

Calcium and Vitamin D: Food Sources and Supplementation

What should you know?

Calcium and Vitamin D are important nutrients needed to build and maintain strong bones throughout life. Your heart, muscles and nerves also need calcium to function properly. Some studies have also suggested that calcium and vitamin D may have benefits beyond bone health such as protecting against cancer, diabetes and high blood pressure, but this evidence is not definitive.

Calcium is an important structural component for healthy bones and teeth. Bones serve as storage for calcium and will release calcium to help maintain blood calcium levels within a tightly regulated range. Signals within the body will act on bones, the intestines and kidneys to raise blood calcium levels when levels are low and are turned off automatically once the body senses it has enough.

Vitamin D helps the body absorb calcium from food and supplements. Vitamin D is taken in from food or dietary supplements and also is made directly in the skin when exposed to direct sunlight. Skin exposed to sunshine through a window or through sunscreen will not produce very much vitamin D. People living in northern climates, especially during the winter months, will have minimal vitamin D from sunlight. However, it is also important to limit exposure of skin to direct sunlight and to wear sunscreen in order to lower the risk for skin cancer.

Vitamin D then travels through the liver, and finally, in the kidneys, it is activated for the body to use. People can be deficient in vitamin D for a few different reasons, including not consuming enough in their diet, limiting their exposure to direct sunlight, or from kidney disorders where the kidneys cannot convert vitamin D to the active form the body needs.

Food Sources of Calcium and Vitamin D

Calcium-rich foods and drinks include dairy products such as milk, yogurt, cheese, cottage cheese and ice cream. Other foods with lots of calcium include broccoli, kale, collard greens, certain nuts and certain breads as well as calcium-fortified foods like calcium-enriched orange juice, cereals and soy products. Calcium from dairy sources is easier for the body to absorb than calcium from vegetables, so emphasize dairy in your diet for your calcium needs. See "Calcium Content of Foods" resource for detailed amounts per servings.

Vitamin D rich foods and drinks include salmon or mackerel, canned tuna fish, and egg yolks as well as vitamin D fortified foods like cereals, juice, milk and other dairy products (see charts at the bottom for detailed amounts per servings).

For reference, 1 cup of milk contains approximately 300 mg of calcium and 100 units of vitamin D.

How much Calcium and Vitamin D do you need?

Life Stage	Calcium Recommended daily amount (RDA)

Toddlers (1-3 years)	700 milligrams (mg)
Children (4-8 years)	1000 mg
Teens (9-18 years)	1300 mg
Adults (19-50 years)	1000 mg
Older Adults (51+ years)	1200 mg

Life Stage	Vitamin D
	Recommended daily amount (RDA)
Infants (Birth to 12 months)	400 International Units (IU)
Children (1-13 years)	600 IU
Teens (14-18 years)	600 IU
Adults (19-70 years)	600 IU
Older Adults (71+ years)	800 IU

Your doctor may recommend or prescribe additional supplementation based on your clinical needs and/or blood levels.

Patients with Special Considerations

Epilepsy: Certain epilepsy medications speed up the metabolism of vitamin D leading to low levels of vitamin D and reduced calcium absorption. These medications include phenytoin, fosphenytoin, phenobarbital and primidone.

Ketogenic Diet: A ketoacidotic environment in the body can lead to more calcium wasting. Liquid, chewable or melt-away supplements of calcium or vitamin D may contain lots of carbohydrates, but using plain tablet versions can minimize carbohydrates.

Neuromuscular disorders (such as Duchenne's muscular dystrophy and others): Muscle weakness and limited ability to bear one's weight can greatly contribute to low bone density and bone weakness. This effect is stronger if

also taking corticosteroid medications and if blood vitamin D level is low.

Chronic Kidney Disease: These patients may be unable to convert vitamin D to its most active form in the kidneys and oftentimes require monitoring of parathyroid hormone levels as well as special forms of vitamin D supplementation.

Cystic Fibrosis: These patients cannot absorb fat-soluble vitamins such as vitamin D, leading to low levels of vitamin D and reduced calcium absorption.

Drug Interactions with Vitamin D and/or Calcium Supplements

<u>Interacting Drug</u>	<u>Brand Name(s)</u>	<u>Interaction</u>
Aluminum Hydroxide	Amphojel Basaljel	When taken with vitamin D supplementation, can lead to increased absorption of aluminum.
Cholestyramine, bile acid sequestrant	Questran LoCholest	Decreases absorption of vitamin D. Separate administration times by several hours to minimize interaction.
Digoxin	Lanoxin	When taken with vitamin D supplements, can increase irregular heartbeat.
Danazol	Cyclomen	Calcium toxicity
Mineral Oil, when used enterally		Decreases absorption of vitamin D. Separate administration times by several hours to minimize interaction.
Orlistat	Xenical	Decreases absorption of vitamin D. Separate administration times by several hours to minimize interaction.
Sucralfate	Carafate	When taken with vitamin D supplements, can lead to increased absorption of aluminum from sucralfate.
Corticosteroids: Prednisone Prednisolone Methylprednisolone Dexamethasone	 Deltasone, Pediapred, Medrol, Solumedrol, Decadron	 Impairs how the body handles vitamin D, leads to lower calcium absorption and bone loss over time.

Phenobarbital	Phenobarb, Luminal	Increases metabolism of vitamin D and reduces calcium absorption
Phenytoin	Dilantin	Increases metabolism of vitamin D and reduces calcium absorption
Levothyroxine	Synthroid	Calcium significantly reduces absorption of levothyroxine when given together. Separate administration times by at least 2 hours.
Iron Supplements. Ferrous Sulfate, Ferrous gluconate	Fer-In-Sol Ferate	Calcium significantly reduces the absorption of iron when given together. Separate administration times by at least 2 hours.
Other medications		Calcium supplements may decrease the absorption of many medications. Consult with your pharmacist on optimizing administration times if needed. Oftentimes, separating by at least 2 hours is recommended.

[Make An Appointment](#) **651-290-8707**

This information is for educational purposes only. It is not intended to replace the advice of your health care providers. If you have any questions, talk with your doctor or others on your health care team.

If you are a Gillette patient with urgent questions or concerns, please contact Telehealth Nursing at [651-229-3890](#).