

Kidney Stones (Urolithiasis)

You may think of kidney stones as something that happens only in adults, but children can get them too. Most children with kidney stones (but not all) have some type of underlying disease, for example, a kidney problem or metabolic disorder. Tests are usually performed to see if your child has one of these underlying diseases. Many stones pass by themselves, but others require treatment.

What are kidney stones?

Kidney stones are collections of crystallized material that form into stones somewhere in the urinary tract. (The urinary tract includes the *kidneys*, which filter urine; *ureters*, tubes that bring urine to the bladder; the *bladder*, which holds urine and expels it through the urethra; and the *urethra*, through which urine flows out of the body.)

The stones may be made up of several different substances, most commonly calcium. Many factors can cause or increase the risk of stones, such as having too much calcium in the urine or infections or surgery of the urinary tract. In some cases, kidney stones run in families.

If your child has a kidney stone, your doctor will likely recommend tests to see if he or she has any condition responsible for the stone. Some stones pass on their own (go out with your child's urine). If not, other treatment options are available. With proper treatment and follow-up, most children with kidney stones have no complications.

What do they look like?

Symptoms of kidney stones vary, but may include:

- Blood in the urine. Sometimes the blood is visible, but other times it is detected on urine tests. In the latter case, the stone may not be causing any symptoms.
- Depending on where the stone is located, pain may occur on your child's side, or in the lower abdomen or genital area. This pain is sometimes called *renal colic*. Pain may come and go.
- Difficulty urinating, depending on stone location. Your child may feel like he or she has to urinate but be unable to do so. This may be a sign that your child is passing a kidney stone.
- Your child may pass urine with small amounts of gravel-like material. This is a sign that your child is passing a stone.

What causes kidney stones?

Many causes are possible:

- *Metabolic abnormalities* are the most common cause of kidney stones in children. This refers to problems with a person's metabolism that lead to abnormal amounts of minerals (like calcium), hormones, enzymes, and other chemicals.
- The most frequent cause is higher than normal levels of calcium in the urine (*hypercalciuria*). This can result from increased absorption of calcium from the intestines or problems with absorption of calcium by the kidneys.
- High levels of oxalate. It can be found in what we eat such as spinach and vitamin C. More oxalate is absorbed into our bodies with certain intestinal diseases. Our bodies can also make too much of it.
- Several other metabolic abnormalities are possible but less common.
- *Kidney and urinary tract problems* may increase the risk of kidney stones. Repeated urinary tract infections with certain bacteria and certain types of surgery on the urinary system are special risk factors for stone formation.
- Many other diseases are associated with kidney stones, including cystic fibrosis (a genetic disease resulting in lung and digestion problems).
- Taking certain drugs can also increase the risk, including steroids and the diuretic furosemide (Lasix).
- In some cases, no apparent cause of kidney stones is found. These cases are called *idiopathic*. The diagnosis of idiopathic kidney stones is made only after tests to make sure your child doesn't have other known causes.

What are some possible complications of kidney stones?

Treatment reduces the risk of complications related to kidney stones. Possible complications include:

- Urinary tract infections.
- Kidney damage.
- Other complications may be related to the underlying disease that is responsible for the kidney stones.

What puts your child at risk of kidney stones?

Risk factors depend on the cause. General risk factors for kidney stones include:

- Dietary factors, especially very high calcium intake, a lot of foods containing oxalate, or very high doses of vitamin C.
- The risk is higher in boys than in girls.

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- If you or others in your family have had kidney stones, your child may be at higher risk.
- Kidney stones are less common in African-American families.
- A long period of immobilization or bed rest increases the risk of kidney stones by increasing the amount of calcium in the urine.

Can kidney stones be prevented?

Depending on the cause of kidney stones, some preventive measures can be recommended:

- Make sure your child drinks plenty of liquids.
- Diet changes may be recommended for oxalate stones.

How are kidney stones treated?

Treatment for kidney stones depends on your child's specific situation. Factors to consider include:

- The size of the stone.
- Where it is located.
- What it is made of.
- Whether it is causing any blockage or infection.

We will recommend a visit to a doctor specializing in the diagnosis and treatment of urinary problems (a pediatric urologist) or a kidney specialist (a nephrologist). Treatment options include:

- *Letting the stone pass.* Many small stones eventually pass on their own (go out with your child's urine). This may be less likely to happen in young children. Passing a stone can be quite painful.

- *Endoscopy.* A simple procedure may be performed to temporarily widen (dilate) part of the urinary system to allow the stone to pass more easily. An endoscope is an instrument placed through the urethra, into the urinary tract. It allows the doctor to see the problem and perform certain procedures.
- *Lithotripsy.* A procedure called lithotripsy uses lasers or sound waves to break up stones, allowing them to pass.
- Surgery is rarely needed to remove kidney stones.
- *Treating the cause.* Other treatments may be recommended, depending on the problem causing your child's kidney stone.
- *Drinking fluids.* Because stones are caused by overly high levels of certain substances in the urine, drinking plenty of fluids will help to prevent further stones.
- *Diet changes.* If high calcium levels are the cause of your child's kidney stone, your doctor may recommend reducing the amount of dairy products in his or her diet. This has to be done carefully to make sure your child's body is getting enough calcium.
- *Medications* may be recommended, depending on what is causing your child's kidney stones. For example, a drug called allopurinol can help to prevent stones made of uric acid.



When should I call your office?

Call our office if your child has:

- Pain when urinating.
- Blood is seen in the urine.