

Vitamin D and Bone Health

Vitamin D plays an important role in protecting your bones. It may also help prevent other conditions including certain cancers. 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. These are both different conditions from osteoporosis.

NOF Recommendations for Vitamin D

The National Osteoporosis Foundation (NOF) recommends that adults under age 50 get 400-800 International Units (IU) of vitamin D every day, and that adults age 50 and older get 800-1,000 IU of vitamin D every day. Some people need more vitamin D.

There are two types of vitamin D supplements. They are vitamin D2 and vitamin D3. Previous research suggested that vitamin D3 was a better choice than vitamin D2. However, more recent studies show that vitamin D3 and vitamin D2 are fairly equal for bone health. Vitamin D3 is also called cholecalciferol. Vitamin D2 is also called ergocalciferol.

According to the Institute of Medicine (IOM), the safe upper limit of vitamin D is 4,000 IU per day for most adults. In some cases, healthcare providers prescribe higher amounts of vitamin D for a short period of time to quickly boost a person's vitamin D levels. In that case, healthcare providers can easily monitor a patient's vitamin D level with a blood test to make sure they aren't getting too much of the vitamin. Problems associated with getting too much vitamin D are very rare.

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.

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People with fair 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 also 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). Vitamin D is also added to milk and to some brands of other dairy products, orange juice, soy milk and cereals.

Check the food label to see if vitamin D has been added to a particular product. One eight ounce serving of milk usually has 25% of the daily value (DV) of vitamin D. The DV is based on a total daily intake of 400 IUs of vitamin D. Therefore a serving of milk with 25% of the DV of vitamin D contains 100 IUs of the vitamin.

Supplements and Medications

Many people do not get enough vitamin D. These individuals should consider taking a supplement. Before adding a vitamin D supplement, check whether any supplements, multivitamins or medications you already take contain vitamin D. You can also estimate the amount of vitamin D that you get from foods.

Subtract the total amount of vitamin D you are already getting each day from the total amount you need to get each day. For example, a 55 year old woman who gets 400 IUs of vitamin D from her calcium supplement should take between 400 and 600 additional IUs of vitamin D to meet the 800-1,000 IUs of vitamin D that is recommended for her age.

Vitamin D supplements can be taken with or without food. While your body needs vitamin D to absorb calcium, you do not need to take vitamin D at the same time as a calcium supplement. If you need help choosing a vitamin D supplement, ask your healthcare provider or pharmacist to recommend one.

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People Who May Not Get Enough Vitamin D

In the U.S. today, many people do not get enough vitamin D. People most likely at risk for not getting enough vitamin D include:

- older adults
- people who spend little time in the sun
- people living in nursing homes or other institutions
- people with certain medical conditions such as serious diseases of the nervous or digestive systems
- people with very dark skin
- 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-dihydroxy-vitamin D.

To protect your bone health, most experts agree you need one of the following levels of 25(OH)D:

- 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 a higher dose of vitamin D. In this case, most people take a weekly dose of 50,000 IUs of vitamin D₂ until the blood level increases. Most healthcare providers do this for a short time to quickly boost the vitamin D level. Afterwards, you should continue on the dose of vitamin D recommended by your healthcare provider to maintain your blood levels of vitamin D.