NHS
Gloucestershire

Vitamin D

What is vitamin D?

Vitamin D is made under your skin when you are outside in daylight, which is the reason vitamin D is sometimes called the 'sunshine vitamin'. A vitamin is something that helps our body function – a 'nutrient' – that we cannot make in our body. Vitamin D is different because even though we call it a vitamin, it is actually a hormone and we can make it in our body.

What does vitamin D do in my body?

Vitamin D works with other nutrients like calcium and phosphorus for healthy bones, muscles and teeth. Even if you have a calcium-rich diet (for example from eating plenty of dairy foods and green leafy vegetables), without enough vitamin D you cannot absorb the calcium into your bones and cells where it is needed.

Sun safety

You do not have to sunbathe to make vitamin D. Strong sunlight can burn skin so we need to balance making enough 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. Find out more about sun safety on the NHS website: https://www.nhs.uk/live-well/seasonal-health/sunscreen-and-sun-safety/

How does the sun allow us to make vitamin D in our bodies?

It is the sun's ultraviolet rays that allow vitamin D to be made in the body. The amount of vitamin D you make depends on how strong the sunlight is. In the UK, ultraviolet light is only strong enough to make vitamin D on exposed skin (on the hands, face and arms or legs) during April to September. You will make more vitamin D in the middle of the day, when the sun is strongest. You will also make more when you are in direct sunlight than in the shade or on a cloudy day.

Who is at risk of low vitamin D levels?

Some groups of people may be more likely to not get enough vitamin D;

- Babies and young children
- Children and adolescents who spend little time playing outside
- Pregnant women and breastfeeding mothers
- People over 65 years old
- People with darker skin tones - that is people of Asian, African, Afro-Caribbean and Middle Eastern descent – living in the UK or other northern climates
- People who always cover most of their skin when outside
- People who live in northern England, Ireland and in Scotland
- Anyone who spends very little time outside during the summer – the housebound, shop or office workers, night shift workers

What happens if I don't get enough vitamin D?

A lack of vitamin D can lead to bone deformities such as rickets in children, and bone pain caused by a condition called osteomalacia in adults. Long term vitamin D deficiency can lead to bones becoming brittle/fragile and more susceptible to fractures (known as osteopenia and osteoporosis).

Osteopenia

This is the stage before osteoporosis, when a bone density scan shows you have lower bone density than average for your age, but not low enough to be classed as osteoporosis.

Osteopenia does not always lead to osteoporosis. It depends on many factors.

If you have osteopenia, it is recommended that you purchase vitamin D supplements to improve your bone health. The recommended dose for people diagnosed with osteopenia is 400 IU (10mcg) of vitamin D per day. Your community Pharmacists will be able to advise you if you need any further information or product advice.

Osteoporosis

Osteoporosis is a condition where bones become thin and their strength is reduced. This makes them more likely to break. It affects both men and women but is most common in women who have gone through the menopause.

People with a diagnosis of osteoporosis can obtain vitamin D supplements on prescription from their GP practice.

You may also be offered calcium supplements: however you may not need these if you are having at least 1000mg calcium per day in your diet. To see whether you're getting enough calcium from what you eat and drink, you can use this online calculator, from the University of Edinburgh: https://webapps.igmm.ed.ac.uk/world/research/rheumatological/calcium-calculator/. The British Dietetic Association has a fact sheet with further advice on how to increase the calcium in your diet found here: https://www.bda.uk.com/resource/calcium.html

Where else can I get vitamin D?

You can help your body get more vitamin D by eating plenty of vitamin D rich foods, including:

- Oily fish such as salmon, sardines, pilchards, trout, herring, kippers and eel all contain reasonable amounts of vitamin D
- Cod liver oil contains a lot of vitamin D (don't take this if you are pregnant because cod liver oil is also high in vitamin A which can harm the unborn baby during pregnancy)
- 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 or are 'fortified' with vitamin D

You can also purchase vitamin D supplements to increase your vitamin D levels

There are 2 types of vitamin D available. These are known as:

- Vitamin D3 (colecalciferol), usually extracted from sheep's wool
- Vitamin D2 (Ergocalciferol), extracted from plants
- Vitamin D3 (colecalciferol) has been reported to raise vitamin D levels in the body more effectively than vitamin D2 (ergocalciferol) and you should take this type if possible








What strength of vitamin D supplement do I need?

Vitamin D is measured in both international units (IU) and micrograms (mcg/µg). How much you need will depend on your age, condition, how likely you are to become deficient and whether you have previously been treated for vitamin D deficiency. You can speak to your Health Care Professional (such as your Pharmacist or GP) if you would like more information.

Age	Dose
• Babies up to the age of 1	340 - 400 IU (8.5 - 10µg/mcg) Note - Children who have more than 500ml of infant formula a day do not need any additional vitamin D as infant formula is already fortified with vitamin D.
• Children aged over 1 • Adults wishing to prevent deficiency who are not at particular risk • Pregnant women	400 IU (10 µg/mcg)
• Adults who are at particular risk of developing a condition associated with lower vitamin D levels (such as osteopenia or osteoporosis)	400-800 IU (10 - 20 µg/mcg)
• Adults with vitamin D deficiency who don't first require higher dose loading or those who have had loading treatment and need to maintain their levels.	800-2000 IU (20-50 µg/mcg) NB: Specialists may recommend up to 4000 IU's for some individuals who they consider to be at particular risk of future vitamin D deficiency following successful treatment of previous deficiency.

Where are vitamin D supplements available?

NHS England recommends that all vitamin supplements should be bought by people directly as part of their own self care, which will reduce the use of NHS resources. Vitamin D supplements are widely available to buy from community pharmacies, supermarkets and health food shops as well as online. The average cost of vitamin D supplements in the UK when purchased from the shops mentioned above or online is between 3p - 6p per tablet which works out at between £10 - £20 per year (depending on which brand you choose to buy).

Can I take too much vitamin D?

Taking too many vitamin D supplements over a long period of time can cause too much calcium to build up in the body (hypercalcaemia). This can weaken the bones and damage the kidneys and the heart. Unlike some vitamins, our body can store vitamin D so do not take more than one supplement containing vitamin D (including cod-liver oil) as you could exceed your recommended dose. Always choose a supplement tailored to your age group or condition as fish liver oils and high dose multivitamin supplements often contain vitamin A, too much of which can cause problems, especially in very young children, pregnant women and the elderly.

Taking a vitamin D supplement alongside eating food sources that are rich in vitamin D and having safe sun exposure is not a problem.

Further information

https://www.bda.uk.com/resource/calcium.html

https://www.bda.uk.com/resource/vitamin-d.html

https://www.bda.uk.com/resource/osteoporosis-diet.html

https://www.gov.uk/government/news/phe-publishes-new-advice-on-vitamin-d

https://www.gov.uk/government/publications/sacn-vitamin-d-and-health-report

https://www.nhs.uk/conditions/osteoporosis/

https://www.nhs.uk/conditions/vitamins-and-minerals/vitamin-d/

https://www.nice.org.uk/guidance/ph56

https://cks.nice.org.uk/topics/vitamin-d-deficiency-in-adults/

https://theros.org.uk/

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