NATIONAL OSTEOPOROSIS FOUNDATION
Standing Tall For You®

Bone Basics

National Osteoporosis Foundation
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VITAMIN D AND BONE HEALTH

Vitamin D plays an important role in protecting your bones. Your body requires vitamin D to absorb calcium. Children need vitamin D to build strong bones, and adults need it to keep bones strong and healthy. When people do not get enough vitamin D, they can lose bone. Studies show that people with low levels of vitamin D have lower bone density or bone mass. They are also more likely to break bones when they are older.

Severe vitamin D deficiency is rare in the United States. It can cause a disease known as osteomalacia where the bones become soft. In children, this is known as rickets. This is a different condition from osteoporosis.

NOF Recommendations for Vitamin D

The National Osteoporosis Foundation (NOF) recommends that adults 50 and under get 400-800 International Units (IU) of vitamin D_3 daily, and that adults 50 and over get 800-1,000 IU of vitamin D_3 daily. Some people may need more. Vitamin D_3 is the form of vitamin D that best supports bone health. You should check your supplements to be sure this is the form you are getting. It is also called cholecalciferol.

Very high amounts of vitamin D can be harmful and may result in kidney stones and other kidney problems. Some kidney problems can cause bone loss. Experts disagree on the safe upper limit for vitamin D. In the past, experts said that people should not get more than 2,000 IU of vitamin D a day. Because of recent studies, some experts now say that a much higher amount is safe. It is difficult to get too much vitamin D unless a person is taking a prescription dose of the vitamin. In that case, healthcare providers can easily monitor a person's vitamin D level with a blood test.

Sources of Vitamin D

There are three ways to get Vitamin D:

- Sunlight
- Food
- Supplements and medications

Sunlight

Your skin makes vitamin D from the ultra-violet light (UVB rays) in sunlight. Your body is able to store the vitamin and use it later. The amount of vitamin D your skin makes depends on time of day, season, latitude, skin pigmentation and other factors. Depending on where you live, vitamin D production may decrease or be completely absent during the winter. It is difficult to measure the amount of vitamin D that your skin makes.

People with fairer skin make more vitamin D than people with darker skin. People who live in higher latitudes such as New York, instead of lower latitudes such as Florida, may get less vitamin D from sunlight. Window glass and air pollution also decrease the amount of vitamin D that your skin can make.

People who are housebound and do not get outside in the sun are unable to make vitamin D. As adults age, the ability to make vitamin D decreases.

Because of concerns about skin cancer, many people stay out of the sun, cover up with clothing and use either sunscreen or sunblock to protect their skin. Probably the most important factor which limits the ability of the skin to make vitamin D is the use of sunscreen and sunblock. Even an SPF (sun protection factor) of 8 reduces the production of vitamin D by 95 percent. These products help protect the skin from the harmful effects

of the sun. Because of the cancer risk from staying in the sun, many people need to get vitamin D from other sources.

Food

Vitamin D is naturally available in only a few foods. It is very difficult to get all the vitamin D you need from food. Foods that have vitamin D include fatty fish (examples are mackerel, salmon and tuna), egg yolks and liver. Vitamin D is also added to milk and to some brands of orange juice, soymilk and cereals. At this time vitamin D is not added to other milk products like cheese, yogurt and butter.

Supplements and Medications

Many people do not get enough vitamin D. Therefore, they may need to take a supplement. Before adding a supplement with vitamin D, check whether your calcium supplement, multivitamin or medication contains vitamin D. Excluding sunlight, the total vitamin D you get includes the following: food + supplements (including multivitamin) + medications.

People Who May Not Get Enough Vitamin D

People most likely at risk for not getting enough vitamin D include:

- people who spend little time in the sun
- people with very dark skin
- elderly people
- people living in nursing homes or other institutions
- people with certain medical conditions such as serious diseases of the nervous or digestive systems
- obese or very overweight people.

Lab Test to Check Your Vitamin D Level

Some people ask how they can know if they are getting enough vitamin D. The best way to find out is with a simple blood test that checks your vitamin D level. Discuss with your healthcare provider whether you should have this test done. It measures 25-hydroxyvitamin D, which is also written as 25(OH)D. This test should not be confused with a test for 1,25-dihydroxyvitamin D.

To protect your bone health, you need one of the following test results according to most experts:

- 75 nmol/L or higher
- 30 ng/mL or higher

If you have osteoporosis and your blood test shows that you do not have enough vitamin D, your healthcare provider may prescribe extra vitamin D (usually vitamin D_2) until your blood level increases. Most healthcare providers do this for a short time to quickly boost the vitamin D level. Afterwards, you should continue on a vitamin D dose that maintains the blood level you need to protect your bones.

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