

## Vitamin D Fact Sheet: Do You Get Enough?

More than half the US population could be deficient in vitamin D! Do *you* get enough? The research on vitamin D is fascinating. Every tissue and cell in our body has vitamin D receptors. Vitamin D is not only important for bone health, but appears to be linked to our immune system, multiple sclerosis, both type 1 and type 2 diabetes, arthritis, heart disease, blood pressure, cancer, muscle aches, depression and even colds and flu.

The sun is the primary source of vitamin D, with fortified milk as the main food source. We used to think that was enough to handle our vitamin D needs – but we need more than we previously thought and many factors impact how much we actually get from the sun. I think it is a good idea for most people to supplement with vitamin D. Here is information about how and why to help you decide what is best for you:

**How much do we need?** We know the old recommendation of 400 IU daily is too little. There is not a new official recommendation, but consensus runs around 1,000 – 2,000 IU. The preferred form is vitamin D3 (cholecalciferol). Recommendations could rise as the research continues. The old upper limit for safety was 2,000 IU, but key researchers now indicate that up to 10,000 IU is probably safe.

**How do we get it?** Age, skin color, weight, angle of the sun, sunscreen and covering up all impact how much vitamin D we are able to absorb. Some people really can rely on getting their needs met from the sun, but for most of us supplementing will be a more reliable approach. You get some vitamin D in a multiple vitamin pill, and also in most calcium supplements. If you drink milk or fortified soy milk on a regular basis you can add that in too. Add up the various sources, and take additional supplementation to reach 1000 – 2,000 IU. Research indicates we may need a maintenance dose of 4,000 IU during winter and year round for those of us who are older, overweight, or have dark skin.

**Why is vitamin D important?** Vitamin D is really a hormone rather than a true vitamin. We have known for a long time that it is required for calcium absorption, bone growth and bone density. Research links vitamin D to muscle growth, immune function, inflammation and uncontrolled cell growth. For a long time researchers have noticed that winter is associated with more symptoms for Multiple Sclerosis and rheumatoid arthritis, and an increase in the diagnosis of cancer, diabetes and other autoimmune diseases. They now think it is related to getting less vitamin D from the sun in the winter.

Vitamin D stimulates muscle strength. When researchers gave vitamin D to older women, they saw an increase in protein synthesis, which means an increase in muscle growth and size. Older people with higher blood levels of vitamin D do better on tests that require muscle strength and balance. They can walk faster and have an easier time getting out of a chair.

Many of the immune diseases, like Multiple Sclerosis, rheumatoid arthritis and type 1 diabetes are affected by vitamin D status. Vitamin D is thought to maintain the balance of types of cells in the immune response, limiting the excessive development of the factors leading to inflammation. It lowers MS risk, stimulates insulin production and protects against the autoimmune response of attacking itself.

Vitamin D appears to make cancer cells less abnormal, less likely to multiply, and more likely to die. There is evidence that vitamin D may make cancer cells adhere to the tumor, which could keep them from branching out and becoming metastatic.

Vitamin also improves mental status and decreases the risk of depression, migraines and some mental illnesses. Drops in blood levels of vitamin D in winter could at least partially explain the winter blues some people experience.

**Why are so many of us deficient?** Many things impact how much vitamin D we get from the sun:

**Sun Exposure:** If applied as directed, a sunscreen with an SPF of 15 or more decreased vitamin D production by 99%! The angle of the sun makes a difference. Between the winter months of November through February, the sun's rays are not strong enough to produce previtamin D above a latitude of 35 degrees North (ie north Atlanta or Los Angeles), or 35 degrees South (ie south of Sydney or Buenos Aires). Even during the summer months, the further away from the equator you go the more exposure to sun you need to make adequate vitamin D. In most latitudes, sun exposure for 15 to 20 minutes a day in summer, before applying sunscreen, is recommended for light skinned people. The more skin is exposed, the more opportunity for absorption.

**Age:** Older people often get less exposure to sun, and their ability to make vitamin D from the sun decreases by 75% by the age of 70.

**Skin Color:** The darker your skin, the more difficult it is to produce vitamin D. It can take 5 to 10 times the amount of sun exposure for an individual with very dark skin to produce the same amount of previtamin D compared to an individual with very light skin. An interesting theory is that light skinned races lost their skin pigment so they could absorb more of the sun's UV rays as they migrated further from the equator.

**Pregnant Women and Children:** Pregnant women, infants (especially those solely breast-fed) and children are at risk. The vitamin D status of an infant at birth is related to the vitamin D status of the mother. Supplementation improves the vitamin D status and decreases disease risk later in life.

**Weight:** Vitamin D is stored in the body's fat cells. In overweight people, that stored vitamin D is not available for use even if adequate vitamin D is produced by the sun.

**SNPs:** Some of us have gene variations, called single nucleotide polymorphisms, which may affect our ability to absorb and produce vitamin D. This is one theory why some people have low blood levels even with regular unprotected sun exposure.

**Testing for vitamin D** The best way to determine the best dose of vitamin D for you is to get tested for your current blood level. Keep in mind that levels are likely to be lower in winter and higher in summer.

Below **20 ng/ml** (50 nmol/L) = **deficient**

Below **30 ng/ml** (75 nmol/L) = **insufficient**

**30 – 60 ng/ml** (75 - 150 nmol/L) considered **sufficient**

**50 – 80 ng/ml** (125 – 200 nmol/L) considered **optimal** by some groups

Over **100 ng/ml** (250 nmol/L) = **excessive**

Over **150 ng/ml** (380 nmol/L) = **toxic**

If you get tested, be sure that the test is for **25-hydroxyvitamin D**. While the standard recommended dose is currently around 1,000- 2,000 IU for vitamin D, the dose to reverse a deficiency could be much higher until the desired blood level is achieved.

One common approach to improving blood levels is to use weekly doses of 50,000 IU for a number of weeks. This is a safe and effective practice. Be sure to get retested to see if it worked, and to continue on a maintenance dose appropriate for you.

**Bottom Line:** Are you convinced that vitamin D is important? Keep watching as the research on vitamin D continues and the recommendations get fine tuned. Get tested to determine the dose most appropriate for you!