Vitamin D Deficiency

A PATIENT’S GUIDE

Vitamin D helps the body absorb calcium. Along with calcium, it is vital for strong, healthy bones. We normally get vitamin D through exposure to sunlight, which triggers the skin to make this vitamin. Very few foods naturally contain vitamin D. Milk and a few other beverages and foods are “fortified” with added vitamin D in some countries, such as the United States and Canada. You can also get vitamin D in supplements.

However, many people still do not get enough of this important vitamin. For instance, the skin makes less vitamin D as we age. Use of sunscreen or sun avoidance also lowers the skin’s production of vitamin D.

There has been much confusion about how much vitamin D we should get and what defines a deficiency, or lack, of this vitamin. This guide is based on The Endocrine Society’s practice guidelines for physicians about testing for, treating, and preventing vitamin D deficiency.

These guidelines do not apply to people who want to take vitamin D for reasons other than bone health. The guidelines do not recommend a high dose of vitamin D to try to prevent disease, improve quality of life, or extend life.

What health problems does low vitamin D cause?

Vitamin D that is too low often causes no symptoms at first. However, vitamin D deficiency can lead to a loss of bone density (size and strength), broken bones (fractures), muscle weakness, and the bone-thinning disease osteoporosis. Severe vitamin D deficiency can cause rickets in children and osteomalacia in adults. Both problems cause soft, weak bones, as well as pain in the bones and muscles.

Some studies show that a lack of vitamin D may raise the risk of some cancers and certain other health problems. However, there is not strong scientific proof of this yet.

What are the risk factors for vitamin D deficiency?

Some health problems raise the risk of vitamin D deficiency and suggest the need for vitamin D testing. They include:

- Osteoporosis
- Chronic (long-term) kidney or liver disease
- Malabsorption (inability to absorb nutrients in the intestines) due to
  - Cystic fibrosis
  - Crohn’s disease or other inflammatory bowel disease
  - Bariatric weight-loss surgery
  - Radiation treatment
- Hyperparathyroidism (too much of a hormone that controls the body’s calcium level)
- Sarcoidosis, tuberculosis, histoplasmosis, or other granulomatous disease (disease with granulomas, collections of cells caused by chronic inflammation)
- Some lymphomas, a type of cancer

Other risk factors for vitamin D deficiency are:

- Dark skin
- Pregnancy and breast-feeding
- Use of certain medicines that affect vitamin D metabolism
  - Cholestyramine (cholesterol drug)
  - Antiseizure drugs
  - Glucocorticoids
  - Antifungal drugs
  - AIDS medications
- Frequent falls in older adults, or a non-traumatic fracture (bone break without a major injury) in any age group
- Obesity (vitamin D can get “trapped” in body fat)

How is vitamin D deficiency found?

The best way for doctors to measure how much vitamin D is in your body is with a blood test called the serum 25-hydroxyvitamin D test. Not everyone should get this screening test. Experts recommend it for people at risk of vitamin D deficiency. Your doctor will tell you if you need this test.

A test result below 20 nanograms per milliliter (ng/mL) shows you do not have enough vitamin D.

You may need to repeat the 25-hydroxyvitamin D blood test during treatment of vitamin D deficiency. This will show your response to treatment.

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www.hormone.org
How is vitamin D deficiency treated and prevented?

Treatment and prevention of vitamin D deficiency includes increasing your intake of vitamin D. The goal is to get your blood level of vitamin D above 30 ng/mL. You likely will need supplements to raise your vitamin D level. That is because it is hard to get enough vitamin D solely from your diet, and excess sun exposure can cause skin cancer.

In supplements and fortified foods, vitamin D comes in two forms: D2 and D3. While some research studies suggest that vitamin D2 may be less potent, either form can be effective at recommended doses.

Vitamin D comes in pills, gelatin capsules, or a liquid for children, alone or in a multivitamin. The oral dose is once daily or weekly. Children with rickets or at risk of this disease may get vitamin D injections (shots) a few times a year.

The treatment dose of vitamin D depends on your age, how low your blood vitamin D level is, and what is causing the level to be low. Most often your doctor will lower the vitamin D dose after six to eight weeks of treatment. You will then stay on this lower “maintenance” dose for as long as you need.

Vitamin D treatment can improve bone, body composition (how much lean muscle mass an individual has), and quality of life in patients with vitamin D deficiency.

Can you get too much vitamin D?

For most people, there is no downside to taking vitamin D supplements. Getting too much vitamin D is uncommon at the recommended intake. An overdose of vitamin D is possible, though, when daily supplements exceed the suggested upper limits. It is therefore important that you take the dose of vitamin D that your doctor recommends.

Excess vitamin D can cause calcium deposits, nausea, vomiting, itching, increased thirst and urination, weakness, and kidney failure.

SUGGESTED VITAMIN D INTAKE

<table>
<thead>
<tr>
<th>Age</th>
<th>General Population (Institute of Medicine Recommendations)</th>
<th>At Risk of Vitamin D Deficiency (The Endocrine Society Suggestions)</th>
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<tbody>
<tr>
<td></td>
<td>RDA (IU/day)</td>
<td>Upper Limit (IU/day)</td>
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<td>Infants and children</td>
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<td>6–12 months</td>
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<td>4–8 years</td>
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<td>9–18 years</td>
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<td>Adults</td>
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<td>Pregnant or breast-feeding</td>
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<td>14–18 years</td>
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<tr>
<td>19–50 years</td>
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IU = International Units

What can you do to help prevent and treat vitamin D deficiency?

To prevent vitamin D deficiency, make sure you get at least the RDA through supplements and the foods you eat. Foods with natural vitamin D include:
- Certain fish: salmon, sardines, mackerel, tuna
- Cod liver oil
- Shiitake mushrooms
- Egg yolks

Foods that often have added vitamin D include:
- Dairy products
- Orange juice
- Infant formula
- Cereal

Ask your doctor if you should undergo a vitamin D blood test if you think you are at risk of low vitamin D. Also discuss whether you should increase your daily vitamin D intake.

You can reverse vitamin D deficiency over time by getting enough vitamin D. Take your prescribed dose of vitamin D and keep appointments with your doctor, to ensure the success of your treatment and healthy bones.

Note to health care professionals: This patient guide is based on, and is intended to be used in conjunction with, the Endocrine Society’s clinical practice guidelines (available at www.endocrine.org/guidelines/index.cfm).