

## QUESTIONS and ANSWERS on VITAMIN D AND SUN EXPOSURE

These questions and answers have been developed to support the Consensus Statement on Vitamin D and Sun Exposure in New Zealand March 2012. The Consensus Statement has been agreed by the Ministry of Health and the Cancer Society of New Zealand and is supported by ACC.

### What is vitamin D?

Vitamin D is a fat-soluble vitamin, which means it can be stored in our bodies. It functions as a hormone and has an important role in:

- bone health
- regulating calcium levels in the blood (calcium balance)
- bone strength

Low vitamin D levels have been linked to many chronic conditions, including rheumatoid arthritis, multiple sclerosis, respiratory diseases, Type II diabetes and some cancers. However, robust evidence from intervention trials is required to determine what role, if any, vitamin D plays in the prevention and/or treatment of these health conditions.

### How do we get vitamin D?

#### Sun exposure

Most vitamin D is produced from the action of the sun on our skin. However, too much sun and sunburn can also cause melanoma and other types of skin cancer. This means we need to balance the risk of skin cancer against getting enough sun exposure for adequate vitamin D levels. The recommended level of sun exposure, i.e. being SunSmart, will depend on individual factors including: your skin type; how much skin is exposed to the sun and for how long; the time of day and the season; and where you are in New Zealand.

**Find out more about being SunSmart at <http://www.cancernz.org.nz/reducing-your-cancer-risk/sunsmart/> or <http://sunsmart.org.nz/>**

#### Food

Certain foods contain small amounts of vitamin D. Small quantities occur naturally in oily fish (such as salmon, tuna, sardines, eel and warehou); milk and milk products; eggs; and liver.

We can also get vitamin D from **fortified** foods. In New Zealand, vitamin D can be added on a *voluntary basis* by food manufacturers to: margarine and fat spreads; some reduced fat dairy products such as milk, dried milk, yoghurt, plant-based dairy substitutes (e.g., soy drinks); and liquid meal replacements.

You can check the ingredient list and/or the nutrition information panel on food labels to see if extra vitamin D has been added.

#### Supplementation

These refer to prescription tablets. The standard PHARMAC-subsidised tablet currently recommended is a single 1.25mg (50,000IU) tablet of cholecalciferol per month.

### What is the Cancer Society of New Zealand's advice for sensible sun exposure?

- Sunburn should always be avoided.
- Sunbeds or solaria should not be used.
- For most people, some sun exposure is recommended to make vitamin D.
- Vitamin D tablets may be needed for those at high risk of vitamin D deficiency.

People at high risk of skin cancer should discuss their vitamin D requirements with their GP.

## Why do we need vitamin D?

We need vitamin D, along with calcium, for strong healthy bones. Vitamin D deficiency in adults, can lead to bone weakness and increased risk of fracture. Adults with vitamin D deficiency may be diagnosed with osteoporosis or osteomalacia ('soft' bones). Vitamin D deficiency in young children can lead to rickets, causing bow legs and knock knees.

## What level of vitamin D is recommended in the blood?

In reaching a Consensus Statement the current science was reviewed. We recommend a 25-hydroxyvitamin D (25-OHD) blood level of 50 nmol/L or over. Deficiency has been defined as a blood level below 25nmol/L. Blood levels of between 25 and 50 nmol/L have been termed below recommended level.

## How common is vitamin D deficiency in New Zealand?

Key results from the recent 2008/09 New Zealand Adult Nutrition Survey (ANS) were:

- 68 percent of adults had good levels of vitamin D
- around 27 percent of adults had vitamin D levels below the recommended level but were not deficient
- around 5 percent of adults had vitamin D deficiency which could make them more prone to bone conditions like osteoporosis and osteomalacia
- around 6 percent of Maori men and women were deficient.
- about 10 percent of Pacific men and women were deficient.
- There were not enough people of Asian ethnicity for a reliable estimate of their vitamin D status.

## How do I know if I am vitamin D deficient?

The best way to confirm your vitamin D status is to discuss this with your general practitioner (GP). Your GP will ask you about your sun exposure habits and your diet. Following this your GP may recommend either behaviour change (increased sun exposure) or supplementation with a prescribed vitamin D tablet. In some circumstances your GP may recommend that you have a blood test to check your vitamin D status.

## How can I improve my intake or vitamin D status?

- **Sun exposure:** You can increase your vitamin D status by increased sun exposure. The best way is to expose more of your skin (e.g. arms and lower legs) for a shorter period of time, rather than a small area (e.g. face and hands) for a longer period. Being active outdoors is a great way to do this, and gain other health benefits at the same time. Between September and April, it is best to get outdoors before 10am or after 4pm. From May to August, some outdoor activity around the middle of the day is recommended.
- **Diet:** Choose foods that contain vitamin D. Examples include oily fish (such as salmon, tuna, sardines, eel and warehou); milk and milk products; eggs and liver.
- **Supplementation:** Where increased sun exposure is either not possible (e.g. being housebound, lifestyle); not recommended (e.g. risk of skin cancer; on certain medications); or not acceptable (e.g. for cultural reasons; or risk of skin damage/skin cancer); or for those with very dark skin (this includes many people from Africa, the Indian subcontinent and the

Middle East), **supplementation should be considered on the advice of your GP**. For some high-risk groups this may mean on-going vitamin D supplementation to maintain vitamin D levels.

- People living in southern regions (particularly West Coast, Canterbury, South Canterbury and Otago and Southland DHB regions), who do not get outside much in winter may wish to consider a vitamin D tablet from May to August each year.

## What about the risk of skin cancer?

Be SunSmart during the peak Ultra Violet Radiation (UVR) times (10am to 4pm) between September and April excluding some groups at high risk of being vitamin D deficient. You can be SunSmart by following these five simple steps:

- Slip – on a shirt with collar and sleeves
- Slop – on broad spectrum Sun Protection Factor (SPF) 30+ sunscreen
- Slap – on a hat with a wide brim
- Wrap – on sunglasses
- Stay in the shade.

## How much sun do I need to make enough vitamin D?

It is not possible to provide a single guideline for everyone. This is because the amount of sun you need to make enough vitamin D depends on factors such as:

- your skin colour (how darkly pigmented your skin is)
- your age, weight, and mobility
- the foods you choose to eat
- how you dress (how much of your skin is usually 'covered-up')
- how, and where you exercise, as well as the season, the time of day, and where you live

Note that glass does not transmit the UV wavelengths necessary for the production of vitamin D so sitting inside in the sun will not help you increase your vitamin D level.

## Are vitamin D tablets recommended?

Most of our healthy adult population will get sufficient vitamin D from sun exposure and food year-round. This includes older people who live independently, who are 'out and about' and are physically active outdoors.

There are **three** groups that are at a particularly high risk of vitamin D deficiency and poor bone health. **These three groups may need vitamin D supplementation:**

1. people with naturally very dark skin – this includes many people from Africa, the Indian subcontinent and the Middle East, especially if they are covered by veils and full-body-coverage clothing
2. people who completely avoid sun exposure because they have had skin cancer, skin damage from the sun, or are on photosensitising medications
3. people with low mobility, who are frail or who are housebound either in residential care or living in the community, including people who are bed-ridden or chair-bound.

Other people with, or at risk of, vitamin D deficiency include:

- people who have liver or kidney disease, or are on certain medications that affect vitamin D levels may also be at risk of vitamin D deficiency.
- people who live in the southern regions and spend little time outdoors in the middle of the day between May and August.

Talk to your GP about taking a vitamin D tablet, if you think you belong to one of these high risk groups.

### **Are Maori at risk of vitamin D deficiency?**

While there was no significant difference in the levels of vitamin D deficiency between Maori and non-Maori (2008/09 Adult Nutrition Survey), Maori women were 1.4 times more likely (compared with non-Maori women) to be below the recommended level of vitamin D, that is, to have a level between 25 and 50 nmol/L.

Being Maori is in itself not sufficient reason to take vitamin D tablets. If other risk factors (for example: little sun exposure, living in the lower South Island, obesity, kidney or liver disease) are also present then vitamin D tablets may be considered.

### **Are Pacific peoples at risk of vitamin D deficiency?**

Pacific people are 2.3 times more likely to be vitamin D deficient than non-Pacific people (2008/09 Adult Nutrition Survey). However a New Zealand study found that Pacific peoples also have lower fracture rates and a higher bone mineral density than New Zealand Europeans. Therefore, being a Pacific person is in itself not sufficient reason to take vitamin D tablets. If other risk factors (for example: little sun exposure, living in the lower South Island, obesity, kidney or liver disease) are also present then vitamin D tablets may be considered.

### **What if my GP/dermatologist/other specialist has given me different advice?**

The information in the Consensus Statement applies to the general population and should not replace specific advice given to individuals by their GP or specialist.

### **Is separate advice being developed for pregnant women and babies/infants and young children in relation to vitamin D?**

A separate statement will be developed for these groups.

### **Which vitamin D tablet is recommended?**

The standard PHARMAC-subsidised tablet recommended for the preceding at risk groups, is a single 1.25 mg (50,000IU) tablet of cholecalciferol per month. This is the same tablet currently used for the ACC programme (refer to the next question).

For severe deficiency, an individualised treatment programme may be needed, or recommended by your doctor.

### **What is the Accident Compensation Corporation (ACC) vitamin D programme?**

Cholecalciferol has been provided for older people living in residential care facilities in a programme funded by ACC, district health boards and primary health organisations since 2008. A resident must be prescribed a vitamin D tablet by their GP. A prescribing guideline has been developed by a specialist advisory group of lead clinicians and researchers, and ACC to advise on appropriate treatment and provide recommendations on dose and frequency.

Vitamin D has been shown to increase the number and size of type II muscle fibres, which play an important role in balance and mobility. Vitamin D also helps maintain the strength of our bones. This is important for preventing falls and fall related injuries.

### **Is it possible to overdose on vitamin D?**

It is not possible for sun exposure alone to create too much vitamin D. An overdose on vitamin D is most unlikely from eating usual amounts of foods containing vitamin D.

Very high intakes of vitamin D can cause non-specific symptoms such as nausea, vomiting, poor appetite, headache and constipation. Vitamin D toxicity can also raise blood levels of calcium, which can cause confusion, heart rhythm abnormalities, kidney stones and calcification of some organs and tissues.

Vitamin D tablets should be taken only under the recommendation of your GP.

To date, no negative health effects have been reported to ACC from those people prescribed a monthly vitamin D tablet (i.e. the standard PHARMAC-subsidised single 1.25 mg (50,000 IU) tablet of cholecalciferol per month).

### **Is it safe to use a commercial sunbed?**

Do not use sunbeds (or solaria) because of the increased risk of melanoma and other skin cancers. Consumer NZ mystery shopper surveys have found that many sunbed operators do not follow best practice voluntary guidelines.

### **What is the Consumer New Zealand sunbed survey?**

Consumer New Zealand has undertaken four separate sunbed surveys. Undercover researchers went to sunbed outlets and evaluated the session against some of the guidelines in the voluntary sunbed standard. The result of their most recent survey was published in December 2011 and showed that most operators did not meet all the requirements Consumer NZ were looking for. This is a similar finding to previous surveys Access the latest survey here:

<http://www.consumer.org.nz/reports/sunbeds>

### **Are there other useful New Zealand web pages?**

The web pages below provide more information on vitamin D and health.

- [Cancer Society of New Zealand \(www.cancernz.org.nz\)](http://www.cancernz.org.nz)
- [Medsafe consumer medicine information \(www.medsafe.govt.nz\)](http://www.medsafe.govt.nz)
- [ACC Guidelines for preventing falls \(www.acc.govt.nz\)](http://www.acc.govt.nz)
- [Osteoporosis New Zealand \(www.bones.org.nz\)](http://www.bones.org.nz)

#### **Footnote**

\* A 'vitamin D tablet' (as opposed to a dietary supplement) refers to a registered medicine that has been evaluated for safety, quality and efficacy by Medsafe before being released onto the New Zealand market.