

# Vitamin D

SELF-CARE FORUM FACT SHEET NO. 22

This fact sheet is intended to help you understand what vitamin D is, why it is important and how to get your recommended daily intake of this essential nutrient.

## Useful facts

### What is Vitamin D?

Vitamin D is a hormone, but it was first identified as a nutrient found in cod liver oil and so it was called "vitamin D" (vitamin A, some B vitamins and vitamin C were discovered before vitamin D was identified). Vitamin D is unique because it is found in some foods and our bodies can make it when our skin is exposed to sunlight. But this only works when the sun is high enough in the sky. In the UK, we can make vitamin D from sunlight from April to September; a good rule of thumb is, if your shadow is shorter than you are, you can make vitamin D. The amount of exposure to the sun needed to make vitamin D is longer if you have darker rather than lighter skin tones.

### Why is it important?

**Bone health:** It is used in the absorption of calcium and other minerals, and in the laying down of those minerals into our bones and teeth, helping to keep them healthy and strong. Vitamin D is also thought to prevent falls. These two benefits together mean that vitamin D can help prevent bone fractures.

**Immunity:** Vitamin D is essential to good immunity. Research shows that we may get more coughs and colds in the winter because we cannot make vitamin D from the winter sun, so we have lower levels. Research also links low levels of vitamin D to an increased risk of developing heart disease, some cancers, and conditions like type I diabetes and multiple sclerosis. If children are deficient in vitamin D they can develop Rickets Disease (see "deficiency" section).

Our cells have specialist receptors which recognise vitamin D. This means it is involved in different functions, many of which are not yet fully understood. Ongoing research shows that there are more functions of vitamin D to be explored, in muscle function and strength, heart function and health, maintaining healthy blood pressure and in reducing depression.

## Where is vitamin D found?

Diet alone is not enough to get sufficient vitamin D, but they can help alongside sunlight and winter Vitamin D supplementation. Foods containing vitamin D include:

- oily fish such as salmon, sardines, pilchards, trout, herring, tuna (fresh), kippers and eel contain reasonable amounts of vitamin D
- cod liver oil contains a lot of vitamin D, but don't take this if you are pregnant, fish body oil is better due to risk of vitamin A toxicity.
- egg yolk, meat, offal and milk contain small amounts, but this varies during the seasons
- margarine, some breakfast cereals, infant formula milk and some yogurts have added vitamin D.

Vitamin D supplements are widely available from pharmacies, health food shops and most supermarkets and your pharmacist can recommend the dose most suitable for you. The NHS recommends all adults in the UK take a Vitamin D supplement between early October and late March. Some people who are pregnant or breastfeeding and children aged 6 months to 4 years may qualify for Healthy Start vitamins which contain vitamin D. Ask your health visitor about this. A supplement only needs to contain 10 micrograms to meet the recommendation; a higher vitamin D content is unnecessary and could be harmful in the long run.

Some people may also need calcium supplements.

## Further information

- [Vitamin D - NHS \(www.nhs.uk\)](http://www.nhs.uk)
- [Calcium - British Dietetic Association \(BDA\)](http://www.bda.co.uk)
- [Sun safety | Reduce your skin cancer risk | Cancer Research UK](http://www.cancerresearchuk.org)

## Recommended intake

It is recommended that everyone takes a 10 microgram (a microgram symbol looks like this  $\mu\text{g}$ ) vitamin D supplement, throughout autumn and winter, although it's thought that food intakes and exposure to sunlight should be enough for most people in spring and summer. Vitamin D is available as a food supplement and a medicine and the measurements used for the two categories are different. Vitamin D in food supplements is measured in micrograms and in medicines it is measured in International Units (shown as IU or iu on packaging). 400iu is 10 $\mu\text{g}$ , the recommended intake.

The National Institute for Health and Care Excellence (NICE) recommends people at risk of deficiency should take a 10 microgram vitamin D supplement all year round. Risk factors for vitamin D deficiency include people:

- Aged 65 years or over
- Who are pregnant and breastfeeding
- Children up to the age of 5
- Who are not exposed to much sunlight (for example living in a care home, office workers and night shift workers) or who cover their skin for cultural reasons
- Who have darker skins who cannot make vitamin D from the sunlight in the UK as quickly or easily as people with paler skins.
- Who are obese
- Who have experienced multiple fractures

## Deficiency

Vitamin D deficiency can lead to a disease called rickets. A lack of minerals in the bone means they can become too soft and bend, particularly the bones of the legs and pelvis. In adults, long-term vitamin D deficiency also makes bones soft, but instead of bending, the bones of the legs, pelvis and lower back will ache, and break easily.

Because vitamin D is involved in so many things in our bodies, there are also lots of other symptoms of deficiency. Tiredness and fatigue, low mood and getting more colds and flu can also be indicators that vitamin D levels are too low.

If you are concerned that you may be suffering from low vitamin D, make sure you eat plenty of foods containing vitamin D (see section on "where is vitamin D found?"). Consider taking vitamin D supplements which are widely available at low cost.

## Sun safety

The sun's ultraviolet rays allow vitamin D to be made in the body, in the UK from April-September. However, you do not have to sunbathe to make vitamin D. Sun exposure to hands, wrists and face for 20 minutes is enough for most people. Strong sun also burns skin, so it is important to balance making vitamin D with being safe in the sun. Take care to cover up or protect your skin with sunscreen before you turn red or get burnt.

## Safety and risks

Taking a vitamin D supplement, eating foods rich in vitamin D and spending a lot of time outside in sunshine is not a problem. However, do not take more than one supplement containing vitamin D (cod-liver oil is a supplement) as you could exceed the safe limit.

In 2018, the UK food supplement industry set a voluntary upper limit of 75 $\mu\text{g}$  (3,000 IU) for vitamin D to ensure safety. Doses over 100 $\mu\text{g}$  are not considered safe unless advised by a healthcare professional.

Choose supplements based on age or condition. Fish liver oils and high-dose multivitamins can contain too much vitamin A, causing liver and bone issues, especially in young children and the elderly. Excessive vitamin D can lead to hypercalcemia, damaging kidneys and the heart. Avoid vitamin D if you have hypercalcemia or chronic kidney disease. Consult a health professional before taking vitamin D if you have hyperthyroidism, renal impairment, tuberculosis, or lymphoma.

A member of your pharmacy team can help you choose.