

Low vitamin D in Victoria

Key health promotion messages for community health workers

July 2009



Vitamin D is an important public health issue. Low vitamin D is common in Australia and is more common in people in the southern states.

Most vitamin D is made in the skin from exposure to the sun's ultraviolet (UV) radiation. UV radiation cannot be seen or felt and its intensity varies throughout the year and the day. Information about safe UV levels is available from www.sunsmart.com.au

It is difficult to get enough vitamin D from diet alone. Only a few foods naturally contain vitamin D (fish, eggs). Margarine and some types of milk have added vitamin D, but most people only get 10–25% of their vitamin D from food.

Vitamin D is essential for bone and muscle health in all age groups and for the prevention of falls and fractures in older people.

Low vitamin D causes:

- Bone and muscle pain
- Poor bone mineralization (softer bones) causing **rickets** (bony deformity) in children and **osteomalacia** in adults. Low vitamin D is a contributor to osteoporosis

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

Low vitamin D may have no obvious symptoms but without treatment it can have significant health effects.

Groups at risk of low vitamin D

- **People with naturally very dark skin.** The pigment in skin (melanin) acts as a filter to UVB (Ultraviolet B) radiation and reduces synthesis of vitamin D
- **People with little or no sun exposure.** This group includes:
 - Older adults: Frail, medium to long-term residential care or aged care, housebound
 - People who wear concealing clothing for religious and cultural purposes
 - People who deliberately avoid sun exposure for cosmetic or health reasons

- People at high risk of skin cancers
- People hospitalised long-term
- People with a disability or chronic disease
- 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 vitamin D and/or if they have naturally very dark skin

Some medicines (e.g. anticonvulsant medicines for epilepsy) increase breakdown of vitamin D in the body and reduce vitamin D levels.



Sun exposure and vitamin D

Most Australians with fair to olive skin get enough vitamin D through incidental sun exposure during normal daily outside activities even if they apply sunscreen.

Table 1: Safe sun exposure for vitamin D

	Fair to olive skin (Fitzpatrick skin types I–IV)	Naturally very dark skin (Fitzpatrick skin types V–VI: rarely or never burns)
In Victoria	Higher risk of skin cancer	Higher risk of low vitamin D
From September to April—when average UV levels are 3 and above	A few minutes of sun exposure to the face, arms and hands (or equivalent area of skin) before 10am or after 3pm on most days of the week should provide enough vitamin D.	3–6 times the exposure level of fair to olive skin. More sun exposure and supplementation may be required.
	Sun protection is needed during these months.	It is not really necessary for people with this skin type to wear sunscreen but they should still wear a hat.
From May to August—when average UV levels are below 3	Approximately 2–3 hours of sun exposure to the face, arms and hands (or equivalent area of skin) across the week should help maintain vitamin D levels.	3–6 times the exposure level of fair to olive skin. More sun exposure and supplementation may be required.
	Sun protection is not needed unless you are in alpine regions or near highly reflective surfaces such as snow and water.	Sun protection is not needed unless you are in alpine regions or near highly reflective surfaces such as snow and water.

Vitamin D testing and treatment

- **All people at risk of low vitamin D should have their levels checked** by their doctor (with a blood test)
- **People with low vitamin D should be treated with supplements** so their levels return to the normal range (50–75 nmol/L) or above.
- Vitamin D supplements can be low dose (given daily) or high dose form (given monthly or less often). High dose vitamin D is becoming more widely available. Currently a high dose tablet (Cal D Forte 50,000 IU) is being trialled in Melbourne. For information on authorized clinics/pharmacies please refer to Osteoporosis Australia website (<http://www.osteoporosis.org.au>)
- **People with low vitamin D also need adequate calcium** in their diet
- **Low vitamin D is a long term problem.** Once low vitamin D is treated the aim is to maintain normal vitamin D levels. People with risk factors for low vitamin D should have their levels checked every year and may need lifelong supplements

Acknowledgement

The document is based on information generated from the following resources:

Cancer Council Australia, The Australian and New Zealand Bone and Mineral Society, Osteoporosis Australia and the Australasian College of Dermatologists (2007) *Risks and benefits of sun exposure Position Statement*.

Cancer Council Australia, The Australian and New Zealand Bone and Mineral Society, Osteoporosis Australia and the Australasian College of Dermatologists (2008) *How much sun is enough? Getting the balance right—vitamin D and sun protection* (brochure).

Cancer Council Victoria (2007) UV radiation and vitamin D—For people with very dark skin (information sheet) http://www.sunsmart.com.au/vitamin_d

Calcium, Vitamin D & Osteoporosis (2009). A guide for consumers. Osteoporosis Australia. 3rd edition

Calcium, Vitamin D & Osteoporosis (2008). A guide for GPs, Osteoporosis Australia, 2nd edition.

Munns C, Zacharin MR, Rodda CP, et al. Prevention and treatment of infant and childhood vitamin D deficiency in Australia and New Zealand: a consensus statement. *Medical Journal of Australia* (2006); 185(5):268–72.

IARC. Vitamin D and Cancer (2008). IARC Working Group Reports Vol.5, International Agency for research on Cancer, Lyon, France (<http://www.iarc.fr/en/publications/pdfs-online/wrk/wrk5/index.php>)