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Six Ways to Keep Kidney Stones at Bay

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By Dr. Mercola

Records of kidney stones, which are mineral crystallizations that form from imbalanced mineral ions in your urine, can be found since the beginning of civilization. Lithotomy, a surgical procedure for removing stones, is one of the earliest known surgical procedures. In fact, a caution about the dangers of surgically removing stones is found in the text of the Hippocratic Oath, and there is even evidence of kidney stones in a 7,000-year-old Egyptian mummy.



In just the past three decades, however, the number of people with kidney stones in the United States has been on the rise -- most likely as a result of modern diets -- and the condition is now incredibly common. Nearly 3 million people visit a health care provider and more than half a million go to the emergency room each year due to problems with kidney stones, according to the [National Kidney & Urologic Diseases Information Clearinghouse \(NKUDIC\)](#).

Just recently, someone in my family had a mild case of kidney stones. I also treated my brother-in-law 20 years ago for recurrent stones and he underwent several rounds of extracorporeal shockwave lithotripsy. Eventually I had to refer him to the University of Chicago Center where they were able to develop a dietary program that essentially eliminated them.

In all, an estimated 1 million Americans develop kidney stones each year. Unfortunately, this makes the chance of getting another one very high, as once you have had one kidney stone attack, your chance of recurrence is about 70 to 80 percent. So, as with most health conditions, prevention is the best route of attack for kidney stones.

What are Kidney Stones?

Kidney stones form when minerals in your urine crystallize, forming a "stone." Typically, compounds in your urine inhibit these crystals from forming. Some people form stones when

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their urine contains more crystal-forming substances, such as calcium and uric acid, than the available fluid can dilute. This can happen when urine is highly acid or highly alkaline.

The conditions allowing kidney stones to form are created by problems in the way your body absorbs and eliminates calcium and other substances. Sometimes the underlying cause is a metabolic disorder or kidney disease, although certain drugs, such as Lasix (furosemide), Topomax (topiramate), and Xenical, can also promote kidney stones. Many times, it is a combination of factors that creates an environment favorable to stone formation.

As such, most kidney stones contain crystals of multiple types, but determining the predominate type helps you identify the underlying cause:

- 1. Calcium stones:** The most common type (four out of five cases) is usually in the form of calcium oxalate. Oxalate is found in some fruits and vegetables, but your liver produces most of your oxalate. If you are found to have oxalate stones, your physician may recommend avoiding foods rich in oxalates, such as dark green vegetables, nuts and chocolate.
- 2. Struvite stones:** Found more often in women, these are almost always the result of urinary tract infections.
- 3. Uric acid stones:** These are a byproduct of protein metabolism. They're commonly seen with gout, and may result from certain genetic factors and disorders of your blood-producing tissues. However, fructose also elevates uric acid, and there is evidence that fructose consumption is helping to drive up rates of kidney disease.
- 4. Cystine stones:** Representing only a very small percentage of kidney stones, these are the result of a hereditary disorder that causes your kidneys to excrete massive amounts of certain amino acids (cystinuria).



Do Kidney Stones Require Medical Help?

If the stone remains small, it will pass through your urinary tract unnoticed, but if it is large it can be one of the most excruciatingly painful conditions you can experience. Kidney stones can range in size from a grain of sand to larger than a golf ball, and if a stone fails to pass, permanent damage to your urinary tract can result.

So this is not something to ignore -- not that you could easily ignore such a painful episode -- but in most cases the best solution is letting the stone pass on its own. This might take days, or weeks in some cases, but the key is to drink enough pure water -- NOT soda or fruit juice -- to decrease the concentration of solids in your urine to the point that the stone will be dissolved.

Most kidney stones will pass on their own without medical intervention, but in some cases, such as if a stone blocks the flow of urine, damages kidney tissues, or is simply too large to pass on its own, you may need more aggressive treatment. There are several medical procedures and surgical techniques that can be used to treat kidney stones, but the risks are high enough that physicians typically shy away from them, unless there's no other choice.

Fortunately, there are now some more advanced options other than surgery, such as extracorporeal shockwave lithotripsy. This treatment entails being submerged in a tub of water where sound waves traveling through the liquid shatter the stones. They then pass as gravel through your urine in a few days or weeks.

You Can Prevent Kidney Stones with Lifestyle Changes

Many people mistakenly believe that there's nothing you can do to prevent kidney stones. In reality, many risk factors are under your control, and many are remarkably simple.

1. Drink Plenty of Water

The number one risk factor for kidney stones is not drinking enough water. If you aren't drinking enough, your urine will simply have higher concentrations of substances that can form stones. NKUDIC recommends drinking enough water to produce at least 2 quarts of urine in every 24-hour period, but a simpler way to know if you are drinking enough water is to check the color of your urine; you want your urine to be a very light yellow.



Every person's water requirement is different, depending on your particular system and activity level, but simply keeping your urine light yellow will go a long way toward preventing kidney stones. Remember to increase your water intake whenever you increase your activity, and when you're in a warmer climate.

If you happen to be taking any multivitamins or B supplements that contain vitamin B2 (riboflavin), the color of your urine will be a very bright nearly fluorescent yellow and this will not allow you to use the color of your urine as a guide to how well you are hydrated.

2. Make Sure You Get Adequate Magnesium

[Magnesium](#) is responsible for more than 300 biochemical reactions in your body, and deficiency of this mineral has been linked to kidney stones. It also plays an important role in your body's absorption and assimilation of calcium, as if you consume too much calcium without adequate magnesium, the excess calcium can actually become toxic and contribute to health conditions like kidney stones.

Magnesium helps prevent calcium from combining with oxalate, which is the most common type of kidney stone.

Green leafy vegetables like spinach and Swiss chard are excellent sources of magnesium, and one of the simplest ways to make sure you're consuming enough of these is by [juicing your vegetables](#). Vegetable juice is an excellent source of magnesium, as are some beans, nuts and seeds, like almonds, pumpkin seeds, sunflower seeds and sesame seeds. Avocados are also a good source. However, surveys suggest that many Americans are not getting enough magnesium in their diets.

It's been estimated that up to 80 percent of the U.S. population is deficient in this important mineral, according to Carolyn Dean, MD, ND, author of [The Miracle of Magnesium](#).

If you decide to supplement with magnesium it is important to understand that its complementary partner is calcium. So you should use both. Typically you would use twice as much elemental magnesium relative to the elemental calcium. That ratio works out quite well for most.

3. Avoid Sugar, Including Fructose and Soda

A diet high in sugar can set you up for kidney stones, since sugar upsets the mineral relationships in your body by interfering with calcium and magnesium absorption. The consumption of unhealthy sugars and soda by children is a large factor in why children as young as age 5 or 6 are now developing kidney stones.

One [South African study](#) found that drinking soda exacerbates conditions in your urine that lead to formation of calcium oxalate kidney stone problems. Sugar can also increase kidney size and produce pathological changes in your kidney such as the formation of kidney stones.



4. Exercise

You're more prone to kidney stones if you're bedridden or very sedentary for a long period of time, partly because limited activity can cause your bones to release more calcium. Exercise will also help you to resolve high blood pressure, a condition that doubles your risk for kidney stones. You can find my comprehensive exercise recommendations, including [how to perform highly recommended Peak Fitness exercises, here](#).

5. Eat Calcium-Rich Foods (but be careful with supplements)

In the past, kidney stone sufferers have been warned to avoid foods high in calcium, as calcium is a major component of the majority of kidney stones. However, there is now evidence that avoiding calcium may do more harm than good. The Harvard School of Public Health conducted a [study of more than 45,000 men](#), and the men who had diets rich in calcium had a one-third lower risk of kidney stones than those with lower calcium diets.

It turns out that a diet rich in calcium actually blocks a chemical action that causes the formation of the stones. It binds with oxalates (from foods) in your intestine, which then prevents both from being absorbed into your blood and later transferred to your kidneys.

So, urinary oxalates may be more important to formation of calcium-oxalate kidney stone crystals than is urinary calcium. It is important to note that it is the calcium from *foods* that is beneficial -- not calcium supplements, which have actually been found to [increase your risk of kidney stones](#) by 20 percent.

Check out my [nutrition plan](#) for a simple, step-by-step guide for what types of foods to eat to reduce your risk of kidney stones and other chronic and acute health conditions.

6. Avoid Non-Fermented Soy

Soybeans and soy-based foods may promote kidney stones in those prone to them, as they may contain high levels of oxalates, which can bind with calcium in your kidney to form kidney stones.

This is just one reason why unfermented soy -- the type found in soy milk, soy burgers, soy ice cream and even tofu -- is not a health food. If you were to carefully review the thousands of studies published on soy, I strongly believe you would reach the same conclusion as I have -- which is, the [risks of consuming unfermented soy products](#) FAR outweigh any possible benefits.



If you're interested in enjoying the health *benefits* of soy, [choose fermented soy](#), as after a long fermentation process, the phytate (which blocks your body's uptake of essential minerals) and anti-nutrient levels of soybeans (including oxalates) are reduced, and their beneficial properties become available to your digestive system.

As you can see, the best and most natural ways to prevent kidney stones are some of the easiest, if you're willing to make some lifestyle alterations.