

Kidney Stones

What are kidney stones?

- Kidney stones are one of the most common and most painful medical problems known.
- They occur when salts in the urine precipitate and form solid material.
- Stones can vary in size from as small as a grain of rice to as large as an apple.
- The pain of passing a kidney stone is said to be one of the most severe pains which it is possible to experience.
- Small stones can cause pain as they pass from the kidneys down to the bladder and then to the outside, because their sharp edges tear at the lining of the urinary tract.
- Large stones can get stuck in the kidney or in the bladder. Then they have to be removed, as they can cause blockage of the flow of urine, pain, infection and kidney damage.

How common are they?

- Many doctors believe that kidney stones are more common in Australia than in many other countries because of our hot, dry climate.
- In most Western countries, kidney stones are more common in men than in women, and more common in older people than younger people.
- However in developing countries, and in Aboriginal Australians, urinary tract stones tend to be more common in children than in adults, and they tend to occur in the bladder more than in the kidneys.
- 1 in 10 men and 1 in 35 women will develop a kidney stone in their lifetime.

- Over 1 million Australians are currently suffering from kidney stones.
- Each week, over 10,000 Australians visit the doctor because of kidney stones. Kidney stones cost the health system \$70 million dollars a year in direct identifiable costs. Their true cost, due to chronic illness, lost productivity and emotional distress, is much higher

Who gets stones?

- Rarely, stones will be a marker of a metabolic disease such as gout. However for the great majority of people with stones, no cause is found.
- Some people are 'stone formers' and get recurrent kidney stones throughout their lives. These people tend to have more salts (particularly calcium and phosphate salts) in their urine than people who are not stone formers.
- Studies have shown that people affected by stones drink less water and pass a smaller volume of urine than people who don't get stones.
- This leads many doctors to believe that you can prevent yourself from getting stones by drinking lots of water – 8 glasses a day is what is recommended, to keep your urine volume above two litres a day.
- Stones do not occur more commonly in pregnant women, and the risks of pregnancy are not increased for women who suffer from kidney stones.
- People who get kidney stones usually have thinner bones ('osteoporosis') than people who do not. This may be because calcium leaks from their body into their urine.
- There is no convincing evidence that diet affects the risk of developing kidney stones.
- Mineral water cannot cause kidney stones because it contains only trace amounts of minerals.
- The presence of infection or of a foreign body in the urinary tract can form a focus around which stones can form.

How are kidney stones treated?

- The majority of kidney stones pass by themselves through the urinary tract and out with the flow of urine. In these circumstances the only treatment which is required is pain relief. However pain can be so severe that hospital admission and narcotics (pethidine or morphine) are required.
- Sometimes an open operation is needed to remove stones, but often they can be removed with keyhole surgery.
- A new invention, the lithotripter, uses an intense beam of ultrasound to smash large kidney stones into small fragments.

I've had a kidney stone – how do I stop myself from getting another?

- If you have had a kidney stone, your risk of getting a second stone is about 5–10% each year. 30–50% of people with a first kidney stone will get a second one within five years.
- The risk of recurrence peaks within the first five years and then declines. However some people keep on getting stones their whole lives.
- There is good scientific evidence to demonstrate that if you have had one kidney stone, you can halve your risk of getting a second one by drinking enough water to keep your urine volume at or above two litres a day.
- It is not necessary to change your diet if you have had a kidney stone, unless you are in the small minority of stone patients who have a metabolic disease. In particular, a low calcium diet has not been shown to be useful in preventing stone recurrence, and may actually worsen the problem of thin bones (osteoporosis) in stone sufferers.
- Three randomised controlled trials have shown that a particular type of drug (thiazide diuretics) can reduce the likelihood of stone recurrence. However it is not known whether these drugs are more effective than simply drinking more water, and they do have significant side-effects.
- In stone formers who have a high level of uric acid in their urine or who make uric acid stones, the drug allopurinol can reduce the rate of recurrence of stones.
- If stones are associated with infection, complete clearance of both the stones and the infection is required if recurrence is to be avoided.

Is there any medical research in Australia about kidney stones?

- Professor Rosemary Ryall at the Flinders Medical Centre in Adelaide, South Australia leads an outstanding team of scientists who study the cause and treatment of kidney stones. Professor Ryall is a world expert in this field.
- The Flinders group has published over 100 papers on kidney stones and their work has gained an outstanding international reputation over the last 20 years.
- The Australian Kidney Foundation has been a major funder of the work of the Flinders stone group for many years.
- The most recent AKF research grant (for the year 2000) supports an excitingly novel project – studying the formation of crystals in plants such as spinach, grapes and strawberries to gain new insights into how stones form in humans

(Prepared by Dr JF Knight, AKF Medical Director, for Kidney Week 2000)