Debunking common vitamin D myths

March 20 2018

Credit: Yale University

You may have heard every vitamin D myth under the sun—so many, in fact, that you might be at the point of throwing your hands up in the air in frustration. Why can't there be a simple answer?

First, some facts: Your body needs vitamin D. Its main job is to help the body absorb calcium from the intestines. This calcium is necessary to help "mineralize the skeleton" over the course of your lifetime and is a

critical mineral for forming the hardened bone that keeps you strong and healthy.

On the other hand, "not getting enough Vitamin D can have serious consequences, including increased rates of bone loss or even osteomalacia ('soft bones') in adults and rickets (a deforming bone disorder) in children," says Yale Medicine endocrinologist Karl Insogna, MD, director of the Yale Medicine's Bone Center.

How do you get vitamin D?

The short answer is from food, the sun or supplements.

There are two main kinds of vitamin D—vitamin D2 and vitamin D3—which you can get from (and occur naturally in) certain foods like salmon, tuna, mackerel and beef liver and egg yolks. But because we don't consume large enough quantities of these foods, they can't be our sole source of vitamin D. That's why foods like milk, cereal and some orange juices are vitamin D2- and D3-fortified. (Since the 1930s, manufacturers have voluntarily enriched these foods with vitamin D to help reduce the incidence of nutritional rickets.)

When exposed to the sun, your skin can manufacture its own vitamin D. "We each have vitamin D receptor cells that, through a chain of reactions starting with conversion of cholesterol in the skin, produce vitamin D3 when they're exposed to ultraviolet B (UVB) from the sun," says Yale Medicine dermatologist David J. Leffell, MD, chief of Dermatologic Surgery.

Another avenue to get vitamin D is by taking supplements. These come in both pill and liquid form. They are generally recommended for people with fat absorption issues, lactose intolerance, milk allergies, as well as for people with darker skin tones or with certain medical conditions that

prevent them from going outdoors.

How does the body process vitamin D?

After vitamin D is absorbed through the skin or acquired from food or supplements, it gets stored in the body's fat cells. Here it remains inactive until it's needed. Through a process called hydroxylation, the liver and kidneys turn the stored vitamin D into the active form the body needs (called calcitriol). In case you were wondering, it doesn't matter if you're getting D2 or D3, and the sunlight-generated kind isn't better than the nutritional variety. "The body can use each perfectly fine," says Dr. Insogna.

Those are the basic facts, but some questions might remain: How should you get vitamin D? How much should you get and when should you worry about your levels? In light of these common questions, our Yale Medicine doctors help clear up some confusion about vitamin D, separating fact from fiction.

The more vitamin D you take, the better? Absolutely not.

—Thomas Carpenter, MD, Yale Medicine pediatric endocrinologist and director of the Yale School of Medicine's Center for X-Linked Hypophosphatemia

That's a misconception. Vitamin D is stored in fat. So, if you're a small person and getting large doses, you have less available storage, which means vitamin D goes into your blood and you may absorb too much calcium, creating a toxic situation. And it's unclear how long you have until you exceed the upper limits of vitamin D intake before it becomes dangerous. (Modest increases above the RDA are not likely to cause

harm.)

Just recently, I treated an infant whose blood vitamin D level was in the hundreds when it should have been between 20 and 50 nanograms/milliliter (ng/mL). The child, who developed high blood calcium (hypercalcemia), had to be hospitalized and treated with several types of medications to get the calcium levels down to normal levels.

You can now get 50,000 IU tablets over the counter. There are patients with specific issues who might need a prescription for high levels of vitamin D, but for most people, that amount will raise your vitamin D level too high.

When shopping for supplements, always look for ones that offer the daily recommended allowance (RDA) you need for your age bracket: For most healthy people, it's 600 IU per day, but for people over age 70 who need a little more—it's about 800 IU. That's because, as people age (women after menopause, in particular), they less efficiently synthesize vitamin D and absorb calcium. Babies should be getting smaller amounts in their first year of life, between 200 and 400 IU.

Should everyone should get their vitamin D levels checked? Generally, no.

—Karl Insogna, MD, director of Yale Medicine's Bone Center

Most people should be fine. Testing is important only for certain populations: for people who are institutionalized; for patients with a gastrointestinal disorder (like inflammatory bowel disease) or osteoporosis; those who have had weight loss surgery; those on anti-convulsant medications; and children who are immobilized and not outside and active. If you're over 70, I recommend getting your levels

checked at least one time.

People whose cultural or religious beliefs require them to be fully clothed, especially if they're living in northern climates, and whose dietary habits include little or no dairy (which is vitamin-D-fortified), may also be vitamin D-deficient and should be tested.

Is vitamin D deficiency an epidemic? No, it's not.

—Thomas Carpenter, MD, Yale Medicine pediatric endocrinologist and director of the Yale School of Medicine's Center for X-Linked Hypophosphatemia

Based on the United States Dietary Association (USDA) and National Health and Nutrition Surveys (and using 20ng/mL as the lower limit), the bulk of the population is not vitamin D-deficient. The population we tend to see vitamin D deficiency in—and it's typically in wintertime—are breastfed infants. Breast milk doesn't have much vitamin D in it. That's what spurred a recommendation from the American Academy of Pediatrics that every breastfed infant be given vitamin D (if they're being given liquid multivitamin drops, they're getting enough of it). But if infants aren't given multivitamin drops, they need to be given 200 IU a day of vitamin D for the first two months of life and 400 units a day afterwards until they're drinking formula or milk, which are each fortified with vitamin D.

Is it best to get your vitamin D from the sun? Definitely not!

—David J. Leffell, MD, Yale Medicine dermatologist and chief of Dermatologic Surgery

One of the biggest challenges we've faced in dermatology and in the world of skin cancer prevention has been a lot of misinformation about vitamin D metabolism.

There are claims that one needs to get a certain amount of sun exposure every day in order to produce enough vitamin D to be healthy. It's just not true. The majority of people can get their vitamin D from nutritional supplements and from vitamin D-fortified foods.

There are some people (who are typically not dermatologists or experts in the biology of skin cancer) who have advocated for tanning to get vitamin D. But we know that UVB light causes skin cancer and that protecting yourself against it makes sense. As a doctor who treats patients who have melanomas, I want the general public to be advised that under no circumstances can use of a tanning bed or tanning in general be justified on the basis of vitamin D. Take a supplement instead.

The final verdict on vitamin D

No bones about it, the endocrinologists we interviewed agree with our dermatologist.

"Just being outdoors, you get a fair amount of sun exposure and some sun-related generation of vitamin D," says Dr. Insogna. "Because skin cancer, particularly melanoma, can be such a devastating disease, it's best to use sunblock when outdoors in strong sunlight for any prolonged length of time. Because this may limit the amount of vitamin D you get from sun exposure, make sure your diet includes sources of vitamin D from foods or supplements," he says.

Both your skin and your bones will thank you.