

Vitamin D and UV radiation



The sun's ultraviolet (UV) radiation is both a major cause of skin cancer and the best natural source of vitamin D.¹ In Victoria we need to balance the risk of skin cancer from too much sun exposure with maintaining adequate vitamin D levels.

What is vitamin D?

Vitamin D is a hormone that controls calcium levels in the blood. It is needed for the development and maintenance of healthy bones, muscles and teeth and it is also important for general health.^{2,3}

Most vitamin D is made in the skin from exposure to the sun's UV radiation. There are also very small amounts of vitamin D that occur naturally in fish and eggs, while margarine and some types of milk have added vitamin D. However it is difficult to get enough vitamin D from diet alone.

How do I take a balanced approach to UV radiation exposure?

Most Victorians with fair to olive skin get enough vitamin D during their normal day-to-day activities (from September through to April) even if they apply sunscreen⁶.

The body can only absorb a certain amount of vitamin D at a time. Prolonged sun exposure does not cause vitamin D levels to increase. Short periods of sun exposure may be more efficient at producing vitamin D.⁵

In Victoria from **September to April** most people need sun protection when the UV Index is 3 and above. During these months, most Victorians can maintain adequate vitamin D by exposing their face, arms and hands for a few minutes on most days – but this should be done either side of the peak UV radiation periods. People with naturally very dark skin may need three to six times this exposure.⁷

From **May to August**, to maintain adequate vitamin D, most people in Victoria need two to three hours of sunlight to the face, arms and hands (or an equivalent area of the skin), spread over a week. Sun protection is not needed unless in alpine regions or near highly reflective surfaces such as snow and water. People with naturally very dark skin may need three to six times this exposure and supplementation may be required.⁷ Eye protection is still necessary if near highly reflective surfaces such as snow and water.

The use of solariums is not recommended to boost vitamin D levels because of their health risks.

Will sunscreen stop you from making enough vitamin D?

Regular use of sunscreen when the UV radiation level reaches 3 or more does not greatly decrease vitamin D levels over time.^{8,9,10}

Who is at risk of vitamin D deficiency?

- **People with naturally very dark skin.** The pigment in skin (melanin) acts as a filter to ultraviolet B (UVB) radiation and reduces synthesis of vitamin D.⁷
- **People with little or no sun exposure.** This group includes:
 - older adults, especially the frail, who are in medium to long-term residential care, or aged care, or are housebound¹²
 - people who wear concealing clothing for religious or cultural purposes¹¹
 - people who deliberately avoid sun exposure for cosmetic or health reasons
 - people at high risk of skin cancers
 - people who are hospitalised long-term
 - people with a disability or chronic disease
 - people in occupations such as taxi drivers, factory workers, night -shift workers.
- **Breast fed babies with other low vitamin D risk factors.** Breast milk is the best type of feed for babies, but it does not contain much vitamin D. Babies get their initial store of vitamin D from their mothers, so they are at risk of low vitamin D if their mother has low levels.¹³

People in these groups, and others who think they may be vitamin D deficient, should ask their doctor about their vitamin D levels. Low vitamin D may have no obvious symptoms, but without treatment, it can have significant health effects.

Low vitamin D and vitamin D deficiency causes bone and muscle pain and poor bone mineralisation (softer bones) causing rickets (bony deformity) in children and osteomalacia in adults. Low vitamin D is a contributor to osteoporosis.

More recently, vitamin D deficiency has been linked to various types of cancers (particularly colon cancer), heart disease, stroke, altered immunity and autoimmune diseases, although more research is needed.

Vitamin D levels can be checked with a simple blood test. Sun exposure may not be enough and some people may need to take a vitamin D supplement, especially in winter.

What is considered naturally very dark skin?

All skin types can be damaged by too much UV radiation. However, naturally very dark-skinned people need three to six times the exposure time and supplementation may be required depending on their vitamin D levels. Those who need this level of exposure usually have skin type 5 or 6 on this classification scale.¹⁵

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| Skin type | Skin colour | Characteristics |
|-----------|---|-------------------------------------|
| 1 | Very fair/pale white skin | Always burns, never tans |
| 2 | Fair white skin | Always burns easily, tans minimally |
| 3 | Light brown skin | Burns moderately, tans uniformly |
| 4 | Moderate brown skin | Burns minimally, always tans well |
| 5 | Dark brown skin | Rarely burns, tans profusely |
| 6 | Naturally very dark brown or black skin | Never burns |

Do people with naturally very dark skin need to worry about sun exposure?

Yes – care still needs to be taken in the sun. Even though skin cancer is less common in dark-skinned people, skin cancers that do occur are often detected at a later, more dangerous, stage. People with this skin type do not normally need to apply sunscreen and can safely tolerate relatively high levels of UV radiation without getting burnt.¹⁶

Regardless of skin colour, the risk of eye damage remains. Cataracts have blinded around 16 million people worldwide. According to the World Health Organization, sun exposure may be a factor in up to 20% of cataracts, especially in countries close to the equator, such as India, Pakistan and parts of Africa.¹⁷ High levels of UV radiation have also been linked to harmful effects on the immune system.¹⁸

It is recommended that all people, regardless of skin type, wear a hat and sunglasses to protect their eyes.

What about naturally very dark-skinned children at school and in care?

Children at school and in care usually spend at least 60 minutes a day outdoors. It is important for children with naturally very dark skin to have some sun exposure during these periods. These children do not normally need to apply sunscreen because of the high level of melanin in their skin. This is a decision for their families to make. It is recommended that all children wear a hat (and sunglasses if relevant) to protect their eyes and face.

What do I do if I think I am at risk of vitamin D deficiency?

See your doctor if you think you may be at risk of vitamin D deficiency. A simple blood test can assess your risk. If you are at risk, make sure you have regular medical check-ups to monitor levels. The doctor may

recommend that you take vitamin D supplements. If so, take the supplements strictly as directed.

Further information and resources

Being SunSmart in Australia information sheet and other information is available at sunsmart.com.au or contact the Cancer Council Helpline on 13 11 20

Risks and Benefits of Sun Exposure position statement is available at www.cancer.org.au/File/PolicyPublications/PSRisksBenefitsSunExposure03May07.pdf

UV-protective clothing and accessories can be purchased at the Cancer Council Victoria's Carlton shop or at cancervic.org.au; click on 'Our shop'.

This information can be photocopied for distribution.

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