



Kidney stones

This information sheet from Great Ormond Street Hospital explains the causes, symptoms and treatment of kidney stones and where to get help.

Kidney stones are also called renal stones. They are clusters of tiny crystals that can form in the kidneys. Most clusters are too small to cause any problems and pass out of the body in the urine. Sometimes, the clusters can clump together to form bigger clusters, which may eventually become big enough to block the filtering units in the kidney. Sometimes, they pass out of the kidney down the ureter and out in the urine without causing any problems, but if they are big they may block the ureter or lodge in the bladder.

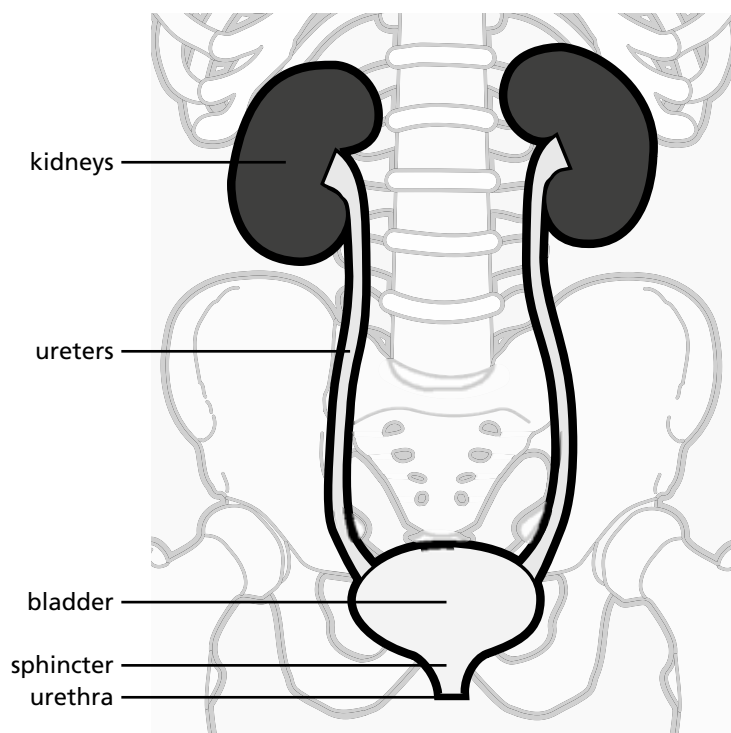
Kidney stones are much more common in adults than in children. Children who have kidney stones will be checked thoroughly to rule out or confirm an underlying condition causing the problem. This could include a structural abnormality with the urinary system or a problem with the metabolism.

What causes kidney stones?

The urinary system consists of the kidneys, ureters, the bladder and urethra. The kidneys filter the blood to remove waste products and produce urine. The urine flows from the kidneys down through the ureters to the bladder, where it is stored until we go to the toilet. It passes through another tube called the urethra to the outside when urinating (peeing).

The kidneys contain millions of tiny filtering units called glomeruli. As blood passes through the tubes in the glomerulus, waste products pass through the walls of the tubes to form urine. Blood cells and other things such as protein cannot pass through the walls because they are too big.

The urine contains lots of different substances, which do not cause any





problems when the urine is weak and the amount of each substance is balanced.

However, when the urine becomes too concentrated, often due to dehydration, the proportion of these substances in the urine increases, which can make crystals form. They can also form if the amount of these substances increases because the body is making more of them than it should or not removing them normally.

In rare situations, kidney stones can develop after urinary infections. Some children are more at risk of kidney stones, for instance, children who were born prematurely or those who have very limited mobility, such as those confined to wheelchair.

What are the signs and symptoms of kidney stones?

Some kidney stones do not cause any symptoms at all, particularly if they are very small and not causing a blockage. However, kidney stones can be painful and cause blood in the urine (haematuria) and generally feelings of being unwell, such as a high temperature and vomiting. If the stone passes out of the kidney into the ureter, it can cause severe pain.

Kidney stones can cause an infection. Signs of an infection include a high temperature, vomiting and/or diarrhoea and urine that is pink or cloudy. Studies have shown that pain is not experienced in approximately half of young children with stones.

How are kidney stones normally diagnosed?

Your doctor will ask lots of questions about how the child became ill and examine them. Various imaging scans may be needed to confirm the diagnosis, see where the kidney stones are located and their size. An ultrasound scan is usually the first test to help make the diagnosis, although other scans may be needed as well. Urine tests will be needed to show whether there is an infection and to measure the chemicals that cause stones. Blood tests will show how well the kidneys are working.

How are kidney stones normally treated?

This depends on their size and location. Smaller stones can be broken up using sound waves (lithotripsy). Some stones that are stuck in the ureter can be removed using an endoscope, a tube containing a small camera, a light and a laser device to break up the stone. Most other stones are removed using a keyhole-type surgery.

Children with lots of stones or stones in both kidneys usually need several procedures to clear the stones. It is important to drink plenty of fluids to stop them forming again. Your doctor will explain how much fluid. Some children may need to reduce their salt intake and, rarely, other medicines or measures may be necessary.



What happens next?

Many children have just one stone episode but it may take some time to clear the stones. Incomplete clearance can increase the risk of new or larger stones. A small number of children have metabolic conditions that lead them to form stones throughout their life and extra treatment will be necessary to minimise these episodes.

Further help and advice

Talk to the child's doctor or health visitor.

There is no specific support group of children with kidney stones, but the following organisation may be able to offer advice and support:

British Kidney Patient Association

Bordon GU35 9JZ

Tel: 01420 47021 or 47022

Website: www.britishkidney-pa.co.uk

Notes

Compiled by the GOSH web team in collaboration with the Child and Family Information Group

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