



Why are We So Vitamin D Deficient?

A statistical error has reduced our daily required dose of the ‘sunshine vitamin’ to our own detriment.

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There are many benefits of vitamin D and many risks that come with vitamin D deficiency but many people don't have enough of this easy-to-get vitamin.

The “sunshine vitamin” supports the musculoskeletal system by regulating calcium use for optimal bone strength and density, in addition to enhancing muscle tone. Vitamin D also regulates the immune system by reducing levels of certain inflammatory cytokines and reduces the risk of certain cancers as well as cardiovascular disease.

It is essential we get enough vitamin D.

yet, American's blood levels of vitamin D don't measure up according to government data (NHANES). How can this unfortunate situation occur? First, we do not go out in the sun to get adequate amounts of natural, solar-generated vitamin D, and second, the dietary recommendations for vitamin D, specifically intended for those who don't get vitamin D from sunlight, are wrong.

Consider this: Pale young adult skin exposed to the summer sun will produce 10,000 IU of vitamin D within 15 minutes (Holick, 2008) yet the Institute of Medicine (National Institutes of Health Office of Dietary Supplements) has determined a recommended dietary allowance (RDA) of only 600 IU per day. Why are

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these values so far apart?

Consistent with how the skin generates vitamin D when exposed to sun, vitamin D researchers at the University of California-San Diego, Creighton University, and elsewhere have shown that 600 IU per day is only about one-tenth the amount needed to support vitamin D levels linked to reducing incidence or risk of diseases related to vitamin D deficiency (Heaney, Garland).

How did the Institute of Medicine get vitamin D dosing so wrong?

The RDA is the intake considered necessary to meet the nutritional needs of 97.5 percent of the population. The measurement the IOM used in their calculations was the blood level of vitamin D derivative (25-hydroxyvitamin D) at 20 ng/ml to achieve the 97.5 percent criterion, however, due to a statistical error, the 20 ng/ml value was actually the level to ensure almost the opposite. sd

Investigators from the University of Alberta published a paper in the journal *Nutrients* in which they showed that the IOM had made this statistical error in defining the intake needed to reach and maintain a vitamin D level of 20 ng/ml. Had the IOM calculated it correctly, the RDA would have been ten times greater in agreement with Heaney and Garland.

Using the same studies on which the IOM had based its calculation, Veugelers & Ekwaru determined 8,895 IU of vitamin D per day would be necessary to achieve 20 ng/ml in 97.5 percent of the population. Again, using the same set of IOM studies, Heaney's group found that 7,000 IU would bring 97.5 percent of people above 20 ng/ml.

Those who don't get much or any vitamin D from sun exposure due to indoor lifestyle, time of year, age, sunscreen use, or other factors must supplement to get healthy levels of vitamin D.

Conventional thinking among vitamin D scientists and physicians is that between 3,000 and 5,000 IU per day is appropriate for most healthy adults. While these amounts may seem like a lot, keep in mind that your body 'uses' 4,000 IU per day and that the skin can generate 10,000 IU of vitamin D after 10 minutes of full-body summer sun exposure.

Despite what you may have read elsewhere, vitamin D toxicity is very rare. In fact, the vast majority of physicians have never encountered it (ask your doctor about their experience). It can happen to those that take 40,000 - 50,000 IU a day for months or as a result of rare manufacturing errors, and in such isolated instances the treatment is to simply stop taking the additional vitamin D until blood levels normalize. Interestingly, it is impossible to 'overdose' from sun-generated vitamin D as there are checks and balances in place to prevent overproduction. Have you ever seen an unhealthy looking lifeguard?

During these sunnier months, it is important to practice sensible sun exposure to load up your vitamin D stores for winter. If you're

a younger adult under age 40, this means going out into the sun in a bathing suit with skin exposed with no sunscreen for 10-15 minutes. In that time period, your skin will produce enough vitamin D for that day's needs and the extra will be stored. After that time period, apply your SPF 15 and you'll reduce vitamin D production by

99 percent. Do this as often as you can. If you're older, have darker skin, or are obese, you'll need longer sun exposure to achieve the same goals.

Quiz: Why do cold-blooded animals sun themselves? To get warm, right? Wrong. Lizards injected with vitamin D prior to being placed in the sun don't sun themselves as long as lizards injected with a placebo. Furthermore, the effect is dose-dependent; the more vitamin D that's injected into the lizard, the less time it spends in the sun. The lizard is responding to blood levels of vitamin D and regulating sun exposure based on those levels. The lizard is 'smart' enough to go into the sun to get its vitamin D. Do you go in the sun?

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