

WHO SHOULD BE TAKING A VITAMIN D SUPPLEMENT?

An update on advice from the Chief Medical Officer on vitamin D supplementation.



Michèle Sadler
 Consultant
 Nutritionist
 Rank Nutrition Ltd

Vitamin D has been in the news recently on various counts. Developing research has led to the suggestion that it may have a beneficial role in a range of diseases, including certain types of cancer, cardiovascular disease, tuberculosis, multiple sclerosis and diabetes - hence it has been hailed as the new 'wonder vitamin' (1). Current evidence for these potential benefits is, however, inclusive (1,2).

Nevertheless, vitamin D has a multitude of acknowledged roles and benefits and these are apparent from the EU health claims recently authorised for vitamin D. Those targeted at the general population are outlined in Box 1. The conditions of use for these claims are for a food or food product to meet the criteria for a 'source of vitamin D' nutrition claim, i.e. 0.75mcg per 100g or per 100ml, which is based on 15 percent of the EU labelling RDA (5mcg/day) per 100g or 100ml. In addition, health claims have also been authorised for vitamin D alone and for vitamin D in combination with calcium for the growth and development of bone in children.

Box 1: EU authorised general function health claims for vitamin D

Cell division
Maintenance of normal bones
Maintenance of normal muscle function
Maintenance of normal teeth
Normal absorption/utilisation of calcium and phosphorus
Normal blood calcium levels
Normal function of the immune system

Positive EFSA opinions have also been awarded for two vitamin D-related disease risk reduction claims. One is for vitamin D and 'reduction in the risk of falling' in men and women aged 60 years and above. The second is for vitamin D in combination with calcium for the claim that 'Calcium and vitamin D may reduce the loss of bone mineral in post-menopausal women; low bone mineral density is a risk factor in the development of osteoporotic bone fractures'. These two claims have yet to be authorised, mainly because of ongoing discussions concerning the conditions of use. EFSA has indicated that the daily intake required to achieve these effects is at least 800IU (20mcg) of vitamin D from all sources (3).

At the other end of the scale, vitamin D is also emerging as a nutrient of concern for public health and a number of population groups are at risk of vitamin D deficiency (Box 2). Vitamin D is unique among the micronutrients because it can be made in the body, by exposure of the skin to ultraviolet radiation. Indeed, this provides the main source for our bodies as vitamin

D is found in relatively few foods. The main dietary sources are oily fish, eggs, organ meats, butter, fish liver oils, fortified spreads and other fortified foods such as children's yoghurts. Current dietary intakes among adults aged 16 to 64 years are 3.1mcg/day for men and 2.6mcg/day for women (4).

While there is a labelling RDA of 5mcg vitamin D/day across Europe, in the UK no RNI has been set for adults or children over four years of age who receive adequate exposure to sunlight (2). An RNI has only been set for infants and children up to the age of four years (7.0 to 8.5mcg/day or 280-340 IU), for pregnant and lactating women (10mcg/day or 400IU), and for 65+ year olds (also 10mcg or 400IU/day). As vitamin D is relatively scarce in the diet, these RNIs cannot be met from the usual intake of food and drink, so that the only way to guarantee this level of intake is by supplementation. Certain groups of the adult population who may not gain adequate exposure to the sun are also recognised as being at risk of vitamin D deficiency and there is also long standing DH advice for these groups (Box 2) to take a 10mcg dietary supplement.

Box 2: Groups at risk of vitamin D deficiency

- Infants and young children under five years of age
- All pregnant and breastfeeding women, especially teenagers and young women
- People who have darker skin, for example people of African, African-Caribbean and South Asian origin, because their bodies are not able to make as much vitamin D
- People who have low or no exposure to the sun, for example those who cover their skin for cultural reasons, who are housebound or confined indoors for long periods
- Older people aged 65 years and over

Hence, DH advice is that:

- all women who are pregnant or breastfeeding; all men and women aged 65 years or over and all those who are not exposed to much sun should take a daily supplement containing 10 micrograms vitamin D;
- all infants and young children aged six months to five years should take a daily supplement containing 7.0 to 8.5 micrograms vitamin D.

RAISING AWARENESS

In the early part of 2012, the Chief Medical Officer (CMO) wrote to health professionals to raise awareness of this existing DH advice. This was precipitated by emerging evidence from the NDNS of low vitamin D status in adults (younger and older adults and in British Asians) and in older children (5,6). There have also been reports of a growing incidence of rickets, particularly in

Michèle is Director of Rank Nutrition Ltd, providing nutrition consultancy to the food and supplements industries. Michèle is an expert in nutrition and health claims, including current regulatory developments. Michèle works with companies to develop appropriate claims, writes scientific dossiers, undertakes systematic reviews and advises on research studies and requirements.

UK South Asian and Afro-Caribbean population sub-groups (2). It has been recognised for some years that these DH recommendations for supplementation are being overlooked and not implemented by health professionals or by the general public (1,2). Though a SACN working group is looking into vitamin D, it will be some time before their report is published and it was, therefore, considered timely to reinforce the existing advice.

The terms of reference for the forthcoming SACN review of vitamin D are: to review the Dietary Reference Values for vitamin D intake and make recommendations. This will involve a risk assessment of the vitamin D status of the UK population with consideration of biochemical markers of vitamin D status and appropriate threshold values, the association between vitamin D status and various health outcomes at different life stages and in different population groups, the potential adverse effects of high vitamin D intakes and the relative contributions of dietary vitamin D intake (from natural food sources, fortified foods and supplements) and endogenous vitamin D synthesis to the vitamin D status of the UK population. The health outcomes likely to be considered include cancer, cardiovascular disease, Type 2 diabetes, obesity, immunity and infection, mental health, bone health, macular degeneration and periodontal disease.

Following the CMO's letter and to help raise awareness of the existing recommendations, DH has agreed with manufacturers and retailers of food supplements a number of statements for use on product labels, websites and other promotional materials (Table 1). The aim is to help ensure that people at risk of vitamin D deficiency are aware of the risk and have access to suitable food supplements. Hence, this is a useful communication tool for patients. The statements can be used on vitamin D-only products or on multivitamins or other combination products that meet the conditions of use. The wordings can be adapted provided the meaning remains the same, including combining the statements if a product is intended for more than one of the target groups.

A related development has been the publication of recent EFSA scientific opinion on the tolerable upper intake level (TUL) for vitamin D (7). This was undertaken following publication of the EFSA opinion on the daily intakes needed to fulfil the beneficial effects for the disease risk reduction claim for reduced bone loss in post-menopausal women (see above). Based on recent evidence, the TUL for adults including pregnant and lactating women was revised upwards from 50mcg to 100mcg/day and is now in line with the upper level set by the IOM in 2011 (8). This is considerably higher than the guidance level for upper intakes of 25mcg supplementary vitamin D/day set by the EVM in 2003 (9). However, this advice remains in place while this issue is considered by SACN.

In conclusion, in view of the essential roles of vitamin D in the body, it is important to ensure that our bodies are provided with sufficient levels of this vitamin, either from endogenous synthesis by the action of sunlight on the skin, or from dietary sources. As vitamin D is found in relatively few foods, groups at risk of vitamin D deficiency are advised by DH to take a daily supplement.

Table 1: Statements for use on food supplements and consumer communications to raise awareness of the need for vitamin D supplementation in specific population groups

Population sub-group recommended to take a vitamin D supplement	Suggested statement	Conditions of use
Infants and young children	[The Department of Health or UK Health Departments or The Chief Medical Officer recommend(s)], all infants and young children aged six months to five years take a daily supplement containing 7.0 to 8.5µg of vitamin D. This product should not be given to infants consuming 500ml or more of infant formula a day. Shorter wording: Government advice: all infants and young children aged six months to five years should take a vitamin D supplement.	<ul style="list-style-type: none"> • The daily vitamin A dose of the product should not be higher than that in the Healthy Start vitamins at 700IU or 233µg for all age groups. • The daily dose should contain between 5.0 to 10µg of vitamin D. • The labelling of products aimed at infants and young children (0-3yrs) should bear the following information: A warning to the effect 'Not suitable for: - infants consuming 500ml or more of formula milks a day - infants under one month of age unless under medical supervision'.
Pregnant and breastfeeding women	[The Department of Health or UK Health Departments or The Chief Medical Officer recommend(s)] all pregnant and breastfeeding women should take a daily supplement containing 10µg of vitamin D. Shorter wording: Government advice: all pregnant women and breastfeeding women should take a supplement containing vitamin D.	<ul style="list-style-type: none"> • The daily dose should provide between 5-10µg of vitamin D. • Any product bearing this statement must not contain retinol.
People aged 65 years and over	[The Department of Health or UK Health Departments or The Chief Medical Officer recommend(s)] that people aged 65 years and over should take a daily supplement of 10µg of vitamin D. Shorter wording: Government advice: adults aged 65 and over should take a supplement containing vitamin D.	<ul style="list-style-type: none"> • The daily dose should provide between 5-10µg of vitamin D. • Any product bearing this statement must not contain more than 800µg of retinol.
People not exposed to much sun	[The Department of Health or UK Health Departments or The Chief Medical Officer recommend(s)] that people who are not exposed to much sun, [for example those who cover their skin, who are housebound or confined indoors for long periods] should take a daily supplement of 10µg of vitamin D. Shorter wording: Government advice: people who are housebound or cover their skin for long periods should take a supplement containing vitamin D.	<ul style="list-style-type: none"> • The daily dose should provide between 5.0-10µg of vitamin D. • Any product bearing this statement must not contain more than 800µg of retinol.

Glossary

EFSA: European Food Safety Authority; EVM: Expert Group on Vitamins and Minerals; IOM: Institute of Medicine; MCG: micrograms; RDA: Recommended daily allowance; RNI: Reference nutrient intake; SACN: Scientific Advisory Committee on Nutrition

For article references please email: info@networkhealthgroup.co.uk