

KIDNEY STONES

Kidney stones (also called nephrolithiasis or urolithiasis) affect approximately 12 percent of men and 5 percent of women by age 70. Fortunately, treatment is available to effectively manage most stones, and steps can be taken to prevent their recurrence. Recurrence can occur at a rate of up to 5 percent per year in people who are not treated.

History of kidney stones — Patients who have had a kidney stone in the past or have a family history of stones have the highest risk of a future stone. The probability of forming a second stone is about 5 to 10 percent at one year and 50 percent or higher at 10 years.

Dietary risk factors — The amount and type of food and drink that a person consumes can play an important role in the development of kidney stones.

Low fluid intake — The amount of fluids a person drinks directly affects the amount of urine that is made. Drinking a small amount of fluids means that less urine is made, compared to if more liquids are consumed. Making less urine can increase the risk of stone formation because the concentration of stone-forming substances in the urine is higher. Increasing fluid intake can reduce the risk of recurrent stones. We recommend drinking enough fluids so that the kidneys makes approximately 2 liters of urine per day. Your urine should look clear, not concentrated or dark yellow. If your urine looks yellow, you need to increase the amount of water consumed per day.

Type of fluid — The type of fluid consumed may also be important, although data are sometimes conflicting. Caffeinated beverages (coffee, tea, soda) however are very irritating to the bladder and may increase symptoms such as urinary frequency and urgency. Wine does not usually increase the risk of kidney stones.

The most common types of stones are formed from calcium. For calcium oxalate stones, patients should *reduce meat products, table salt, and other foods high in oxalate* (e.g., beets, collards, eggplant, parsley, spinach, sweet potatoes, summer squash, leeks, okra, green peppers, green beans, black olives, chocolate, nuts, draft beer, juices containing berries, tea, ovaltine and chocolate flavored drink mixes, peanut butter, almond butter, soybean curd, tofu, blackberries, blueberries, red currants, raspberries, strawberries, concord grapes, rhubarb, tangerines, lemon/orange peels, grits, white corn, wheat germ, fruit cake, multigrain cereals, whole wheat bread, ground pepper >1tsp/day, vegetable soup, tomato sauce and soup). Also, while there is a common belief that eliminating dairy products is helpful, recent studies suggest that decreasing sources of calcium and Vitamin D only increases the risk of stones.

However, use of calcium supplements may increase the risk of kidney stones in susceptible individuals by raising the level of calcium in the urine. This is particularly true if the supplement is taken between meals or at bedtime. Patients with a history of kidney stones should consult their healthcare provider about the risks and benefits of taking a calcium supplement.

Medical conditions — Some medical conditions are associated with an increased risk for stone formation, including the following:

Conditions that increase the absorption of oxalate from the gastrointestinal tract (like short bowel syndrome, chronic diarrhea, or previous bowel surgery or gastric bypass surgery)

Conditions that increase the chance of urinary tract infection, such as anatomic abnormalities of the kidneys or ureters, or difficulties with bladder emptying

Hyperparathyroidism and sarcoidosis, which can be associated with high blood levels of calcium

Gout, which may result in acidic (low pH) urine

Diabetes, which may be associated with increased calcium excretion in the urine

Cystinuria, an inherited condition that is associated with an increased level of cystine in the urine

Sucrose — Sucrose, commonly known as table sugar, is found in many prepared foods. Higher sucrose intake is associated with an increased risk of stone formation in women.

Medications — Some medications that promote formation of urine crystals increase the risk of stone formation. Excessive intake of vitamin C (more than 1000 milligrams per day) can promote calcium oxalate stone formation.

Diarrhea and dehydration — Uric acid stones are sometimes seen in patients who have chronic diarrhea, because of their concentrated, acidic urine. People who are predisposed to developing stones have an increased risk of stone formation if they become dehydrated. This includes patients who engage in heavy physical exercise (such as marathon running).

Drinking more fluids may *decrease* the risk of another stone. The goal of increased fluid intake is to increase the amount of urine that flows through the kidneys and ureter, and also to lower the concentrations of substances that promote stone formation.