

Kidney stones are a cause for significant pain and sometimes kidney damage. People living in more industrialized countries, like the United States, have an increased risk of forming kidney stones due to higher dietary intake of meats specifically and calories in general. In addition, genetic predisposition increases the risk of kidney stones.

The most common types of kidney stones are composed of calcium and oxalate. Uric acid stones are the next most common type of stone. Both of these types of kidney stones occur more frequently with high intake of meats. The proteins in meats (chicken, fish or red meats) are broken down by the body to uric acid crystals that are then excreted in the urine. This increases the likelihood of forming uric acid stones but in addition, calcium crystals in the urine can attach to the uric acid crystals and then increase calcium oxalate stone formation.

High meat intake also increases the amount of sodium in the urine. Sodium pulls calcium into the urine from the blood stream and increases calcium oxalate stone formation. In addition, high meat intake makes urine more acidic which prevents crystals of uric acid and calcium from dissolving in urine. The crystals are free to attach to one another and form a stone.

Another more recently recognized impact of diet on the occurrence of stone disease relates to the increasing rate of obesity. Obese patients have been noted to have an increased rate of kidney stones and these are often formed from uric acid crystals. The exact cause of the increased occurrence of stones in obesity is not known but probably relates to high intake of food and a change in the ability of insulin to function properly.

In addition to their dietary factors mentioned, having a family member with kidney stones increases the likelihood of forming a stone. Calcium oxalate, uric acid, and cystine stones occur more commonly in those with hereditary predispositions.

Fortunately, once a kidney stone occurs, an evaluation to determine the cause can help prevent the occurrence of more stones. The evaluation (metabolic workup) is relatively simple and consists of blood work and a collection of urine for 24 hours to determine the amount of calcium, oxalate, uric acid, cystine, and sodium in the urine along with a measure of the volume of urine produced in a day.

Increasing fluid intake to cause production of 2 liters of urine a day will flush crystals from the kidneys and help prevent further stones. Other dietary changes and medication recommendations can be made depending on the findings of the metabolic workup.

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