



www.kidneystoneclinic.com.au

Kidney Stone Clinic

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Complex Kidney Stones

In Australia, the chance of forming a kidney stone is becoming more common. It has been estimated there is a 1 in 12 chance you may develop a stone at some point in your life. This is a reflection of our hectic life, unbalanced work-life environment, fast food dietary habits, our genes and the climate around us. Everyone is different and attitude plays a big role in stone prevention. However, without changes being made, you have a 50% chance of developing another stone episode within 5 years. General measures in kidney stone prevention revolve around being well motivated to not having another stone, maintaining a healthy lifestyle and normal weight range, keeping up fluid intake, reducing animal protein intake and decreasing salt in the diet.

Lifestyle Change

There is evidence that having a busy lifestyle and not being able to maintain a work life balance can result in kidney stones forming in our Australian community. Having a lack of physical activity and no time for exercise may result in weight gain in susceptible individuals. Added in the mix of having an unbalanced diet, kidney stones are becoming more widespread. Simply recognizing these factors can be the start of change in becoming a well-motivated patient. In general terms, if you are over your ideal body weight for your height then you should take measures to get to that goal. In general terms, you should improve your daily physical activities in easily attainable goals such as walking more to get your heart rate up, park further away from shopping centre entrances, and setting aside time every day to exercise so it becomes a habit. With your diet, it should be balanced and not too much of one food group. Reducing sugar intake is increasingly recognized as helping to reduce these overall risk factors. More specific measures to reduce stones include the following:

Maintain Calcium Intake

You need to maintain normal calcium intake!

Restricting calcium intake can actually produce kidney stones.

Unless there is a specific abnormality detected through blood tests, calcium stones are not normally due a calcium excess in the body.

Calcium is important in maintaining bone health and especially guarding against osteoporosis as you get older.

You are encouraged to consume two servings of dairy (but no more than two); or another source of calcium-rich food such as cheese each and every day.

Increase Fluid Intake

The best method in preventing stones is to drink more water which dilutes your urine.

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Fluid intake needs to be increased to 10 standard cups (250mL) in a 24-hour period which gives a total of 2.5L. Ideal fluid choices include water, citrus juices and carbonated mineral water beverages.

This needs to be spaced evenly throughout the day, and a practical measure is to carry a drink bottle at all times and sip from it throughout the day.

Even more drinks need to be consumed on hotter days due to sweating.

A good measure of success is the colour of the urine should be clear or a very pale yellow.

The fluid should ideally be low in sugar and calories.

Reducing Protein Intake

Excessive protein intake can result in an acidic urine and form uric acid stones. An important goal is to stay within a healthy weight range for your height. A Body Mass Index range of 19 to 25 is considered healthy. **As a general recommendation, limit your daily protein intake to 350 grams per day in total of beef, poultry, fish and pork.** This will easily provide enough protein for the body's daily requirements.

An easy rule of thumb for estimating portion size is *100 grams of meat is roughly the size to cover the palm on your hand.*

Decrease Salt (Sodium) Intake

Your goal is to reduce added salt in your diet. These may come from fast foods, packaged or canned foods, and salty snacks.

You should consume less than 2000 mg/ day of sodium. This is equivalent to one teaspoon of salt per day.

The human body carefully regulates its salt levels. When excess salt in the urine, calcium is also produced. In other words, the more salt your kidneys filter, the more calcium you form in the urine. Excess calcium in the urine can lead to new stone formation by binding with other minerals.

Specific Types of Kidney Stones and Their Prevention Strategies

If you know your specific stone type, here are some strategies that can help

Preventing Calcium Stones

Above measures

Occasion overactive parathyroid gland and intestinal related disorders

FHx

Sometimes specific meds- thiazide

Prevent UA crystal nidus

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Preventing Uric acid Stones

Uric acid stones are formed by a diet high in animal proteins, or from excessive uric acid production from within the body. Most of these stones can be prevented from making the urine less acidic which results in the uric acid being in a dissolved state.

This can be achieved in the majority of patients by alkalinizing the urine using oral bicarbonate preparations (main ingredient of baking soda), and drinking plenty of oral fluids to keep the urine dilute.

In some circumstances an oral prescription medication called allopurinol maybe used to prevent excessive internal production of uric acid within the body.

Your doctor will advise you about your specific circumstances and tailor the treatment accordingly.

Preventing Infection or Struvite stones

Your choice of urological surgeon and their skillset in treating complex stones is the most important factor here. Infection stones require complete stone clearance by minimally invasive surgical means. The prevention of these stones from recurring is best achieved by being vigilant against developing further urinary tract infections. Drinking plenty of fluids is helpful in this regard.

Preventing cystine stones

This is best carried out in a multidisciplinary environment within a stone clinic having a special interest in this condition. It requires a coordinated team approach consisting ideally of an urological surgeon, renal physician and dietician. Stone episodes typically start during early-adulthood and are recurrent throughout life. Regular minimally invasive stone treatments (retrograde intrarenal surgery and laser treatment, percutaneous nephrolithotomy) maybe required periodically to keep on top of the situation before the stone burden become too large. Drinking plenty of fluids, typically over 3L of fluids each day is needed in most patients. Diligent alkalinisation of urine with taking potassium citrate or bicarbonates are mandatory and need regular monitoring using pH test strips. A low methionine diet with the aid of a dietician is helpful. Medical therapy (d-penicillamine or captopril) is best instituted as a last line of treatment by a renal physician with regular blood count monitoring.

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