;**
- **Lack of stone inhibitors in the urine;**
- **Chronic Infection in the urine** (mostly in post-menopausal women); and
- **Idiopathic** (meaning that no reason is identified in 5-10%).

In most patients, more than one of the groups above is involved in stone formation. Where no cause is identified, the stones are usually made of calcium oxalate. Recurrence of calcium oxalate stones is common.

What treatments are available for this problem?

Back to top

Small stones in the kidney or ureter, which are causing no problems, can be managed expectantly and may pass spontaneously. Active treatment is usually recommended for larger stones or stones which are causing problems

General measures

You will normally be given specific advice about changes to your diet and fluid intake which will reduce the risk of further stone formation. There is some evidence that stone inhibitor levels (especially citrate) can be increased by drinking fresh lemon juice in water. This reduces the levels of stone-forming chemicals in your urine.

Download dietary advice for stone patients.

You should not restrict your calcium intake. Installing a water softener is not helpful in preventing further stones. Avoid grapefruit juice (pictured), vitamin D tablkets and vitamin C supplements which can increase your risk of forming stones.

Medical treatment

Thiazide diuretics and other drugs may be used to reduce the calcium levels in your urine.

it may be possible to dissolve certain less common types of stone using drugs but this is only appropriate for

- **cystine stones:** tiopronin or d-penicillamine; and
- **uric acid stones:** by alkalinising your urine.

If you have a stone caused by infection, you will be prescribed antibiotics before stone treatment and you may be asked to continue them after surgery.

You may be given further advice about specific medical treatment once your stone has been analysed chemically.

Conservative treatment

Small, symptomless stones in the kidney can be monitored by regular checks with an X-ray. Stones of a similar size in the ureter (less than 5mm diameter) usually pass by themselves but active treatment will be recommended if the stone shows no sign of passage after 2-3 weeks.

If you are found to have a stone in the ureter, muscle-relaxant drugs (*e.g. Tamsulosin, Nifedipine*) and drugs which relieve muscle spasm (*e.g. Buscopan, Probanthine*) are no longer used because they have little effect on symptoms and do not speed stone passage.

Nonsurgical treatment

Extracorporeal shockwave lithotripsy - ESWL

This is the most common treatment recommended for stones in the kidneys and for stones less than 1cm diameter in the upper ureter (the drainage tube between kidney & bladder). 90% of stones will clear with one treatment but some patients may need re-treatment or even surgical intervention. If your stone does not responded to two successive treatments with ESWL, it is unlikely to fragment with further treatments and other removal methods should then be considered.

ESWL cannot be performed safely in

- pregnant women;
- patients on heparin, Warfarin or other blood-thinning agents; and
- patients whose weight exceeds 300lb.

Surgery

The main reasons for recommending surgical treatment are:

- a stone which is too large to pass spontaneously (greater than 5mm diameter);
- a stone which is causing obstruction to urine drainage;
- a stone which is causing (or has been caused by) infection;
- a stone which has formed as a result of an anatomical (structural) problem which also needs correction at the same time as stone treatment; and
- failure of simple painkillers to control symptoms.

Percutaneous (keyhole) surgery (PCNL)

This is used for large stones in the kidney upper ureter, either as a primary measure or if ESWL has failed.

Flexible uretero-renoscopy (fURS)

Smaller stones in the kidney can be extracted or fragmented with a laser, using a flexible telescope passed through your bladder. You may have a temporary stent inserted after this procedure.
Download the information leaflet about ureteric stents

Rigid ureteroscopy (URS)

Stones in the ureter can be extracted or fragmented with a laser (pictured), using a rigid telescope passed through your bladder. You may have a temporary stent inserted after this procedure.

Insertion of an ureteric stent

In the emergency situation, when a stone is blocking the ureter completely, it may be necessary to insert a stent under general anaesthetic to relieve the blockage so that definitive treatment can be performed at a later stage.

Percutaneous nephrostomy tube insertion

If there is a blockage with severe infection due to a stone in the ureter, a drainage tube may be inserted into your kidney under local anaesthetic to relieve the problem. This will be followed, at a later date, by definitive treatment of the stone.

What is the "bottom line"?

Back to top

The best treatment for any stone is a judicious combination of all the techniques described above, tailored to the specific needs of individual patients and their individual stone(s).

Click here to see FAQs about stone disease

More resources on Kidney Stones

Some/all of these resources are links to external sites, the content on which BAUS accepts no reponsibility for.

FAQs on Stones
Frequently-asked question about stones from patients, carers and families

Patient UK
General patient-orientated information about kidney stones

Cystinuria UK
A website which describes the genetics, diagnosis & management of cystinuria

BUPA (Kidney Stones)
BUPA factsheet on kidney stones and their treatment

NHS Choices
Approved information from the NHS about kidney stones

Medline Plus
Further information about the causes, symptoms & treatment of kidney stones

National Kidney and Urologic Diseases Information Clearinghouse
Information from USA about kidney stones