

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

What is vitamin D?

Vitamin D is actually a hormone, first identified as an essential nutrient in cod liver oil and so called 'vitamin' D (vitamin A, some of the B vitamins and vitamin C were discovered some time before vitamin D was identified). As with other vitamins, it is found in some foods but vitamin D is unique because our bodies also make it when our skin is exposed to sunlight. However, this only works when the sun is high enough in the sky and only from April until September. In the UK, if your shadow is shorter than you are, you can make vitamin D, though this still may not be enough - see later under 'Recommended daily supplements'.

Why is vitamin D 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. There is increasing evidence that having enough vitamin D can help to prevent falls and in this way vitamin D can help prevent bone fractures.

Immunity: Vitamin D is essential to good immunity. Some research shows that we may get more coughs and colds in the winter because we cannot make vitamin D from the winter sun, which means we have lower levels of vitamin D. Research also suggests that low levels of vitamin D may be linked to an increased risk of developing heart disease, some cancers, and conditions such as type I diabetes and multiple sclerosis.

Every cell in our bodies has special receptors which recognise vitamin D. This suggests that there are many functions of vitamin D that are yet to be discovered and explored. These may include effects on muscles and strength, heart function and health, keeping a healthy blood pressure and on enhancing mood and reducing depression.

Where is it found?

Foods containing vitamin D include:

- oily fish such as salmon, sardines, pilchards, trout, herring, 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
- egg yolk, meat, offal and milk contain small amounts, but this varies during the seasons
- margarine, some breakfast cereals, infant formula milk and some yoghurts have added vitamin D

Vitamin D supplements are widely available from pharmacies, health food shops and most supermarkets. 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; those with a higher content of vitamin D are unnecessary and could be harmful in the long run.

Coronavirus and vitamin D supplements

Although the evidence shows that vitamin D boosts immunity, the National Institute for Health and Care Excellence (NICE) advised in June 2020 and again in December 2020 that there was currently not enough firm evidence to support taking extra Vitamin D to prevent or treat Covid-19.

The recommendation for everyone in the UK to take a 10µg vitamin D supplement throughout the months of October to March still stands.

In November 2020 the government announced that all care home residents and those who have been shielding (and therefore rarely exposed to sunlight), will receive a free 4 months' supply of Vitamin D.

If you have received a letter from the NHS or the Department of Health and Social Care (DHSC) saying you're at high risk from coronavirus, details on how to apply are available online at: <https://www.nhs.uk/conditions/coronavirus-covid-19/people-at-higher-risk/get-vitamin-d-supplements/>

Recommended daily supplements and daily limits

The Department of Health and Social Care (DHSC) recommends that everyone from their 5th birthday should take a 10 µg vitamin D supplement every day, from October to early March. Food intake and exposure to sunlight may be enough for most people in spring and summer.

But some people should take a 10 µg vitamin D supplement all year round:

- People over the age of 65
- Pregnant and breastfeeding women
- Children up to their 5th birthday
- People who are not exposed to much sunlight (for example living in a care home or housebound) or who usually wear clothes covering most of their skin for whatever reason.
- People who have darker skin (as they may not make enough vitamin D from sunlight in the UK as people with paler skins).

Low cost vitamin D supplements are widely available from pharmacies, health food shops and most supermarkets.

On food supplement packaging, amounts are given in micrograms (µg) but in medicines, doses are given in International Units (shown as IU or iu on packaging). Equivalent amounts: $10\mu\text{g} = 400\text{iu}$ $25\mu\text{g} = 1,000\text{iu}$ $75\mu\text{g} = 3,000\text{iu}$

These are the recommended doses at various ages and the most that should be given

Age	Recommended daily dose	Don't give more than this a day
Breastfed babies from birth to 1 year of age	A regular daily supplement containing 8.5 - 10 µg of vitamin D	Not more than 25 µg a day
Formula-fed babies	No extra supplements until having less than 500 mls of formula a day as infant formula milk contains Vitamin D supplement	Not more than 25 µg a day
Children age 1 until their 5th birthday	A regular daily supplement containing 10µg of vitamin D	Not more than 50 µg a day.
Children aged 5-10	10 µg during autumn and winter or all year if necessary - see below	Not more than 50 µg a day
From age 11 and adults	10 µg during autumn and winter or all year if necessary - see below	Not more than 100 µg a day

Vitamin D Deficiency

Vitamin D deficiency can lead to a disease called rickets in children. A lack of minerals in the bones means they can become too soft and bend, particularly the bones of the legs and pelvis. In adults, long-term vitamin D deficiency may also make 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 food containing vitamin D (see over the page). Consider taking a vitamin D food supplement at the dose recommended above. These are widely available at low cost.

Safety and Risks

Taking a vitamin D supplement as well as 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.

Doses over 100µg are not considered to be safe and in 2018 the UK food supplement industry committed to a voluntary upper level of 75µg to ensure consumer safety. 75µg is the equivalent of 3,000iu. It is not considered advisable to take more than this unless recommended by a healthcare practitioner.

Always choose a supplement tailored to the age group or condition, as fish liver oils and high dose multivitamin supplements often contain vitamin A, too much of which can cause liver and bone problems, especially in very young children, and the elderly. Too much vitamin D, taken for a long time, can lead to high levels of calcium in the blood. This is called hypercalcemia and it can damage the kidneys and the heart.

Sun Safety

Although the sun's ultraviolet rays allow vitamin D to be made in the body you do not have to sunbathe to make vitamin D. 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.