Shining the Light on Vitamin D Supplementing

By Jamie Wells, M.D. — March 15, 2017

There is this unsubstantiated, but widely believed, notion that vitamins and supplements are a panacea. In fact, a multi-billion dollar industry serves to support and perpetuate this often faulty, overly auspicious claim.

Here, I will tackle the true level of importance of the “sunshine” Vitamin D in staving off disease, preserving healthy bones and the actual hazards of deficiency and toxicity.

Why? Because, according to Britain’s leading testing laboratory[^2], excessive exogenous ingestion to overdose levels of Vitamin D supplements purchased online reveal some people are taking 2,250 times the recommended dosages. Such endeavors place them at risk of heart and kidney issues (among others) given the National Health System (NHS) lab[^2] is witnessing 2-3 overdose cases weekly. Apparently, earlier in the year it was recommended that people in Britain take supplements during the darker months. Somehow— along with ever present marketing by supplement companies— the message precipitated hefty self-prescribing in hundreds of cases to dangerous degrees. Vitamin D is vital but an excess can be toxic.

Before we get to the hazards of excess, let’s address Vitamin D’s importance.

Vitamin D produced in the skin is converted to a hormone form and activated by the liver and kidney. Yes, maintaining appropriate levels of the fat-soluble Vitamin D consistently is essential to well-being and multiple bodily functions. It promotes proper absorption of calcium in the gut[^3] and regulates calcium and phosphate concentrations so that bones develop with strength, grow and appropriately remodel. When Vitamin D values are optimally maintained, conditions that weaken and thin bones are avoided (e.g. rickets in kids, osteomalacia in adults, with calcium also prevents osteoporosis). Additionally, it plays a role[^3] in reducing inflammation, neuromuscular and immune
functions and many cellular reactions.

However, when an individual is otherwise healthy it can be naturally and effectively generated via sun exposure and dietary intake of certain foods—though most of this is acquired through fortified foods in the United States. Fundamentally, there is no superior means of absorbing a nutrient than the old-fashioned way of eating it, in particular, for a person with an intact and normally functioning gastrointestinal tract.

Due to recent concerns about skin cancer, in particular melanoma, the pendulum has swung to where over-protection from the sun is the new normal, which can prompt lower levels in Vitamin D. Again, like most ideal recommendations, moderation is the key factor. Small doses of sun exposure are necessary to generate Vitamin D which is essential to good health. Prevention of skin cancer is important to balance the mix. (1)

Bypassing nature’s most bioavailable method of nurturing the body by orally or intravenously obtaining a supplement will never be preferable. It may not be converted the same as the more natural route, the metabolism of the substance is less clear or could require more to yield a similar result, for example. For those with afflictions that prevent appropriate absorption, alternatives like supplements can prove invaluable. For instance, patients with cystic fibrosis are challenged by pancreatic insufficiency and an impaired ability to absorb fat-soluble vitamins. An individual with chronic liver disease might develop rickets (aka Vitamin D deficiency). Medications people take for other conditions could also interact unfavorably with Vitamin D. As we age, our utilization changes as well.

So, yes, medical issues exist that require proper care, evaluation and monitoring of Vitamin D.

When too much Vitamin D is ingested from supplements, calcium and phosphorus metabolism get disturbed. Their levels rise as they deposit into soft tissue having been mobilized from bone. Hence, such calcification serves to damage the heart, blood vessels, central nervous system, kidneys and other organs. With escalating rates of these elements, kidney stones and potential kidney failure can ensue. Symptoms like polyuria (aka too much urination), polydipsia (aka too much drinking), cardiac arrhythmias, weight loss, nausea, vomiting, weakness, confusion and poor growth can develop. To manage the toxicity which induces a hypercalcemia, the cascade of events needs to be corrected safely--and urgently--including immediate cessation of Vitamin D supplements (e.g. diuretic use, hydration restored, reduced intake of calcium, etc…).

This does not occur with excessive sun exposure as the body has natural defenses that counteract such a disequilibrium. It is also highly unlikely from eating foods rich in the vitamin.

Last year, a UK study in the Annals of Clinical Biochemistry [4] investigated self-administration of Vitamin D in the general public concluding “Clinicians should be aware that patients may be self-administering very high concentrations of vitamin D, especially when investigating unexplained hypercalcaemia.” In so doing, 372 patients had high to toxic levels and few were under medical supervision. “The internet was the main source of supplements (74%).” With recent laboratory findings there demonstrating such elevations, the NHS is issuing a health warning [2] about self-prescribing and these extreme dosages.
When it comes to medications -- over-the-counter, prescription or "natural" supplements and vitamins, there is not necessarily a panacea. Each typically turns something on while effectively turning something else off. That's basic pharmacology. These substances do not work in a vacuum and our ability to metabolize them is impacted by a number of influencing factors like extremes of age, other co-morbidities, varying medicines, genetics and so on...

**What’s the Bottom Line?**

- Intermittent sun exposure in moderation (along with dietary intake) is an optimal way to maintain your Vitamin D levels — while being cognizant of skin cancer precautions.
- A blood test is necessary to determine whether you are deficient, sufficient or in a toxic range.
- Blood tests are not static, but dynamic indicators of your personal trend over time. Discuss with your doctor whether you are in need of more significant intervention and be sure to follow-up consistently. For instance, one low value does not necessarily translate to endless supplementation. Also, other electrolytes, for example, can be affected and require testing.
- Self-prescribing and self-referring, in general, can lead to adverse effects and delay in your medical care. A therapeutic doctor-patient relationship entails being able to discuss your worries freely with your physician. If you aren’t comfortable doing so, then maybe you should consider finding one with whom you are.
- It is in your best interest to discuss all medications, vitamins and supplements or alternative therapies with your treating physician. He/she knows your entire medical and family history and comprehensive physical examination and can best assist you to be certain there are no interactions that can be doing you harm. Being fully informed is key to your making the decision that is right for you. As is knowing your own personal risks.
- The National Institutes of Health (NIH) provides a wonderful resource for health professionals [3] or consumers [5] (just click on the blue links) so you can better assess your Vitamin D requirements and risk factors. Review them with your doctor.

**NOTE:**


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