Vitamin D
Its role in disease prevention

Dermato-Endocrinology
April/May/June 2012; 4:2, 81–83;

William B. Grant and Vin Tangpricha

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 antituberculotic 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 pre 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.