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VITAMIN D FACTSHEET

WHAT IS VITAMIN D?

Vitamins are vital micronutrients that perform many different roles in the body, are involved in cell function, growth and development and therefore help our bodies function normally.

As we can produce Vitamin D in the body, it is technically a hormone, although it is known as a vitamin[1]. Vitamin D helps to maintain the concentration of calcium in the plasma, and along with calcium and phosphorous, assists in maintaining normal bones[2], and keeps teeth and muscles healthy.

How do we get vitamin D?

Vitamin D is fat soluble and is present in a few foods, although food is not the best source. Food sources for vitamin D include[3]:

- Oily fish such as salmon, mackerel and sardines
- Some mushrooms have been enriched with vitamin D from ultraviolet light during the growing process
- Meat and offal
- Egg yolk
- Foods with added vitamin D such as breakfast cereals, fat spreads and infant formula, follow-on formula and toddler milks

When ultraviolet light from the sun's rays hits the skin, the synthesis of vitamin D is triggered. The vitamin D from either food or sunlight must undergo hydroxylation before becoming active in the body[4].

Sun exposure for 10-30 minutes per day between March and September should be sufficient for most people to get their vitamin D. Exposed forearms or lower legs with no sunscreen or clothing coverage is needed for vitamin D synthesis. Care should be taken not to burn the skin, and children from 0-6months of age should not be exposed to strong direct sunlight[5].

What are the implications of deficiency?

A lack of vitamin D can lead to bone deformities: thin, brittle or misshapen bones. Rickets, a very painful condition for children causing soft bones and poor growth, is caused by a lack of vitamin D or calcium[6]. Similarly in adults, this condition is known as osteomalacia. Vitamin D deficiency is also linked to infection, inflammation, and carcinogenesis[7].

What is the guidance on supplementation?

The UK Department of Health and Social Care (DHSC) advises to take 10 micrograms (mcg) or 400 International Units (IU) of vitamin D daily between October and March, when the action of sunlight on our skin is not sufficient to trigger vitamin D synthesis[5]. The DHSC advice is for all people aged 1 year and over, including pregnant and breastfeeding women.

Breastfed babies aged from birth to 1 year should be supplemented with 8.5-10mcg of vitamin D daily. If a baby is being formula fed, unless they are having less than 500ml of formula per day, they should not be given a vitamin D supplement as infant formula contains vitamin D[5]. Children from 1-4 years of age are also advised to take 10mcg of vitamin D daily.

What is the upper level of intake for vitamin D?

Taking too many vitamin D supplements may be harmful and may cause hypercalcaemia, which can damage both the heart and kidneys[5].

- Adults and children >10 years of age should not take more than 100mcg or 4000 IU per day
- Children <10 years of age should not take more than 50mcg or 2,000 IU a day
- Infants <12 months should not have more than 25 micrograms or 1,000 IU a day

Which population groups are particularly vulnerable?

There are different groups which are more at risk of vitamin D deficiency in the UK than others. These include[1]:

- Young people who do not spend much time playing outdoors
- Pregnant and breastfeeding mothers
- Those with darker skin tones
- Those >65 years of age
- Those who cover up when outside
- People who are housebound, or whose work means they are not able to get outside during daylight hours in the warmer months

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