Vitamin D Health, Nutrition & Supplements

Do not undertake any changes to your health without consulting your physician.

Vitamin D & Health

Vitamin D is an important hormone in our body which can be synthesized from direct sunlight or obtained from food or supplements. Many cells and tissues in the body have a receptor for this hormone, which means that many different cells and tissues need Vitamin D. **Adequate Vitamin D levels are necessary for the proper and optimal function of the body.**

Bone Health

The main function of vitamin D is to help with calcium absorption from food in the intestine. Sufficient calcium absorption insures the correct renewal and mineralization of bone. In other words, vitamin D helps your body to use calcium to keep your bones strong and healthy! It also helps to maintain muscle strength and reduces risk of falls.

Cancer

In the late 1940s it was noted that US individuals living in northern latitudes with less sun exposure were more likely to die of cancer than those living in the south. In 1990 it was proposed that vitamin D deficiency increased the risk for these cancers. This is seen with many common cancers, such as cancers of the colon and prostate, breast, ovary, and pancreas. Although research is non-conclusive, vitamin D has become a prime candidate for cancer prevention. Higher vitamin D levels at cancer diagnosis or treatment have been linked to longer survival time in cancer patients.

Cardiovascular Disease

Observational studies have suggested that low levels of vitamin D are associated with an increased risk of cardiovascular events. The Health Professionals Follow-up Study found that men without cardiovascular disease at baseline, but with vitamin D deficiency, experienced a two-fold increased rate of heart attack during a 10-year follow-up period. Some studies have demonstrated that vitamin D has a positive impact on blood pressure.

Immunity

The importance of vitamin D in the regulation of the immune system has emerged in the last 30 years. Our immune system is a highly complex system involving numerous mechanisms. Vitamin D plays an essential role in many of the systems involved. **Deficiency in vitamin D is associated with an increased susceptibility to infection and a higher rate of autoimmune diseases.**
Results of studies looking at potential benefits of administering vitamin D to decrease infection have not been consistent, but many have reported an association of lower vitamin D levels and increased rates of infection. In addition, there is growing epidemiologic evidence connecting vitamin D deficiency and autoimmune diseases such as multiple sclerosis, rheumatoid arthritis, type 1 diabetes mellitus, inflammatory bowel disease and systemic lupus erythematosus.

Cognitive Impairment/Dementia

Vitamin D has multiple functions throughout the central nervous system and could be implicated in the prevention and treatment of disorders such as dementia and Alzheimer's disease. Clinical trials studying the effect of vitamin D supplementation on cognitive outcomes have shown mixed results.

Depression

Vitamin D may protect against depression and seasonal affective disorder (SAD). People who suffer depression have 14% lower levels of vitamin D from those who do not and depression severity is associated with lower levels as well.

Vitamin D LEVELS

Vitamin D goes through different chemical forms in the body. The compound that is measured in the blood (serum) is 25-hydroxyvitamin D or 25(OH)2D. It is a robust and reliable marker of vitamin D status. Different labs will report in different units, so it is important if your level is measured in nmol/L or ng/ml.
The recommended reference range guidelines vary amongst societies. The following table shows recommended ranges from different organizations.

	Vitamin D Scientists	Endocrine Society	Food & Nutrition	Testing Laboratories
Deficient	0-30 ng/ml	0-20 ng/ml	0-11 ng/ml	0-31 ng/ml
Insufficient	31-39 ng/ml	21-29 ng/ml	12-20 ng/ml	
Sufficient	40-80 ng/ml	30-100 ng/ml	>-20 ng/ml	32-100 ng/ml
Toxic	>150 ng/ml			

Deficiency/Insufficiency

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The best way to assess your vitamin D status is to have your levels checked! Your healthcare provider can make recommendations on how to optimize your levels vitamin D levels to support to your health status.

Toxicity

Vitamin D is a fat-soluble vitamin and therefore susceptible to toxicity.
The likelihood of toxicity from dietary sources or sunlight exposure is extremely unlikely. Toxicity could occur with high doses of supplements over a long period of time. **Therefore, it is always important to assess your levels when initiating high doses of supplements. After baseline testing, test 3 to 6 months after beginning supplements or changing regimens.**

ACQUIRING Vitamin D

RDA Guidelines

The US Dietary Guidelines are as follows:

Infants	**400 IU/day**
Adults	**600 IU/day**
Adults 70+	**800 IU/day**

Some experts question if this is enough and recommend higher doses up to 2000 IU/day for maintenance. Treatment of deficiency will require more. The upper limit depends on age and is 4,000 IU/day for ages 9 and older.

Sunlight Exposure

Vitamin D needs can be met by exposing 10-15% of the skin area such as the neck, head, arms, and legs to sun for 10-15 min daily or 2-3 times weekly from 10 a.m. to 3 p.m. (without sunscreen).
Darker skin pigmentation, aging, and sunscreen use can reduce the skin's vitamin D production.
Sun exposure, between 10am and 3pm produces vitamin D that may last twice as long in the blood than ingested vitamin D. However, many dermatologists may recommend against this due to the increased risk of skin cancer associated with UV exposure.
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Food Sources

The following link is a table listing food sources of vitamin D and the amount of vitamin D in each source.
https://www.dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials/food-sources-select-nutrients/food-sources
Foods high in vitamin D include fatty fish such as salmon, sardines, tuna, and mackerel. Other sources include shitake mushrooms, eggs, and fortified products such as milk, yogurt, cheese, orange juice and cereals.

Supplements

Vitamin D is available in two different forms: ergocalciferol (D2) and cholecalciferol (D3). Cholecalciferol (D3) is more potent and longer acting than ergocalciferol (D2) and is the preferred supplemental form. Most supplements available today are the D3 form.
Most multivitamin supplements contain a dose of 600 – 800 IU of vitamin D
Single vitamin D supplements typically range in dose from 400-2,000+ IU
The potency of vitamin D supplements can vary widely from different manufacturers. Chose a product that is third party verified and displays a stamp of approval.

Prescription Vitamin D

Vitamin D is available in prescription strength as 50,000 IU of ergocalciferol (D2) or 50,000 IU cholecalciferol (D3) that is taken once weekly, typically for 8-12 weeks for deficiency replenishment.