



How can vitamin D insufficiency be corrected?

Low levels of vitamin D can often be corrected by taking vitamin D supplements or increasing your exposure to sunlight.

Ask your doctor whether he or she recommends increasing your vitamin D intake.

NOTE: This material is provided for general information purposes only. It is not intended as a substitute for medical advice and/or consultation with a physician or technical expert.

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Vitamin D

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What is vitamin D?

Vitamin D has long been recognized as an important nutrient that helps form and maintain healthy bones. Now there is a growing body of evidence showing that vitamin D is important to your overall health because it helps reduce inflammation, regulates immune system function, and helps control blood sugar (glucose) levels.¹

Maintaining a healthy level of vitamin D may play a key role in preventing certain cancers, diabetes, multiple sclerosis, cardiovascular disease, stroke, and other health problems.¹⁻⁵

In addition, vitamin D may be useful in the treatment of high blood pressure.^{1,4}

How much vitamin D does a person need?

Experts believe people of all ages may need more vitamin D than the current guidelines recommend.

The following levels have been proposed as indicative of:

Deficiency	< 10 ng/mL
Insufficiency	10-30 ng/mL
Sufficiency	30-100 ng/mL
Toxicity	> 100 ng/mL

Consider talking to your doctor about your vitamin D levels.

What are the sources?

It can be difficult to obtain enough vitamin D from food sources alone.

Most foods, with the exception of fatty fish oils, contain little vitamin D. Some foods (milk, orange juice, cereals) may be supplemented with vitamin D at very low levels.

Vitamin D levels can be increased by spending time in the sun.

Exposing the arms and legs to sunlight for 5 to 30 minutes between 10 AM and 3 PM twice a week is often enough.¹

Sunscreen, which is important in protecting against skin cancer, blocks the formation of vitamin D, and winter sunlight is nowhere near as effective as summer sunlight for making vitamin D.^{1,5}

Who is at risk for vitamin D deficiency?

- People whose exposure to sunlight is very limited
- People who have naturally dark skin
- Adults older than 50 years of age
- Infants who are exclusively breast-fed or receiving less than about 2 cups a day of vitamin D-fortified formula or milk
- People with fat malabsorption conditions, such as pancreatitis, cystic fibrosis, celiac disease and surgical resection of the bowel
- People who have liver or kidney disease or enzyme deficiencies
- People who live in northern climates during winter
- People who are obese

What are the health risks?



In children, vitamin D deficiency can lead to rickets, a bone disease that results in poorly developed, weak bones, delayed growth, immune deficiencies, and, when severe, seizures.^{1,2}

Vitamin D deficiency can affect bone health in adults as well.

It may lead to osteomalacia, a condition that results in weak bones, fractures, bone pain, and weak muscles.^{1,2}

Low levels of vitamin D may also play a role in the development of osteoporosis (thinning of the bones), which can lead to fractures.^{1,2}

Other health problems are now being linked to low (insufficient) levels of vitamin D.



Infants and young children with insufficient vitamin D levels may for the rest of their lives be at increased risk of developing diabetes, multiple sclerosis, rheumatoid arthritis, and inflammatory bowel diseases (all conditions related to poor immune system function), as well as many common cancers.^{1,5}



People with insufficient vitamin D levels may be more likely to develop and die from colon, endometrial, skin, pancreatic, or prostate cancer than those who maintain healthy levels of vitamin D.^{1,3,6}



Vitamin D insufficiency is now linked with an increased risk for high blood pressure, heart disease, heart failure, and death due to heart attack or stroke.^{4,7-9}