

Vitamin D Its role in disease prevention

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KEY POINTS FROM THIS ARTICLE:

- 1) “Evidence that vitamin D reduces the risk of many types of disease is increasing exponentially.”
- 2) In 2011, the Institute of Medicine (IOM) of the US National Academies reviewed the evidence for beneficial effects of vitamin D for skeletal health, and set the daily recommended intake of vitamin D at 600–800 IU for most children and adults; and defined vitamin D sufficiency as a serum 25(OH)D level above 20 ng/ml (50 nmol/l). They also set a daily upper intake of 4,000 IU of vitamin D3.
- 3) “More than 130 journal publications have criticized the IOM report as being too conservative. One summarized the problems succinctly: ‘The IOM recommendations for vitamin D fail in a major way on logic, on science, and on effective public health guidance’.”
- 4) “The importance of vitamin D is underscored by the fact that skin pigmentation varied as humans moved out of Africa, becoming very pale in northern Europe.”
- 5) The authors cite evidence of the relationship between low vitamin D levels and cancers (bladder, brain, colon, gastric, prostate, and rectal cancer; multiple myeloma; and non-Hodgkin lymphoma), and their survivability rates.
- 6) The beneficial effects of vitamin D may be much higher than is apparent according to prospective studies (perhaps a 28% reduction in all-cause mortality rate.)
- 7) Vitamin D may reduce the risk of the metabolic syndrome and its sequelae, type-2 diabetes mellitus and cardiovascular disease (CVD).
- 8) “Several human skin diseases, including psoriasis, vitiligo, atopic dermatitis and localized scleroderma, can be treated with solar radiation (heliotherapy) or artificial UV radiation (phototherapy).”
- 9) One non-vitamin D effect of UVA is liberation of nitric oxide (NO), which can lower blood pressure, has antimicrobial effects and acts as a neurotransmitter.

- 10) Ultraviolet light releases endorphins, which may be one reason that being in the sun is pleasurable.
- 11) Ultraviolet light may reduce the risk of multiple sclerosis through non-vitamin D mechanisms.
- 12) Vitamin D deficiency may be a risk factor for erectile dysfunction.
- 13) Vitamin D deficiency is linked to the risk of CVD and taking vitamin D supplements can reduce the risk of CVD.
- 14) Optimal vitamin D levels appear to help in the prevention and treatment of infections.
- 15) 250,000 IU of cholecalciferol rapidly restores vitamin D status into the optimal range in subjects with cystic fibrosis acute respiratory infection and is associated with improved survival and improved recovery of lung function.
- 16) There is epidemiologic and intervention studies pointing to an important role for vitamin D in the critically ill patient with infection.
- 17) Vitamin D deficiency is a common feature of chronic kidney disease (CKD). "Ergocalciferol [vitamin D2] was less effective than cholecalciferol [vitamin D3]," and "correcting vitamin D status required a daily dose of greater than 2,000 IU."
- 18) Vitamin D can improve the efficacy and reduce some of the adverse side effects of antiepileptic glucocorticoids, bisphosphonates, antiretroviral drugs, anti-estrogens, cytostatic agents, antihypertensive drugs, and antituberculous drugs. This action occurs through the Pregnane X receptor (PXR), which plays an important role in detoxifying xenobiotics [chemicals that are found in the body but not produced or expected to be present in it] and drugs.
- 19) Vitamin D appears to reduce the risk of hospital-acquired infections, such as pneumonia, bacteremias, urinary tract infections, and surgical site infections. Therefore, vitamin D status should be assessed and corrected in hospital patients.
- 20) Low vitamin D levels may increase two immune-mediated diseases, asthma and lupus. "Studies of pregnant women and their offspring suggest that vitamin D deficiency may predispose an infant to future risk of wheezing disorders."

COMMENTS FROM DAN MURPHY

We test vitamin D levels on nearly all of our patients. We target 50 ng/ml as optimal. It is difficult to achieve these levels without consuming at least 5,000 IU of Vitamin D3 per day.