

The ABCs on vitamin D

There's no downside to increasing your vitamin D intake. So what are you waiting for? *by Karen Giles-Smith*

When making most decisions, one usually weighs the pros and cons. When deciding whether or not to take vitamin D supplements, deliberation is an unnecessary step, according to Michael Holick, PhD, MD, professor of Medicine, Physiology and Biophysics and director of Bone Health Care Clinic and the Heliotherapy, Light, and Skin Research Center at Boston University Medical Center.

"There are no downsides to increasing vitamin D intake," said Holick during his presentation at the Michigan Academy of Family Physicians annual scientific assembly in July.

Vitamin D's role in health is increasingly in the spotlight, as researchers learn more about the benefits of adequate intake and the detriments of not getting enough. "Vitamin D deficiency is probably the most common medical condition in the world with very significant consequences," said Holick. In Michigan, it's estimated that 98 percent of adults are vitamin D deficient. In the U.S., it's estimated that 9 percent of children and teens are vitamin D deficient and 61 percent are vitamin D insufficient.

Vitamin D and your health

Vitamin D was dubbed a vitamin back in 1919 when it was discovered, however, it acts more like a hormone in the body. All body cells and tissues have vitamin D receptors, which signifies the important role vitamin D plays in bodily functions and health. Vitamin D is necessary for absorption of calcium, bone formation, function of neuromuscular and immune systems, and reduction of inflammation. Vitamin D deficiency can cause softening of the bones, referred to as rickets in children and osteomalacia in adults. Vitamin D deficiency also may increase the risk of many diseases and conditions including cancers, diabetes, obesity, hypertension, depression, Alzheimer's and many more. Those at greatest risk of vitamin



D deficiency are breastfed infants, older adults, as well as people with limited sun exposure, dark skin, fat malabsorption or obesity.

Vitamin D recommendations

The Institute of Medicine recommends 200-600 IUs (International Units) of vitamin D daily depending on age, however, these values are currently under review and are expected to increase. In 2008, the American Academy of Pediatrics increased recommendations for vitamin D intake for children to 400 IUs daily. Based on the latest research, many experts recommend adults take 1,000-2,000 IUs of vitamin D through supplements, estimating that with the addition of some sun exposure and vitamin D-containing foods, adults are likely to get what they need.

Vitamin D and the sun

Vitamin D is manufactured in the skin when exposed to the UV-B rays of sunlight. In fact, 90-95 percent of

the vitamin D in the body is generated from sunlight exposure. Because of the body's regulation system, it's not possible to overdose on vitamin D from the sun. Vitamin D synthesis in the skin is influenced by season, latitude, time of day, cloud cover, smog, skin pigmentation, and sunscreen. In latitudes north of Atlanta, Georgia (that means Michigan), there's not enough UV energy in sunlight to allow the skin to make vitamin D from November through February. In warmer months, we spend a lot of time indoors and when outdoors, we often avoid the sun with the use of hats, clothing and sunscreen. All in all, Michiganders don't make much vitamin D.

Some experts recommend getting about 15 minutes of sun exposure at least three times a week before applying sunscreen, except in cases of sun-sensitive skin or increased cancer risk. On the other hand, many dermatologists recommend complete protection from the sun, pointing to food and supplements as safer sources.

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Vitamin D in food

The recommendation from the American Dietetic Association to “get the nutrients you need from food first,” holds true for vitamin D, however, not many foods or beverages are rich in vitamin D. So, in addition to a well-balanced diet, most people also need a vitamin D supplement. Several types of fish such as salmon, tuna, mackerel and sardines are good sources of vitamin D. Other good sources include vitamin D-fortified foods such as margarine, orange juice, cereals, and dairy products like milk, some yogurts and cheeses (check labels).

Directions: Adults: One tablet daily, with food.

Supplement Facts		
Serving Size: One tablet		
	Amount Per Serving	% Daily Value
Vitamin A (14% as beta carotene)	3500 IU	70%
Vitamin C	90 mg	150%
Vitamin D	400 IU	100%
Vitamin E	45 IU	150%
Vitamin K	20 mcg	25%
Thiamin (B1)	1.2 mg	80%
Riboflavin (B2)	1.7 mg	100%



Vitamin D supplements

With news of the widespread vitamin D deficiency, more people are taking vitamin D supplements—sold in pills usually containing 400, 1,000 or 2,000 IUs—and some are concerned that they are getting too much. Not to worry, says Holick: Taking up to 10,000 IUs of vitamin D daily will not cause vitamin D toxicity in adults. That said, Holick recommends that most adults take 1,500–2,000 IUs of vitamin D every day, based on the latest research. Although both forms of vitamin D supplements, D2 and D3, effectively raise blood levels of vitamin D, vitamin D3 may be more effective. Many supplements are being reformulated to contain vitamin D3.

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Michael Holick, MD, PhD, speaking on vitamin D to Michigan family physicians in July. Photo by Mitch Smith.

Sunscreen blocks vitamin D production. Sunscreen with SPF 30 reduces the body's ability to make vitamin D by 99 percent, according to Dr. Holick

Vitamin D and your doctor

A simple blood test measuring 25-hydroxyvitamin D can determine vitamin D status, however, health insurance companies are beginning to limit vitamin D testing to contain costs. Since the vast majority of people are vitamin D deficient, some physicians recommend their patients skip the blood test and take 1,000-2,000 IUs of vitamin D daily.

Talk with your doctor or dietitian about vitamin D. Some medications, such as steroids and cholesterol-lowering drugs, may interact with vitamin D supplements.



Vitamin D deficiency may increase risk of:

Preeclampsia (a condition during pregnancy causing high blood pressure, placing mother and child at risk)

Periodontitis (severe gum infection)

Osteoporosis

Rickets (softening of bones in children leading to fractures and deformity)

Obesity

All cancers

Type 1 and type 2 diabetes

Hypertension

Tuberculosis

Influenza

Upper respiratory infections (in children and adults)

Fibromyalgia

Multiple sclerosis

Rheumatoid arthritis

Osteoarthritis

Heart disease

Depression

Schizophrenia

Alzheimer's

Get the D You Need From:

A little sun—Sensible sun exposure is one source. Some experts suggest 15 minutes in the sun at least three times a week, then apply sunscreen/cover up.

A variety of vitamin D-rich foods—Include vitamin D-rich foods in a well-balanced diet (go easy on the cod liver oil)

A vitamin D supplement—Chances are, you'll also need a supplement. The latest research indicates most adults need 1,000-2,000 IUs vitamin D daily.

Food Sources of Vitamin D (IUs):

Cod liver oil, 1 Tbsp: 1,360

Salmon, wild, 3.5 oz: 988

Salmon, farm-raised, 3.5 oz: 245-360

Sardines, canned in oil, drained, 1.75 oz: 250

Tuna, canned in oil, 3 oz: 200

Mackarel, 3.5 oz: 24-345

Milk (vitamin D fortified: fat free, low fat, reduced fat and whole), 1 cup: 100

Yogurt (vitamin D fortified), 6 oz: 40

Cereal (vitamin D fortified), 1 cup: 40

Orange juice (vitamin D fortified), 6 oz: 38

Kraft Singles cheese product (vitamin D fortified), 1 slice: 34

Margarine (vitamin D fortified), 1 tsp: 20

Egg, 1: 20