Healthy Living

Patient Information from the American Chiropractic Association

Patient Education: Vitamin D

Vitamin D is a nutrient generated by the body through exposure to the rays of the sun. It can also be found in some foods. Vitamin D plays an important role in building strong bones by helping the body absorb calcium from food and supplements. People who get too little vitamin D may develop soft, thin and brittle bones.

Vitamin D is found in cells throughout the body and is vital for many other health functions, as well. It participates in the nerve and muscle function, as well as in the function of the immune system and in the reduction of inflammation.

How can I get vitamin D?

The body makes vitamin D when skin is directly exposed to the sun outdoors. During the warmest months, for example, 5 to 30 minutes of exposure between 10 AM and 3 PM several times a week to the face, arms, legs, or back without sunscreen may be enough to produce sufficient vitamin D. However, excessive exposure to the sun increases the risk of skin cancer. When out in the sun, wear protective clothing and apply sunscreen with a sun protection factor of 8 or more.

Cloudy days, shade, and having dark-colored skin cut down on the amount of vitamin D the skin makes. People who avoid the sun, who cover their bodies with sunscreen or clothing, or who live in the northern half of the United States during the winter months should include good sources of vitamin D in their diets or take a supplement.

Vitamin D is found in supplements in two different forms: D_2 (ergocalciferol) and D_3 (cholecalciferol). Both increase vitamin D in the blood, but the D_3 form may do it better and keep levels raised for a longer time.

Vitamin D in American diets is found mostly in fortified foods:

- Fatty fish such as salmon and tuna, as well as fish liver oils, are among the best sources.

- Beef liver, cheese, egg yolks and some mushrooms provide small amounts.
- Almost all of the U.S. milk supply is fortified with 400 IU of vitamin D per quart. But foods made from milk, like cheese and ice cream, are usually not fortified.
- Vitamin D is added to many breakfast cereals and to some brands of orange juice, yogurt, margarine, and soy beverages. Check the labels for more information.

Am I getting enough vitamin D?

The amount of vitamin D required depends on your age. Average daily recommended amounts for different ages are listed below in International Units (IU):

Children and most adults	200 IU
Adults 51–70 years	400 IU
Adults 71 years and older	600 IU
Pregnant and lactating women	200 IU

Measuring blood levels of 25-hydroxyvitamin D is the best test to check the levels of vitamin D in the body. In general, levels below 15 nanograms per milliliter (ng/mL) are inadequate, and levels above 200 ng/mL are too high. Some nutrition experts think a blood level of at least 30 ng/mL is best for overall good health. By these measures, some Americans are vita-

min D deficient and almost no one has levels that are too high.

Certain groups of people may not get enough vitamin D:

- Breastfed infants. The American Academy of Pediatrics advises that breast-fed infants be given a supplement of 400 IU of vitamin D each day.
- Older adults, since their skin produces vitamin D less efficiently, and their kidneys are less able to convert vitamin D to its active form.
- People with dark skin, because their skin has less ability to produce vitamin D from the sun.
- People with Crohn's disease or celiac disease who don't handle fat properly, because vitamin D needs fat to be absorbed.
- Obese people. Their body fat binds to some vitamin D and prevents it from getting into the blood.

In children, vitamin D deficiency causes rickets, where the bones become soft and bend. Although rare, this disease still occurs. In adults, vitamin D deficiency leads to osteomalacia, causing bone pain and muscle weakness.

How does vitamin D affect health?

As people get older, they develop, or are at risk of, osteoporosis—a condition where bones become fragile and may fracture easily as a result of falls. Women are at an especially high risk for developing osteoporosis. Supplements of both vitamin D_3 (at 700-800 IU/day) and calcium (500-1,200 mg/day) have been shown to reduce the risk of bone loss and fractures in people aged 62 to 85 years.

Some studies suggest that vitamin D may protect against cancers of the colon, prostate, and breast. But higher levels of vitamin D in the blood have also been linked to higher rates of pancreatic cancer. At this time, more studies are needed to assess the connection between vitamin D and cancer.

Vitamin D is also being studied for its possible role in the prevention and treatment of low-back and joint pain, diabetes, hypertension, glucose intolerance, multiple sclerosis and other conditions. ■

What precautions do I need to take with vitamin D?

When amounts of vitamin D in the blood become too high, it can lead to toxicity—nausea, vomiting, poor appetite, constipation, weakness and weight loss. In addition, by raising blood levels of calcium, too much vitamin D can cause confusion, disorientation and problems with heart rhythm. Excess vitamin D can also damage the kidneys.

The safe upper limit for vitamin D is 1,000 IU/day for infants and 2,000 IU for children and adults. Vitamin D toxicity almost always occurs from overuse of supplements. Excessive sun exposure doesn't cause vitamin D poisoning because the body limits the amount of this vitamin it produces.
Like most dietary supplements, vitamin D may interact or interfere with other medicines or supplements.

Tell your health care providers about any dietary supplements and medicines you take.

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For more information on prevention and wellness, or to find a doctor of chiropractic near you, visit ACA's website at www.acatoday.org/patients.

Source: http://ods.od.nih.gov/factsheets/VitaminD-Consumer.asp