



Official Government Advice on Vitamin D

Function

The main function of vitamin D is to regulate the amount of calcium and phosphate in the body. These nutrients are needed to keep bones, teeth and muscles healthy.

A lack of vitamin D can lead to bone deformities such as rickets in children, and bone pain and tenderness as a result of a condition called osteomalacia in adults.

Sources

Vitamin D is made in the skin when it is exposed to sunlight. It can also be obtained from the diet.

Sunlight

From late March/early April to September, the action of sunlight on skin is the main source of vitamin D for the majority of people. We can't say exactly how much time is needed in the sun to make enough vitamin D to meet the body's requirements because there are a number of factors that can affect skin synthesis of vitamin D. We also need to be careful that we don't spend too much time in the sun because excessive exposure can increase the risk of skin damage and skin cancer. Between October and early March we don't get any vitamin D from the action of sunlight on the skin.

Diet

Vitamin D is found naturally in a small number of foods including oily fish (e.g. salmon, herring, and mackerel), red meat, liver and egg yolk. It is also present in foods fortified with vitamin D such as some breakfast cereals and most fat spreads. Another source of vitamin D is dietary supplements.

Scientific Advisory Committee on Nutrition (SACN) conclusions on vitamin D

SACN did not make a recommendation about how much time is needed in the sun to make enough vitamin D to meet the body's requirements because of the number of factors that can affect the amount of vitamin D made in the skin. SACN's recommendations about vitamin D intake therefore assume minimal sunlight exposure.

From birth up to 1 year of age: a vitamin D intake in the range 8.5 to 10 micrograms/day is recommended for all infants from birth up to 1 year of age, including those who are exclusively or partially breast fed. This recommendation is precautionary due to insecurities in the data for this age group.

Ages 1 year and above: A vitamin D intake of 10 micrograms/day is recommended for everyone aged 1 year and above, including pregnant and breastfeeding women and population groups at risk of vitamin D deficiency (those with minimal exposure to sunshine and those from minority ethnic groups with dark skin).



PHE's advice to the general public

From birth up to 1 year of age

Infants from birth to one year of age, whether exclusively or partially breastfed, should be given a daily supplement containing 8.5 to 10 micrograms vitamin D to make sure they get enough.

Exclusive breastfeeding* until around six months will help you protect your baby from illness and infection. Babies who aren't breastfed are more likely to get diarrhoea, vomiting and respiratory infections. For mothers, breastfeeding decreases the risk of breast cancer and it may also offer some protection against ovarian cancer. Breast milk should continue to be given alongside an increasingly varied diet once your baby is introduced to solid foods.

Babies fed infant formula should not be given a vitamin D supplement unless they are receiving less than 500 mls (about a pint) of formula a day because formula is fortified with vitamin D and no other supplementation is required.

*Exclusive breastfeeding is when a baby receives only breastmilk. They are not given any other liquids or solid foods except medicines, vitamin drops or oral rehydration solutions when necessary.

Ages 1 to 4 years

Children aged 1 to 4 years of age should be given a daily supplement containing 10 micrograms vitamin D. Some children aged up to 4 may be entitled to free Healthy Start vitamin drops.

Ages 5 years and above

Between late March/early April and September, the majority of people aged 5 years and above will probably obtain sufficient vitamin D from sunlight when they are outdoors, alongside foods that naturally contain or are fortified with vitamin D. As such, they might choose not to take a vitamin D supplement during these months.

From October to March everyone over the age of five will need to rely on dietary sources of vitamin D. Since vitamin D is found only in a small number of foods, it might be difficult to get enough from foods that naturally contain vitamin D and/or fortified foods alone. So everyone, including pregnant and breastfeeding women, should consider taking a daily supplement containing 10 micrograms of vitamin D.

However, some groups of people with very little or no sunshine exposure will not obtain enough vitamin D from sunlight. People from these groups should take a daily supplement containing 10 micrograms vitamin D throughout the year. They are:

- people who are seldom outdoors such as frail or housebound individuals and those who are confined indoors e.g. in institutions such as care homes
- people who habitually wear clothes that cover most of their skin while outdoors.

People from minority ethnic groups with dark skin such as those of African, African-Caribbean and South Asian origin might not get enough vitamin D from sunlight in summer so they should consider taking a daily supplement containing 10 micrograms vitamin D throughout the year.

Some pregnant women and new mothers may be entitled to free Healthy Start vitamins.



What happens if I take too much vitamin D?

Too much vitamin D can lead to above normal concentrations of calcium in the blood (hypercalcaemia). Too much calcium in the blood can weaken bones and damage the kidneys and heart.

For most people who choose to take a vitamin D supplement, 10 micrograms/day will be sufficient. If your doctor has advised you differently, you should follow their advice.

The Tolerable Upper Intake Level (UL) for vitamin D is 100 micrograms/day for adults (including pregnant and lactating women and the elderly) and children aged 11 to 17 years, 50 micrograms/day for children aged 1 to 10 years and 25 micrograms/day for infants. A UL is the maximum amount of a nutrient that can be consumed every day over a life time without causing appreciable risk to health. However, individuals with medical disorders that predispose them to hypercalcaemia¹ may not be able to safely take as much; if in doubt, you should consult your doctor.

¹ The UL may not apply to individuals with certain medical conditions such as normocalcaemic hyperparathyroidism and granulomatous conditions (including sarcoidosis and tuberculosis) which predispose to hypercalcaemia or to those with genetic predispositions such as idiopathic infantile hypercalcaemia.