



NATIONAL KIDNEY
FOUNDATION®



AN OVERVIEW OF

Kidney Stones

Kidney stones can be a serious problem

10%

One in ten people will have a kidney stone over the course of a lifetime.



Over half a million people go to emergency rooms for kidney stone problems every year.



People who had a kidney stone are at higher risk of having another.



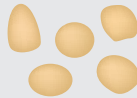
Kidney stones may increase the risk of developing kidney disease.

A kidney stone is a hard object that is made from chemicals in the urine.

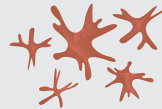
FIVE
main types of
kidney stones



calcium oxalate



uric acid



calcium phosphate



struvite



cystine

These artistic renderings are not actual representations of kidney stones.

Risk factors



Family or personal history of kidney stones



Dehydration: Excessive sweating or not drinking enough water can increase your risk for kidney stones



Diets high in protein, salt, or sugar



Obesity



Digestive diseases or surgeries

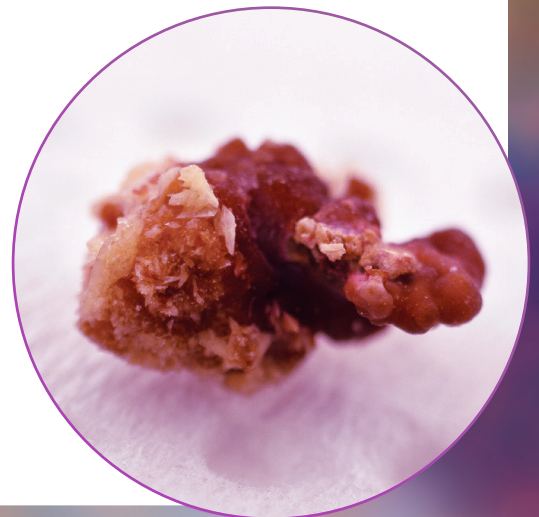
Know the symptoms

A stone that is small enough, can pass through with no symptoms. However, a stone that is too large to pass through may cause significant pain, back-up of urine, and other health problems.

Speak with a healthcare professional if you feel any of these symptoms:



- severe pain on either side of your lower back
- more vague pain or stomach ache that doesn't go away
- blood in the urine
- nausea or vomiting
- fever and chills
- urine that smells bad or looks cloudy



Kidney stones can be treated



Diagnosis of a kidney stone starts with a medical history, physical examination, imaging tests, urine and blood testing, and stone analysis.

At first, drinking more water may be recommended.

Medications can also be used either for pain or to help the stone pass. Depending on the type of stone, these medicines can include allopurinol (for uric acid stones), antibiotics (for struvite stones), citrate, thiazide diuretics (water pills), or tamsulosin (to relax the ureter and help the stone pass).

If these treatments do not work, or if the stone is too large to pass through, then surgical procedures may be needed to break down larger stones or remove them.

Steps can be taken to help prevent future stones



Drink enough water.

Drinking enough water each day is important in maintaining overall health. Eight to ten glasses a day is a common recommendation for daily hydration. Fluid restrictions might also apply if you have advanced kidney disease, so speak with a healthcare professional about the right amount for you.



Eat a healthy diet.

A registered dietitian can help.



Maintain a healthy weight.



Manage blood pressure and limit salt (sodium) intake.



Other preventive steps or medicines can depend on the type of stones.



Citrate might also be used to help prevent certain stones if urine citrate is low and urine pH levels are too low (or too acidic).

- Citrus juices contain citrate (citric acid), but large amounts might be needed. Also, be careful of sugar. Lemon juice concentrate (4 oz per day) mixed with water can be considered.
- The citrate content of most fruits and vegetables contains both alkali (less acidic) citrate and citric acid, however, only the alkali citrate is excreted in the urine to raise urine citrate and pH levels.
- Alkali citrate can be prescribed and is available over-the-counter. It can come in a pill, liquid or powder.
- Alkali citrate is given with a mineral(s), such as sodium, potassium or magnesium to help prevent stone formation. The aim is to increase urine citrate (for prevention of calcium stones) and increase urine pH (or make urine less acidic or more alkaline, for prevention of uric acid and cystine stones).
- Speak with a doctor or other healthcare professional about which treatment options are right for you, including over-the-counter products and home remedies.
- People with kidney disease may need to watch their intake of sodium, potassium or other minerals, depending on the stage of kidney disease or other factors.



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