

Vitamin D in the Spotlight

This critical nutrient builds bones, helps fight infection and may protect against some cancers. Do we get enough?

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For many years, vitamin D was boring—even to doctors. Because it was considered good for bones and not much else, multitaskers like vitamin A, B vitamins and vitamin E hogged all the press. But recent studies have thrust this long-neglected nutrient into the spotlight. Scientists now think vitamin D may affect everything from diabetes to cancer. They're also finding that many people don't have enough of it.

When vitamin D was discovered a century ago, it solved a major public-health problem: rickets, a disease caused by vitamin D deficiency in which bone development is delayed and deformed. When a synthetic version of vitamin D was added to milk, rickets virtually disappeared, as did any concern about vitamin D deficiency. For most of the 20th century, scientists defined a person's daily requirement of vitamin D—called the recommended dietary allowance, or RDA—as the level needed to prevent rickets. Nearly everyone in the developed world was thought to be taking in a healthy amount.

But new research suggests that the RDA may not be sufficient to protect people against several diseases other than rickets. Studies link low blood levels of vitamin D to type 1 diabetes, multiple sclerosis, tuberculosis, colon cancer and even the flu. High levels of the vitamin may help fight HIV infection. And the vitamin's role in bones extends way beyond preventing rickets. Levels higher than the RDA offer older adults protection against fractures, through strengthening muscles as well as bones.

Many people living in this country and northern Europe have levels of vitamin D that are low, based on the latest evidence. Why is that? Unlike most other vitamins, vitamin D is found in only a few foods. Instead, we get most of it from the action of sunlight on our skin. In retrospect, we recognize that rickets became a problem in the early 20th century when increasing urbanization and air pollution in cities caused less sunlight to strike the skin.

A century later, almost every aspect of modern life seems designed to lower our ability to produce vitamin D. Compared with our ancestors, we spend a lot more time indoors, wear more clothes and use sunscreen. If applied adequately to protect against sun-induced skin damage and to reduce the risk of skin cancer, sunscreen lowers the skin's ability to form vitamin D by more than 95 percent. More of us are older and fatter; age and obesity also reduce the amount of vitamin D we produce. An average 70-year-old can produce only about a quarter of the vitamin D of a 20-year-old. Obese people generally have substantially lower blood levels of vitamin D.

No matter what your age or size, the time of sun exposure, the season and geography all affect how much vitamin D you produce. The closer it is to noon, the more vitamin D your skin makes. The angle of the sun is critical, and since that changes with the seasons, vitamin D levels fluctuate drastically. For example, in Boston between November and March, the ultraviolet radiation from the sun is insufficient to produce vitamin D, even with abundant skin exposure on a sunny day. The farther you go away from the equator, the greater the effect. One study found that among white girls in Maine, 48 percent had low vitamin D blood levels at the end of the winter, while only 17 percent were deficient at the end of the summer. Clothing can play a big role as well. Vitamin D deficiency is rampant among women in Saudi Arabia, despite the sunshine, because the traditional clothing nearly completely covers their skin.

Skin pigmentation also affects the way we process vitamin D. Melanin, the pigment that provides a darker tint, acts as a sunscreen, so darker-skinned individuals require at least five times as much sun exposure to form a given amount of vitamin D, compared with a very light-skinned person. Indeed, the majority of African-Americans have low levels of vitamin D.

Finding ways to counteract these barriers to getting enough vitamin D is the next challenge. We have only three ways of boosting our blood levels of the nutrient: increasing sun exposure, increasing our intake of vitamin D-rich foods or taking vitamin D supplements. Because of the risk of skin cancer, getting a lot more sun exposure is not a healthy way to raise blood levels of vitamin D. The only foods with high levels of vitamin D are fatty fish and certain kinds of mushrooms. The other main dietary source is fortified foods: dairy foods (milk has 100 IU per cup), some brands of orange juice and fortified breakfast cereals.

That's why there's growing agreement among experts that a daily vitamin D supplement makes good sense. Among nutritionists working on vitamin D, there is general agreement that the current recommended intake of 400 IU per day (600 for those over the age of 70) is too low, and should be re-evaluated. Most believe that 1,000 IU per day would be a reasonable dose for a typical adult in the United States, and I agree. Certain people might benefit from taking even more, such as those who avoid the sun or live in northern regions. The elderly and African-Americans are especially vulnerable to vitamin D deficiency, and I think supplementation (preferably with the natural form, vitamin D3, cholecalciferol) should be routine for

these groups. And even though we need vitamin D, too much can be toxic. The current official upper limit is 2,000 IU, although many experts think this is too low and should be raised, perhaps to 4,000 IU. For comparison, a light-skinned person in a bathing suit can produce more than 10,000 IU with a half hour in the sun. So stay tuned: there is much more to be learned about how this once "boring" vitamin can protect our health.

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