

# Management of Vitamin D

## How Much Vitamin D do People in Ireland Really Need: a Guide for Pharmacy Staff

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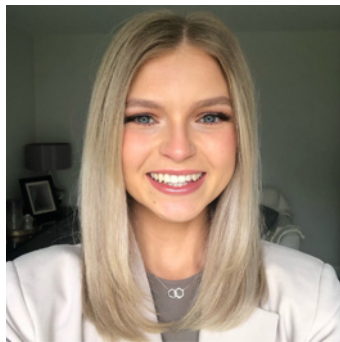
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This article outlines everything pharmacy staff need to know about the recommendations on vitamin D supplements for people living in Ireland.

### Why do people need vitamin D?

Vitamin D plays important physiological roles in the musculoskeletal system, the immune system, and the process of cell division. Vitamin D is key for bone integrity and strength as it is crucial for absorption of dietary calcium and phosphorus. Vitamin D deficiency impairs bone health at any stage in life, giving rise to osteomalacia in adults. However, deficiency of vitamin D is particularly harmful during bone

growth and development, leading to rickets in young children and lower build-up of bone mineral density during adolescence. Although it has not been proven, several studies suggest vitamin D deficiency may also be linked to non-skeletal health conditions, such as cardiovascular diseases; diabetes; inflammatory disorders; some infectious diseases (including COVID-19) and immune disorders; certain cancers; and higher mortality rates.

In summary, vitamin D is important for bone health but also contributes to the normal function of the immune system and a healthy inflammatory response, as well as the maintenance of normal

muscle function. It is generally agreed that the prevention of vitamin D deficiency is a public health nutrition priority.

### Where do people in Ireland get vitamin D?

Vitamin D is only naturally available in a few foods eaten in Ireland. Oily fish (salmon, mackerel, trout, herring) represent foods that are richest in vitamin D. While oily fish also provides other valuable nutrients, such as omega 3 fatty acids, recommended amounts of oily fish (once a week) will not provide enough vitamin D. Other important food sources include the increasing number of vitamin D fortified foods (milks, yogurts, breakfast cereals etc. with vitamin D added). Fortified foods tend to be more expensive and are not eaten by everyone so many people in Ireland do not get enough vitamin D in their diet. Therefore, almost everyone in Ireland needs to take a vitamin D food supplement to prevent vitamin D deficiency.

Sunlight is the most important source of vitamin D in the world, but people must protect their skin from strong sunlight to prevent skin cancer. Although sunscreen products (with adequate SPF) also block the sun rays that

make vitamin D in the skin (UVB radiation), studies show that inadvertent sun exposure makes an important contribution to vitamin D status. This inadvertent sun exposure occurs by just being out and about in sunshine while taking all precautions to avoid sun burn – that is wearing a hat, clothing to cover skin, using sun screen and avoiding hottest times of the day etc. It only takes minimal exposure to sunshine to make a big difference to a person's vitamin D status. This also shows how people who never go outside are much more at risk of vitamin D deficiency.

In Ireland, the UVB radiation needed to make vitamin D from sunlight is only available during the months of April through October. This is due to our geographic location 52° - 55° North and means that Ireland experiences a 'vitamin D winter' that stretches from the end of October to late March. In fact, studies in Ireland show that vitamin D status plummets over this wintertime period. So, if people have a blood test to assess their vitamin D status in March it will generally show a lower vitamin D status compared with having the same blood test in September.

People of dark-skinned ethnicity need longer sun exposure to obtain the same amount of vitamin D. This is because the skin pigmentation, melanin, absorbs the UVB rays that stimulate vitamin D synthesis. For these reasons people of dark-skinned ethnicity in Ireland are advised to take a vitamin D supplement all year round. Briefly, inadvertent sun exposure in summertime will not be as effective in making vitamin D from UVB rays in people of dark-skinned ethnicity as it would be in people of fair-skinned ethnicity, who have lower amounts of melanin in their skin.

**Everyone in Ireland is at risk of vitamin D deficiency, but who is most vulnerable?**

Vitamin D deficiency is a problem across Europe as well as in Ireland. Studies in Ireland have shown vitamin D deficiency is common among children, teenagers and adults – particularly pregnant women. This deficiency is more pronounced in the winter months. A recent study showed that the prevalence of vitamin D deficiency among adults of dark-skinned Irish ethnicity (e.g., Irish Asian) to be much higher (affecting 70%) compared with those who are fair-skinned (affecting 12%).

**Department of Health Recommendations<sup>1</sup>**

There are Department of Health recommendations on the need for vitamin D supplements for people living in Ireland. Detailed information on the amount of vitamin D people need to take according to age, life stage and skin pigmentation is provided in Table 1. A brief overview of these recommendations is described in the box below.

**Everyone in Ireland needs to take a vitamin D supplement** (the only exception are infants up to 1 year of age who take more than 300 ml infant formula)

<sup>1</sup>The scientific basis for these recommendations are outlined in the following reports from the Scientific Committee of the Food Safety Authority of Ireland (FSAI) and links to Healthy Ireland guidance:

- Update to 2007 Scientific Committee Report: Recommendations for a National Policy on Vitamin D Supplementation for Infants in Ireland
- Scientific Recommendations for Food-Based Dietary Guidelines for 1 to 5 Year-Olds in Ireland
- Vitamin D: Scientific Recommendations for 5 to 65 Year Olds Living in Ireland
- Vitamin D: Scientific Recommendations for Food-Based Dietary Guidelines for Older Adults in Ireland and New advice on Vitamin D supplement for people aged 65 years and older from the Department of Health.

**How much supplemental vitamin D is needed?**

The daily amount of vitamin D needed varies according to age (see Table 1)

**Some people need a vitamin D supplement in wintertime only** (end of October to mid-March)

All of fair-skinned ethnicity in the following groups:

- Children
- Teenagers
- Adults up to age 65 years

**Some people need a vitamin D supplement all year round:**

- Infants on less than 300 ml infant formula need a daily vitamin D supplement from birth to 1st birthday
- Pregnant women
- People of dark-skinned ethnicity
- People aged over 65 years

**Table 1. What is ‘enough but not too much’ vitamin D from supplements for people of different ages and skin types in Ireland (Department of Health Recommendations)?**

Age Group	Department of Health Recommendations <sup>1</sup> Vitamin D Supplement µg (micrograms) IU (international units)
<b>Birth to 12 months</b> , all breast fed infants taking less than 300 ml of infant formula per day	<b>5 µg (200 IU)</b> in liquid form <b>all year round</b> .  Infant formula has a lot of vitamin D added. Therefore, infants who are fed more than 300 ml infant formula per day, do not require a vitamin D supplement as they would be at risk of exceeding the upper limit (UL).
<b>Infants of darker skin ethnicity</b>	<b>5 µg (200 IU)</b> in liquid form <b>all year round</b> . <i>There are no extra requirements.</i>
<b>Children 1 to 4 years</b>	<b>5 µg (200 IU)</b> for healthy children, to be taken <b>during the extended winter months</b> from end of October to mid-March.  Due to Ireland’s geographic location (52° - 55° North), the UVB rays required to synthesise vitamin D in human skin do not get through the ozone layer. This is described as Ireland’s vitamin D winter, from the end of October to the middle of March.  The sun is closer to Ireland from the middle of March to the end of October, allowing the UVB rays that synthesise vitamin D to get through.
<b>Children of darker skin ethnicity</b>	<b>5 µg (200 IU)</b> for healthy children of darker skin ethnicity, to be taken <b>all year round</b> . <i>Sun exposure during the summertime will not be as effective in making vitamin D from UVB rays in people of darker skin ethnicity. This is due to the higher amount of melanin (skin pigmentation) which absorbs the UVB rays and prevents vitamin D synthesis by the skin.</i>
<b>Children 5 to 10 years</b>	<b>10 µg (400 IU)</b> for healthy children, to be taken <b>during the extended winter months</b> from end of October to mid-March. This is for the same reasons outlined above for children aged 1 to 5 years.
<b>Children of darker skin ethnicity</b>	<b>10 µg (400 IU)</b> for healthy children of darker skin ethnicity, to be taken <b>all year round</b> . <i>Sun exposure during the summertime will not be as effective in making vitamin D from UVB rays in people of darker skin ethnicity. This is due to the higher amount of melanin (skin pigmentation) which absorbs the UVB rays and prevents vitamin D synthesis by the skin.</i>
<b>11 to 65 years</b>	<b>15 µg (600 IU)</b> for healthy individuals who get sunlight exposure during summer, to be taken <b>during the extended winter months</b> from the end of October to mid-March.
<b>Pregnant women and individuals of darker skin ethnicity</b>	<b>15 µg (600 IU)</b> for individuals of darker skin ethnicity and for individuals of all ethnic groups who are pregnant, to be taken <b>all year round</b> .  <i>Pregnant women need higher amounts of vitamin D to cover the requirements of their developing baby. Vitamin D supplements during pregnancy are important for building the baby’s vitamin D stores while preventing vitamin D deficiency in the mother.</i>
<b>Adults aged 65 years and older, including older adults of darker skin ethnicity</b>	<b>15 µg (600 IU)</b> for all older adults (65 years +) living in Ireland, to be taken <b>all year round</b> .  <i>The ability of human skin to synthesise vitamin D from UVB sunlight rays diminishes with age.</i>

**What unit of measurement is used for vitamin D?**

In the EU vitamin D is measured in **µg (micrograms)** and public health advice from the Department of Health is always given using **µg**. A problem that confuses many consumers is that many vitamin D supplements marketed in Ireland are labelled using IU (International Units) which is the North American unit of measurement.

IU are very different from **µg** so to be sure the vitamin D supplement

provides the correct amount, **people should always look for the Daily Amount in µg!**

**Can people get too much vitamin D?**

The only way people can get too much vitamin D is by taking a supplement that contains excessive amounts. Food supplements are concentrated sources of active vitamin D that are easily absorbed. Too much vitamin D from supplements causes a buildup of calcium in the blood (hypercalcemia). This can lead to

nausea and vomiting, weakness, heart rhythm problems and frequent urination. Vitamin D toxicity might progress to bone pain, kidney stones and kidney damage.

**Therefore, it is very important that people:**

- 1. do not take supplements that contain excessively high amounts of vitamin D**
- 2. do not take more than is stated on the label.**

The Upper Level (UL) is the highest level of intake from all

sources deemed safe. The UL will vary according to body size and, therefore, is much lower for infants and children compared with adults. The Scientific Committee of the Food Safety Authority of Ireland (FSAI) established a UL for vitamin D and all other vitamins and minerals permitted in food supplements in the EU. These various ULs for all age groups are outlined in an FSAI report.<sup>2</sup> In a subsequent report,<sup>3</sup> the FSAI developed guidance for the food supplement industry on the **Maximum Safe Levels** for all vitamins and minerals in food supplement products that ensures even those in each age group who have the highest intakes from food, will have intakes less than the UL. The Maximum Safe Levels for vitamin D in food supplements marketed in Ireland are outlined in Table 2 for each age group.

The information in this article is provided to assist pharmacy staff in guiding consumers through the over-the-counter supplement products, towards appropriate and safe vitamin D products.

**Further reading:**

1. Update to 2007 Scientific Committee Report: Recommendations for a National Policy on Vitamin D Supplementation for Infants in Ireland
2. Scientific Recommendations for Food-Based Dietary Guidelines for 1 to 5 Year-Olds in Ireland
3. Vitamin D: Scientific Recommendations for 5 to 65 Year Olds Living in Ireland
4. Vitamin D: Scientific Recommendations for Food-Based Dietary Guidelines for Older Adults in Ireland
5. Guidance for Food Businesses: The Safety of Vitamins and Minerals in Food Supplements

**References available on request**

Table 2. Maximum Safe Level (MSL) of vitamin D in supplements for people of different ages in Ireland

Age Group*	Maximum Safe Level for food supplements <sup>3</sup>	Upper Level (UL, that should never be exceeded)
4 to 10 years  <b>10 µg (400 IU)</b> recommended daily amount and <b>5 µg (200 IU)</b> for 4 years old.	<b>35 µg (1400 IU)</b> ensures those with the highest intakes of vitamin D from food will have total intakes that are less than the UL (50 µg). This also leaves a margin to account for the likelihood of increases in vitamin D fortified foods.	50 µg (2000 IU)
>11 years  <b>15 µg (600 IU)</b> recommended daily amount.	<b>75 µg (3000 IU)</b> ensures those with the highest intakes of vitamin D from food will have total intakes that are less than the UL (100 µg). This also leaves a margin to account for the likelihood of increases in vitamin D fortified foods.	100 µg (4000 IU)

\*Maximum Safe Levels of vitamin D were not developed for infants (birth to age 1 year) and children aged 1 to 3 years.

## NEWS - Pharmacy Education Accreditation

The European Council for Pharmacy Education Accreditation (ECPHA) was officially launched last month.

ECPHA is an independent organisation founded by the European Association of Hospital Pharmacists and European Society of Clinical Pharmacists. The aim of ECPHA is to establish a pan-European system for accrediting lifelong learning education in pharmacy. In turn, this will help improve the quality of continuing education in pharmacy practiced in healthcare settings by applying high quality standards in the assessment of available and future continuous professional development and educational programmes.

ECPHA's goal is to present an additional layer to the national accreditation systems in the countries where there is one, and not be a substitute of them. Thus, the ECPHA team is already working on the accreditation of the first ECPHA-accredited events happening in Fall 2023. ECPHA's accreditation system is based on a robust and detailed procedure adapted from the European Accreditation Council for Continuing Medical Education (EACCME).

ECPHA President Nenad Miljković, commented, "Having established European Council for Pharmacy Education Accreditation (ECPHA), continuing education in pharmacy in Europe will continue to expand its reach through high quality programmes available for all, for the better of patient health outcomes."

ECPHA Board Member Dereck Stewart stated, "The establishment of ECPHA is an important milestone in advancing the overall quality of professional development and educational provision of all pharmacy team members across Europe and beyond. The very highest of standards will be applied during ECPHA assessment processes thus will be a positive contribution to the advancement of practice of pharmacy in all settings. I encourage all involved in development and education activities to strongly consider submitting an application. We look forward to positive discussions and collaborations with national accrediting bodies."