

Fact sheet

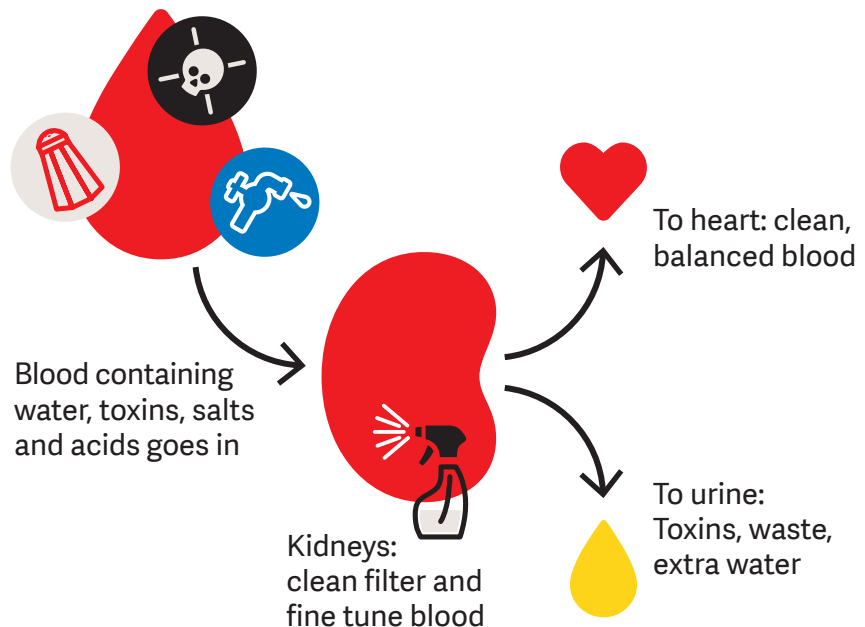
# Kidney Stones



## What are kidney stones

Your kidneys filter your blood and remove the extra waste and water as urine.

Kidney stones form when some waste materials clump together to form a solid crystal. These can be as small as a grain of sand to as big as a golf ball and can block the flow of urine, cause infections and kidney damage.



## What problems do kidney stones cause?

Kidney stones can block the flow of urine, which can then cause damage to your kidneys and sometimes kidney disease. Stones increase your chance of urinary and kidney infection and can result in germs spreading into your blood stream (septicaemia).

## Are there different types of kidney stones?

There are four main types of kidney stones:

- **Calcium** - The most common stones are formed when calcium combines with other minerals like oxalate or phosphate
- **Struvite** - Struvite stones are caused by urinary tract infections (UTI's) and can be quite large
- **Uric Acid** - Uric acid stones are often caused by eating very large amounts of protein foods and are often softer than other types of stones

- **Cystine stones** - Cystine stones are a rare inherited condition where the protein cysteine can build up in urine and form stones





## Other causes of kidney stones

Often, there is no known reason why a stone is formed. A kidney stone can form when substances such as calcium, oxalate, cystine or uric acid are at high levels in your urine. However, stones can also form if these are at normal levels.

Some medicines used to treat conditions, such as kidney disease, cancer or HIV, can also increase your risk of developing kidney stones.

A small number of people get kidney stones because of a medical condition. These conditions can lead to high levels of calcium, oxalate, cystine or uric acid in the body.

## Who is affected by kidney stones?

Kidney stones are one of the most common disorders of the urinary tract.

As you get older and if you have a family history, your chance of developing kidney stones increases. Kidney stones are more common in children in developing countries and among Indigenous Australians.

If you have had a kidney stone, you have an increased chance of getting a second stone. About 30 - 50 per cent of people with a first kidney stone will get a second one within five years and then the risk reduces. However, some people keep getting stones their whole lives.

**The lifetime risk of developing kidney stones is:**

**1/10  
Men** 

**1/35  
Women** 

## What are the symptoms of kidney stones?

Pain is usually the first sign of a kidney stone. The pain usually begins when a stone moves into your urinary tract. This is a sharp pain in your back just below your ribs. It can spread around to the front of your body and sometimes towards your groin.

Other symptoms include:

- blood in your urine
- nausea and vomiting
- shivers, sweating and fever, cloudy or bad smelling urine if you have an infection
- 'gravel' in the urine, which is made of small uric acid stones
- an urgent need to urinate

## How are kidney stones detected?

Many stones are found by chance during tests for other conditions.

Kidney stone tests may include:

- ultrasound
- CT scans
- x-rays including an intravenous pyelogram (IVP), where dye is injected into your bloodstream before the x-rays are taken

If a stone passes out of your body, collect it and take it to your doctor. This can help to decide on your treatment. Urine and blood tests can also help to find the cause of your stone.

## How are kidney stones treated?

Most stones will pass out of your body (in your urine) within three to six weeks without needing any treatment. Pain relief medications are used during this time. However, pain can be so severe that hospital admission and very strong painkillers may be needed. If a stone doesn't pass and blocks urine flow, causes bleeding or an infection, then it may need to be removed in hospital by one of these treatments:

- **Extracorporeal Shock-Wave Lithotripsy (ESWL)** - Ultrasound waves are used to break your kidney stone into smaller pieces that can pass out with your urine. It is used for stones less than 2cm in size.
- **Percutaneous Nephrolithotomy** - For stones larger than 2cm, a small cut is made in your back so a special instrument can remove your kidney stone.
- **Endoscope Removal** - A tube with a camera on the end is inserted into your urethra, passed into your bladder, and then to where your stone is located. It allows your doctor to remove your stone or break it up so it can pass more easily.
- **Surgery** - If none of the other methods are suitable, your stone may need to be removed using traditional surgery. This will involve making a cut in your back to access your kidney and ureter to remove your stone.

## How can I prevent kidney stones occurring again?

If you have had a kidney stone already, these are some tips for reducing your risk of further stones:



Talk to your doctor about the cause of previous stones and any concerns you have.



Some medications might be causing your stones. Do not stop your medications without talking to your doctor.



Treat infections quickly.



Drinking enough to prevent dehydration can halve your risk of another stone. 2 litres or more per day.



Don't drink more than 1 litre per week of drinks with phosphoric acid, which is used to flavour carbonated drinks such as cola and beer.



Fruit juices, especially orange, grapefruit and cranberry, may reduce the risk of some stones.



Mineral water will not cause kidney stones because it contains only small amounts of minerals.



Reducing salt lowers your risk of calcium containing stones. Don't add salt while cooking and leave the saltshaker off the table. Choose low or no salt processed foods.

Only reduce your intake of calcium containing foods, including milk, yoghurt and cheese if your doctor tells you to. Reducing calcium in your diet might increase your risk of weak bones and osteoporosis.

## Medications

Some drugs that may reduce your chance of another stone include:

- Thiazide diuretics
- Indapamide - may reduce the chance of another calcium stone
- Potassium citrate (Hydralyte, Pedalyte, Urocit-K) or citric juices can be used with thiazide treatment, or by themselves
- Allopurinol will usually prevent new stones if you have a high level of uric acid

Speak to your doctor or pharmacist for more information about these drugs.



### IMPORTANT

- Do not change your diet or medications without speaking to your doctor.



### THINGS TO REMEMBER

- The lifetime risk of developing kidney stones is one in 10 for men and one in 35 for women.
- Most kidney stones can be treated without surgery.
- A combination of drinking enough fluids, treating urinary infections and medications can reduce or stop new stone formation.

## What does that word mean?

**Calcium** - The most common mineral in the body. Calcium is essential for healthy bones and teeth. It is also important for regulating heart function, blood clotting, and muscle function. Calcium levels are often abnormal in people with kidney disease. High calcium levels may cause headaches, nausea, sore eyes, aching teeth, itchy skin, mood changes, and confusion.

**Computed tomography (CT) scan** - Uses x-rays and digital computer technology to create detailed images of the body. A CT scan can make an image of every type of body structure at once, including bone, blood vessels and soft tissue.

**Cystine** - Made from proteins found in a wide range of foods including meat, eggs and dairy foods.

**Endoscope** - A long flexible tube with a light attached. It is used to look inside a body cavity or organ. The scope is inserted through a natural opening such as the urethra.

**Osteoporosis** - Makes bones become brittle leading to a higher risk of breaks than in normal bone. Osteoporosis occurs when bones lose minerals, such as calcium, more quickly than the body can replace them, causing a loss of bone thickness (bone density or mass).

**Oxalate** - Naturally present in many foods including leafy green vegetables.

**Phosphate** - A mineral that, together with calcium, keeps your bones strong and healthy. Too much phosphate causes itching and pain in the joints, such as the knees, elbows and ankles. When the kidneys are not functioning properly, high levels of phosphate accumulate in the blood.

**Septicaemia** - When bacteria gets into your bloodstream. Early treatment with antibiotics is essential.

**Urethra** - The tube that takes urine out of the body from the bladder.

**Uric acid** - Made in your body as it breaks down proteins called purines which are sent to your kidneys to filter and pass out of your body as urine. If your kidneys are not working properly, uric acid can cause problems as it builds up in your body.

**Urinary tract infection (UTI)** - Causes symptoms like needing to urinate frequently or pain when urinating. It is caused by bacteria and may need to be treated with antibiotics.

**Ultrasound scan (kidneys)** - An instrument is moved over the skin, sending and receiving ultrasound signals, which then make pictures of the kidneys and bladder. This is a diagnostic test, often used to measure the size of the kidneys.

**Xrays** - An examination used to create images of your internal organs or bones to help diagnose conditions or diseases. Sometimes dye is injected into the bloodstream beforehand.

For more information about kidney or urinary health, please contact our free call Kidney Health Information Service (KHIS) on 1800 454 363.

Or visit our website [kidney.org.au](http://kidney.org.au) to access free health literature.

This is intended as a general introduction to this topic and is not meant to substitute for your doctor's or health professional's advice. All care is taken to ensure that the information is relevant to the reader and applicable to each state in Australia. It should be noted that Kidney Health Australia recognises that each person's experience is individual and that variations do occur in treatment and management due to personal circumstances, the health professional and the state one lives in. Should you require further information always consult your doctor or health professional.



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For all types of services ask for 1800 454 363