

Introduction

Kidney stones affect nearly 1 in 11 individuals in the United States at some point in their lives, and there is evidence that the number of those who have had a stone is rising per the American Urological Association in 2014 and stones are likely to recur, with at least 50% of individuals experiencing another stone within 10 years of the first occurrence. Men get stones more frequently than women, as do people with a family history of stones, obesity, hypertension, or diabetes. Stones occur more commonly in the southeastern United States and less commonly in the western states. Children can develop stones as well, but this is rare. (This can be due to genetic factors, low birth weight with intravenous feeding, and deformities or abnormal anatomy in the urinary tract. However, children are also at risk if they do not drink enough fluid or eat a lot of fast food — which has high levels of salt.)

Kidney stones are crystals that form in the kidney. The development of stones depends on particles that are present in your urine. Certain particles can speed up the growth of stones while others prevent the formation of kidney stones. Lack of fluid intake also contributes to the formation of stones. If you do not drink enough water; your urine will have less fluid and a higher concentration of the particles that form stones. So, by drinking more water, you help to prevent the clumping together of particles that form stones. Most stones are composed of calcium, but others may be made of uric acid, phosphate, and other chemicals. They start out small and grow larger over time. The stones may stay in the kidney or they can travel down the ureter (the tube carrying urine from the kidney to the urine bladder). Stones may also form in the bladder or urethra (tube carrying urine to outside the body).

The Symptoms You Experience May Include:

- Severe pain or very little pain, depending on the stone location. If the stone is blocking the flow of urine, you will experience pain but if the stone is not blocking the flow of urine, you may feel no pain. You may also have pain if the stone is moving down the ureter. The pain can be in the back, side, abdomen and groin depending on the stone location, and the pain may come and go.
- Nausea and vomiting
- Having to go the bathroom more often
- Blood in your urine because of the presence of the stone in the urinary tract
- Fever

Signs Your Health Care Provider May Find on Examination

- Urine test may be abnormal—showing blood, white blood cells, or bacteria
- Tenderness to the back and/or abdomen
- Certain studies such as ultrasound, X-ray or CT scan will confirm the presence of a stone

Treatment

Not all stones require treatment. Stones that do not cause symptoms and are not at risk for damaging the urinary tract may pass on their own. In fact, 80% of kidney stones will pass within 4 weeks. The average time to pass a stone is from 1-3 weeks. Pain control is the main goal. This can be done with narcotics and or non-steroidal anti-inflammatories (NSAID's) such as naproxen (Aleve), ketorolac or ibuprofen.

If a stone is too large to pass, the following treatment options are available:

- Lithotripsy (ESWL): the breaking up of stones by using shock waves. No surgery or incision is required for lithotripsy

- Ureteroscopy: placing a scope into the urethra (where you urinate), the bladder, and finally up into the ureter, where the stone is then removed
- Percutaneous nephrolithotomy: placing a scope directly through the skin in your back into the kidney to remove the stone. (This is usually used for very large stones) A tube called a nephrostomy tube may be placed in your kidney through your back after this surgery for a short time.
- Sometimes, before or after any of these procedures, a small flexible tube (called a stent) may be placed in the ureter to allow passage of urine or stone fragments.
- Uric acid stone is one of the urinary track stones that can be dissolved successfully.

Prevention:

A metabolic workup may be done by your provider to help determine underlying causes for your stone formation. Drink until your urine is almost clear on a daily basis. Water is the perfect beverage, adding lemons juice is helpful as the citrus helps prevent stones. All stone

formers a fluid intake that will achieve a urine volume of at least 2.5 liters daily. Drinking real lemonade is also beneficial. Restrict salt intake and limit high protein diets (Adkins diet for example). Try to obtain 1200 mg of calcium a day through your diet, do not take supplements unless recommended by your provider. Examples of calcium rich foods are dairy products, broccoli, sardines and almonds to name a few.

- Increase intake of fruits and vegetables
- Eat fiber rich foods (nuts, cereals, grains)
- Take medications regularly given to you by your healthcare provider
- Continue to see your healthcare provider regularly for checkups and tests

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References

<https://www.auanet.org/guidelines/kidney-stones-medical-mangement-guideline>

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