

Kidney Stones

The Council for Medical Schemes regularly receives enquiries and complaints with regards to unpaid or short paid accounts for the treatment of kidney stones. In this article the CMS provides information on the condition itself as well as clarity on the Prescribed Minimum Benefits (PMB) for the condition.

What are kidney stones?

Kidney stones – also known as renal calculus, renal lithiasis and nephrolithiasis – are included in the PMB regulations. The condition refers to the presence of stones in the kidney. The stones are formed in the urinary tract by crystallisation of substances excreted in the urine.

Kidney stones vary in sizes, about 70 to 90% of kidney stones are small enough to travel through the urinary tract and leave the body in the urine without being noticed. However, kidney stones that do cause symptoms have been described as one of the most painful disorders.

Causes of kidney stones

Kidney stones are formed when the urine does not have the correct balance of fluid and a combination of minerals and acids. Sometimes the natural ability of the body to inhibit the formation of kidney stones is compromised resulting in the formation of kidney stones.

Kidney stones may consist of only one of the components mentioned below, but certain kidney stones consist of more than one of the components. It is therefore possible to have a stone that consist of calcium oxalate plus uric acid and sometimes even a third component.

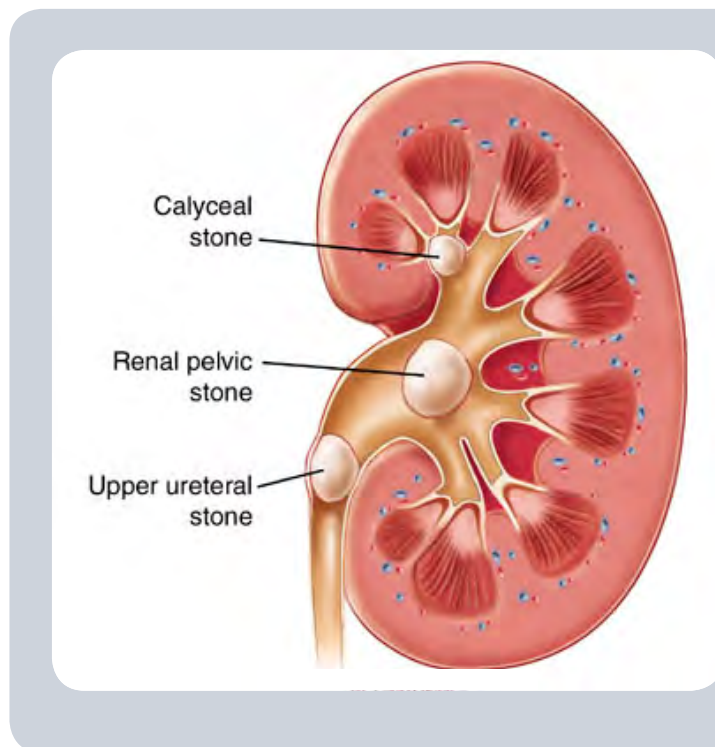
Types of kidney stones

- Calcium stones
- Uric acid stones
- Struvite stones
- Cystine stones
- Xanthine stones

Signs and symptoms of kidney stones

Kidney stones that are sitting in the kidney itself rarely cause any symptoms. Once a kidney stone moves around within the kidney or passes into the ureter (the tube connecting the kidney and bladder) the following signs and symptoms may be experienced:

- Severe pain in the side and back, below the ribs
- Pain that spreads to the lower stomach (abdomen) and groin
- Pain that comes in waves and varies in intensity
- Pain when passing urine



- Pink, red or brown urine
- Cloudy or bad-smelling urine
- Nausea and vomiting
- Continuous need to urinate
- Urinating more frequently than usual
- Fever and chills specifically if an infection is present
- Urinating small amounts or not at all

Risk factors for kidney stones

Risk factors can be divided into two groups namely those that can be controlled and those that cannot.

Risk factors that can be controlled include:

- Insufficient fluid intake – the most common cause of kidney stones is not drinking enough water.
- A diet high in animal protein, sodium (salt), oxalate-rich food and sugar. Oxalate rich foods are:
 - Fruits such as blackberries, blueberries, raspber-

ries, strawberries, currants, kiwifruit, concord (purple) grapes, figs, tangerines, and plums.

- Vegetables such as spinach, Swiss chard, beets (root part), beet greens (leaf part), collards, okra, parsley, leeks and quinoa are among the most oxalate-dense vegetables.
- Oxalate-moderate vegetables include celery, green beans, turnips, and summer squash.
- Nuts and seeds such as almonds, cashews, and peanuts
- Legumes such as soybeans, tofu and other soy products
- Grains such as wheat bran, wheat germ, quinoa
- Other foods including cocoa, chocolate and black tea
- Being overweight and obese may cause insulin resistance and increased calcium in the urine
- Specific medicines that are required for treatment of other conditions. These may include but are not limited to:
 - HIV and AIDS medications such as Indinavir develop stones. In people who also suffer from hepatitis B, hepatitis C, hemophilia, and those who are very thin or who take the antibiotic combination Trimethoprim/sulfamethoxazole (TMP-SMX)
 - Kidney stones are a rare side effect of thyroid hormones and loop diuretics (drugs that increase urination), certain cancer chemotherapy drugs, long-term use of medicines that change the acid content of the urine such as antacids
 - Ephedrine (found in some drugs used to treat asthma, sinusitis and congestion), triamterene (used to treat high blood pressure and fluid build-up), magnesium antacids, sulfamethoxazole-trimethoprim (used to treat certain infections), topiramate (used to treat certain seizures), carbonic anhydrase inhibitors (used to treat glaucoma), furosemide (used to treat high blood pressure or fluid retention), vitamin C or D excess, and laxatives

Risk factors that cannot be controlled include:

- Insulin resistance because of diabetes mellitus, kidney disease, chronic diarrhoea, certain cancers (such as leukemia and lymphoma), and sarcoidosis (a type of inflammation in lymph nodes and other tissues)
- Age and gender.
 - Men between the ages of 30 and 50 are most likely to get kidney stones.
 - Postmenopausal women with low oestrogen levels have an increased risk for kidney stones. Women who have had their ovaries removed are also at increased risk.
- Family history of kidney stones.
- Personal history of frequent urinary tract infections
- Other diseases or conditions, such as Crohn's disease, hyperparathyroidism and/or gout
- Intestinal bypass surgery or gastric bypass surgery as it can cause the buildup of calcium and oxalate levels in the urine and prevent absorption of other nutritional substances

How are kidney stones diagnosed?

In cases of a suspected kidney stone the following tests will be done:

- A very detailed medical history will be taken as this is essential in excluding other conditions and establishing the family history, history of other medical conditions as well as current medicines that may cause the forming of a kidney stone. The consultation is therefore included in the PMB level of care.
- Blood tests to investigate the levels of nitrogen, calcium, creatinine, phosphate and uric acid in the blood. Tests to monitor the kidney functions may also be done.
- Urine tests to determine the acidity of the urine and if there is any blood in the urine. A 24 hour urine specimen may be collected where necessary.
- Radiology tests starting with an abdominal X-ray although this may miss small kidney stones. A CT scan will be able to show even very small stones. Other radiology tests that may be performed include an ultrasound and an intravenous pyelogram (IVP). During an IVP a special dye is injected and x-rays are taken as the dye enters the kidneys and travels down the urinary tract. MRI scans do not provide better results as normal x-rays and CT scans and therefore are not used in the diagnosis of kidney stones. If a MRI is done the medical scheme will not be responsible for the funding of the scan.
- Kidney stones that are passed in the urine may be collected through a strainer and sent to the pathology laboratory to determine the type of stone and the content of the stone.
- Tests to determine if other conditions that contribute to the forming of kidney stones are present may also be done. These may include parathyroid hormone levels, white blood cell count might indicate infection and a metabolic disorder

Treatment of kidney stones

The treatment of kidney stones differs and is dependent on the type, size and cause of the kidney stone. Small kidney stones that do not cause severe symptoms and are not causing any problems may be passed spontaneously. Small kidney stones can be diagnosed and treated by the general practitioner, however cases that need procedural intervention will be referred to an Urologist. The treating doctor may advise as follows:

Small stones with minimal symptoms

The majority of kidney stones do not require invasive treatment. Small kidney stones will first be treated with conservative therapy which includes:

- Drinking 2-3 litres of water a day may help flush out the urinary system and the kidney stones will be passed in the urine.
- Taking analgesics (pain relievers) as passing of even a small stone can cause discomfort and pain. To relieve mild pain, pain relievers such as ibuprofen, paracetamol or naproxen sodium may be prescribed.
- Medicine that relaxes the muscle in the abdomen (stomach) and bladder may be prescribed to help pass the kidney stone more quickly and with less pain.

In cases where the kidney stones do not pass within 2-3 days additional treatment may be required.

Large kidney stones

Kidney stones that cannot be treated with conservative treatment include those that are too large to pass on their own, those which cause bleeding, kidney damage or ongoing urinary tract infection.

The following procedures may be used to treat these kidney stones:

- Extracorporeal shock wave lithotripsy (ESWL) involves the use of sound waves to break up the stones in smaller pieces. The sound waves create strong vibrations to break the stones in small pieces that can be passed in the urine.
- Ureteroscopy involves the passing of a scope through the urethra (urine tube) and bladder into the ureter (tube between kidney and bladder). The stone is located and either broken into small pieces that can pass in the urine or the stone is removed. A small tube called a J-stent is inserted in the ureter to relieve swelling and help with healing. This stent is usually removed a few days after surgery.
- Percutaneous Nephrolithotomy involves the surgical removal of a kidney stone using small telescopes and instruments that is inserted through an incision on the back. The procedure is usually indicated to remove kidney stones that are 10mm or more in size.
- Nephrolithotomy involves open surgery where an incision is made in the side of the back (flank area) and into the kidney. The surgeon will remove the stone and correct any blockage in the affected area. Open surgery is very invasive and only used for:
 - Patients with very large or complex stones that cannot be removed safely using less invasive measures
 - Very obese patients
 - Patients who have kidneys with anatomical abnormality or obstruction
 - Patients undergoing open surgery for another condition

What must be funded under PMB level of care?

The PMB regulations indicate that the diagnosis, treatment and care of the conditions listed in Annexure A of the Regulations must be funded in full. The medical scheme may however appoint Designated Service Providers (DSPs) and implement managed care protocols to manage the financial risk of PMB conditions. All diagnostic investigations and treatment must be based on scientific evidence and must also be cost-effective and affordable.

Diagnostic investigations and treatment that is not available in the public sector is not included in the PMB level of care as determined in the PMB regulations.

It is extremely important that members ensure that they use a DSP. A DSP is a health care provider appointed by and has a specific payment agreement with the medical scheme. In cases where members use a health care provider who is not a DSP, the medical scheme may charge co-payments on services rendered.

In the case of kidney stones, the diagnostic tests prescribed in this article must be funded in full as these investigations are the standard tests done for the diagnosis of this condition.

Treatment that is included in the PMB regulations include the procedures described above, however it must be stated that stones should first be treated conservatively unless a kidney

stone is already so big that it causes obstruction or damage to the urinary system.

Not all medical schemes fund laparoscopic surgery and as such it is important to verify whether the medical scheme will fund Percutaneous Nephrolithotomy before the surgery is done.

The Council for Medical Schemes previously received complaints that certain medical schemes reject funding of the J-stent. The stent is however an intrinsic part of the specific procedure and as such included in the PMB level of care.

As a member, it is important to remember to obtain authorisation before any procedure is done and register on the chronic disease and PMB benefit programme. The registration will ensure that the medical scheme funds the chronic medicine if prescribed. If no authorisation is obtained, the medical scheme is not compelled to pay the claims even if the condition is included in the PMB regulations.

References:

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Illustration on cover page taken from: <http://compurocare.com/kidney-stone-disease/>

WHAT ARE PRESCRIBED MINIMUM BENEFITS?

Prescribed Minimum Benefits (PMBs) are defined by law. They are the minimum level of diagnosis, treatment, and care that your medical scheme must cover – and it must pay for your PMB condition/s from its risk pool and in full. There are medical interventions available over and above those prescribed for PMB conditions but your scheme may choose not to pay for them. A designated service provider (DSP) is a healthcare provider (e.g. doctor, pharmacist, hospital) that is your medical scheme's first choice when you need treatment or care for a PMB condition. You can use a non-DSP voluntarily or involuntarily but be aware that when you choose to use a non-DSP, you may have to pay a portion of the bill as a co-payment. PMBs include 270 serious health conditions, any emergency condition, and 25 chronic diseases; they can be found on our [website](#)

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