

Vitamin D

Why is vitamin D important?

Vitamin D is important for bone and muscle health, it helps the gut to absorb calcium and phosphate (mostly found in milk and dairy foods). The main role of vitamin D in the body is to make sure there is enough calcium and phosphate to keep the bones healthy and strong. There is also evidence that low vitamin D is associated with other health problems including: a higher risk of bowel cancer, heart disease, high blood pressure, stroke, problems with immunity (how the body fights infections) and autoimmune diseases (including diabetes).

Most vitamin D is made in the skin from the action of sunlight. It is hard to get enough vitamin D from food alone. Only a few foods (some types of fish) naturally contain vitamin D. Margarine, baby formula and some types of milk have added vitamin D, but most people only get about a quarter (or even less) of their vitamin D needs from food.

Who is at risk of low vitamin D?

- **People with very dark skin.** The colour in skin (melanin) acts as a natural sunscreen and increases the time needed to make vitamin D
- **People who don't expose their skin to sun** – people who stay inside or who wear covering clothing
- **People with conditions affecting the how the body controls vitamin D levels.** Liver disease, kidney disease, problems with absorbing food (cystic fibrosis, coeliac disease, inflammatory bowel disease) and some medicines (such as anticonvulsants, or isoniazid) can affect vitamin D levels
- **Breast fed babies (with other risk factors).** Breast milk is the best type of food for babies, but it does not contain much vitamin D. Babies get their store of vitamin D when they are born from their mothers; so they are at risk of low vitamin D if their mother has low vitamin D and/or if they have dark skin

How common is low vitamin D?

Low vitamin D is common in Australia. It is more common in people in Victoria and Tasmania (southern states) and people with dark skin. Up to 9 out of 10 African Australians in Melbourne have low vitamin D, although many African communities now know a lot about vitamin D.

How does low vitamin D affect me?

Many people with low vitamin D do not have symptoms, but some people with low vitamin D get bone and muscle pain. Very low vitamin D can cause poor bone mineralization (softer bones) causing *rickets* in children and *osteomalacia* in adults. Rickets only occurs when children are growing – if a child has softer bones from low vitamin D, the bones can bend causing 'bow legs' or 'knock knees' as well as other changes. Rickets is more likely in children who also have low dairy intake, or in babies that breastfeed for a long time without starting solid foods at the normal age (around 4-6 months).

Low vitamin D can cause low calcium – this can cause problems with muscle cramps. Low calcium can cause seizures in young babies – if low calcium (or seizures) are found in a baby, they need to come to hospital urgently.

Vitamin D testing and treatment

- All people at risk of low vitamin D should have their levels checked by their doctor (with a blood test). The normal level for vitamin D is 50 – 150 nmol/L
- People with low vitamin D should be treated with vitamin D tablets or mixtures so their levels return to the normal level (over 50 nmol/L)
- Vitamin D tablets or mixtures can be low dose (taken daily) or high dose (taken monthly or less often).
 - High dose vitamin D is becoming more widely available - it is not used in babies aged less than 3 months, or during pregnancy or breastfeeding
 - Please tell your doctor if you are on *any* vitamin D tablets/medicines. Too much vitamin D can also cause problems. It is important to know that there are lots of different types of vitamin D tablets and mixtures, and some of them are very strong. It is always good to bring your medicine when you see the doctor so they can check what you are taking.
- People with low vitamin D also need enough calcium in their diet. Most people should aim to have 2-3 serves of dairy each day (1 serve of dairy is: 1 glass of milk, 1 tub of yoghurt or 1 slice of cheese).
- Low vitamin D is a long-term problem. Once low vitamin D is treated, the aim is to make sure vitamin D levels stay normal. People with risk factors for low vitamin D need to make sure they spend enough time outside (see below) and should have their levels checked every year. They may need lifelong supplements.

Sun exposure and vitamin D

- **Most Australians with light skin** get enough vitamin D through the sun during normal daily outside activities. People with light skin are at risk of skin cancer – they should always use sunscreen and recommended sun protection. During summer, adults with light skin only need 6-7 minutes outside in the middle of the morning or middle of the afternoon with their arms and face uncovered to make enough vitamin D. Children probably need a similar length of time, so normal outside play during and after school (or kinder/creche) should be enough to make enough vitamin D
- **Most Australian with dark skin** need a longer time in the sun (maybe 3 to 6 times as long as someone with light skin) to make enough vitamin D, but the colour in their skin protects them against skin cancer. They should make sure they do not get sunburnt, however they do not usually need to wear sunscreen during the autumn, spring or winter. Hats and sunglasses are still important for this group. This means adults with dark skin need around 30 - 40 minutes in the middle of the day with their arms and face uncovered to make enough vitamin D, but they may need many hours over the week during the winter. Most people do not spend this long outside in winter (and

they are covered because it is cold) and need extra vitamin D tablets or mixtures during winter

For more information

- [Rickets](#) factsheet
- [Immigrant Health](#) Vitamin D resources (including in different languages)

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