

**Fact sheet**



# Calcium and Phosphate Balance with Kidney Disease

## Why are calcium and phosphate important?

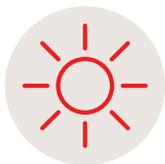
Calcium and phosphate are both minerals that are important for you to be healthy. Together, they help build strong bones and teeth, and also play a role in cell and nerve function.

Your kidneys and your parathyroid glands keep both phosphate and calcium at healthy levels. Your kidneys activate (switch on) vitamin D which is important for calcium balance.

They also control the amount of phosphate that is absorbed from the foods you eat. Your parathyroid gland is responsible for a hormone called parathyroid hormone. This hormone controls phosphate by increasing or decreasing the level of phosphate in your blood.

If you have kidney disease your body is not able to keep the levels of calcium and phosphate at healthy levels. When your kidneys start to fail they cannot remove the excess phosphate from your body. Kidney disease also leads to an increase in production of parathyroid hormone. This also leads to too much phosphate in your body.

The phosphate builds up in your body and binds to calcium. This causes your calcium levels to decrease, which may weaken your bones. The phosphate and calcium can narrow your blood vessels and increase your risk of heart disease and stroke. It can also cause skin ulcers and lumps in your joints.



## What is vitamin D?

Vitamin D is important for good health and strong and healthy bones. It is also important for making sure that your muscles, heart, lungs and brain work well and that your body can fight infection. Your body can make its own vitamin D from sunlight. You can also get vitamin D from supplements and, in small amounts, from foods you eat.

Vitamin D is needed to absorb calcium and phosphate into your body. Even if you eat foods that contain a lot of calcium and phosphate, they won't be absorbed into your body unless you have enough vitamin D.

For vitamin D to work properly, it needs to be 'activated' or 'switched on' by the kidneys. If your kidney function is reduced, your ability to activate vitamin D is decreased.



## How do you check calcium and phosphate balances?

If you have kidney disease, it is very important that your calcium and phosphate balance is checked and managed correctly. Your health care team will request regular blood tests to check your calcium and phosphate levels.

## How is calcium and phosphate imbalance treated?

Treatment of calcium and phosphate imbalance is designed to:

- prevent phosphate levels increasing in your blood
- maintain calcium levels
- reduce the release of parathyroid hormone
- prevent bone disease caused by the loss of calcium

Reducing the amount of phosphate in your diet is one way to stop phosphate levels rising. Phosphate is in a wide variety of foods so it is impossible to have a phosphate-free diet. However, there are some high phosphate foods that are best to be avoided. It is recommended that you speak to an Accredited Practising Dietitian for more information.

Often a phosphate-binding tablet is given to lower the amount of phosphate absorbed from food. Phosphate binders act like 'sponges', trapping the phosphate before it is absorbed. This means that less of the phosphate you eat will go into the bloodstream.

Usually phosphate binders are taken 5 to 10 minutes before or after meals and snacks. Your doctor and Accredited Practising Dietitian will tell you how many and when you should take your phosphate binders. There are several types of phosphate binders available in Australia. Your doctor will recommend the most suitable one for you.

Your doctor may also give you calcitriol, which is active Vitamin D. This helps to absorb calcium into your blood.

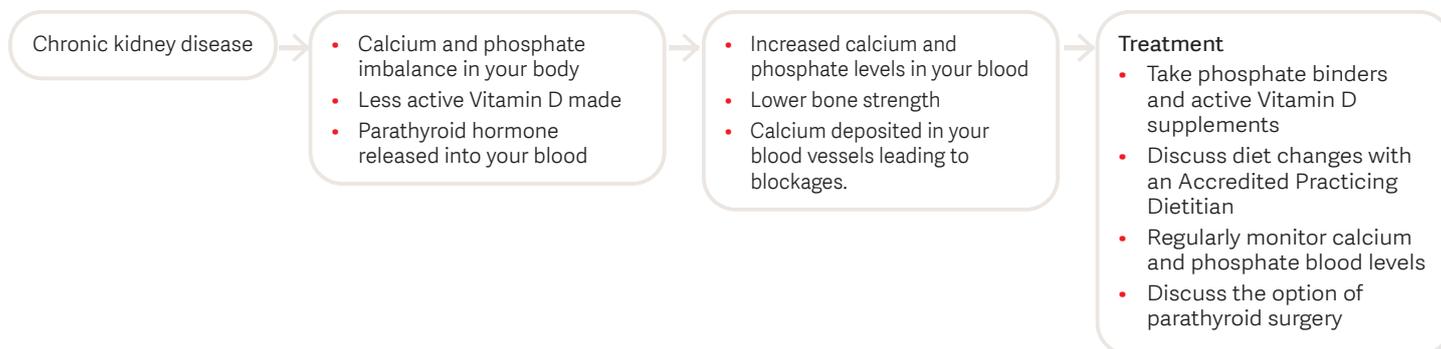
If you are using dialysis, the length of time on dialysis and the dialysate fluid can be changed to help to bring your calcium and phosphate levels into balance. A form of dialysis called 'nocturnal haemodialysis' (haemodialysis done during the night) can help to balance your calcium and phosphate levels. See the *Home haemodialysis* fact sheet for more information.

## What is parathyroid surgery?

Parathyroid surgery is a removal of your parathyroid glands. This may be needed to help to control high phosphate and parathyroid hormone levels. As with any surgery, it is important that you talk to your health care team about the benefits and risks of parathyroid surgery.

See the *Make the most of your visit to the doctor* fact sheet for tips on how to get the information you need from your health care team.

## Summary of calcium and phosphate balance



### THINGS TO REMEMBER

- Calcium and phosphate are minerals that work together to help build strong bones and teeth.
- Kidney disease causes an imbalance in calcium and phosphate.
- Treatments include diet, phosphate binders and parathyroid surgery.

## 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 controlling heart function, blood clotting, and muscle functioning, such as contraction and relaxation. Calcium levels are often abnormal in people with kidney disease. Raised calcium levels may cause headaches, nausea, sore eyes, aching teeth, itchy skin, mood changes, and confusion.

**Calcitriol** - A form of vitamin D that is used to treat and prevent low levels of calcium in the blood of people whose kidneys or parathyroid glands are not working normally. Low blood levels of calcium may cause bone disease. Calcitriol is in a class of medications called vitamins. It works by helping the body to use more of the calcium found in foods or supplements.

**Dialysis** - A treatment for kidney failure that removes waste products and excess fluid from the blood by filtering the blood through a special membrane. There are two types of dialysis; haemodialysis and peritoneal dialysis.

**Parathyroid gland** - The main function of the parathyroid gland is to make the parathyroid hormone. This hormone regulates the amounts of calcium, phosphorus and magnesium in your bones and blood.

**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 your blood.

**Phosphate binders** - If your phosphate level is too high, you may be prescribed medicine called phosphate binders. They combine with phosphate in your intestines so it can pass out of your body with the faeces (poo). It is important to take phosphate binders with your meals and snacks.

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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