

January 24, 2011

Long and Short of Calcium and Vitamin D

By **JANE E. BRODY**

The new daily recommendations for calcium and vitamin D, issued in November by the Institute of Medicine, have left many people wondering whether they are getting enough, or perhaps too much, in their diets and supplements.

The institute's expert committee, which included bone specialists, concluded that most people don't need supplements of these critical nutrients and warned of serious health risks from the high doses some now take — including kidney stones and heart disease linked to calcium supplements, and the very falls and fractures that vitamin D is meant to protect against.

For bone health, vitamin D and calcium go hand in hand, because the vitamin must be present for calcium to be absorbed from the digestive tract. But who, if anyone, needs supplements — and how much? Can you get enough from foods naturally rich in these nutrients or fortified with them?

These are important questions, given the steady increase in life expectancy and the already epidemic levels of osteoporosis and fractures among older Americans, men and women alike. (Women are especially vulnerable, because estrogen loss at menopause can cause a precipitous decline in bone density.)

The answers depend on three things, not to mention which experts you happen to ask: the foods and drinks you regularly consume, your personal and family history of broken bones, and habits that influence bone health.

Dr. Robert P. Heaney, a bone specialist at Creighton University in Omaha, maintains that “at least one-third of all osteoporotic fractures have a nutritional basis.”

What you eat and drink, from childhood on, is critical to the amount of calcium in your bones. Dairy foods, especially milk, yogurt and cheese, are the primary sources of calcium in the American diet, and consumption of milk has been falling steadily for decades, especially in adolescence, when most bone development occurs. A British study concluded that frequent milk consumption before age 25 was an important determinant of bone strength among middle-aged and elderly women.

Other foods are not nearly as rich in absorbable calcium, or the amounts normally eaten do not come close to the calcium content of dairy products: 300 milligrams in a glass of milk, 400 milligrams in eight ounces of yogurt.

Sardines and canned salmon eaten with the bones are good sources, and almonds are a fair source if you eat enough of them. And calcium-fortified foods like orange juice, soy milk, breakfast cereals and tofu are now widely available.

Too Much of a Good Thing

But some other desirable foods are problematic, at least when it comes to calcium: you'd have to eat so much broccoli to approach the level in milk that it could be toxic to your thyroid gland. Other vegetables with calcium, like spinach, collards, kale and beans, contain oxalates that block calcium absorption.

For daily calcium intake, the institute now recommends 1,000 milligrams for children 4 to 8, women and men 19 to 50, and men 51 to 70; 1,300 milligrams for children 9 to 18; and 1,200 milligrams for women 51 and older and men 71 and older. The upper limit of safety, the institute said, is 2,000 milligrams a day for men and women over 51.

Thus, if you are a postmenopausal woman who typically consumes only one or two servings a day of dairy, you may be hard put to get 1,200 milligrams of calcium from the rest of your diet unless you take a supplement. Dr. Ethel Siris, director of the osteoporosis clinic at [Columbia University Medical Center](#) in New York, said such women could benefit from a supplement of calcium carbonate (600 milligrams a day) or calcium citrate (500 milligrams a day).

Be sure to read the product label carefully — a usual “serving” is two tablets. Calcium carbonate should be taken with meals to assure absorption, but calcium citrate can be taken at any time and may cause fewer digestive problems.

Most calcium supplements now also contain vitamin D (usually as cholecalciferol, or D3), supplying about 250 to 300 international units in two tablets. The Institute of Medicine recommends 600 units a day for everyone from age 1 to 70 and 800 units for men and women 71 and older, with a safe upper limit for everyone over the age of 9 of 4,000 units.

Vitamin D has one advantage over calcium: It is fat-soluble and can be stored in the body for later use. But getting enough of it can be tricky.

The body gets most of its vitamin D not from diet but from skin exposed to the ultraviolet B radiation in sunlight. Unprotected skin on the arms and legs may need about 15 minutes of sun exposure a day in spring, summer and fall to make enough of the vitamin.

Alas, this production is effectively blocked if you follow current advice to prevent [skin cancer](#) and [wrinkles](#) by always covering up or using ample amounts of sunscreen. Used properly, sunscreens with an SPF of 8 or higher completely block UVB radiation and prevent synthesis of vitamin D.

Also, people who are dark-skinned or housebound or who live in far northern latitudes may fail to make enough vitamin D. And as people age, their bodies are less able to convert the vitamin into the hormone that is its biologically active form.

Milk is fortified with vitamin D at a level of 400 units per quart, and some yogurts have it as well (check the label). Many breakfast cereals are also now fortified. The only naturally rich dietary sources are oily fish from the sea like salmon and mackerel, egg yolks, liver and fish liver oil.

Testing and Maintaining

An increasing number of physicians now routinely test vitamin D levels in the blood of their female patients, and if it is below 30 nanograms per milliliter, will suggest they take a supplement. The Institute of Medicine maintains that a level of 20 nanograms is adequate, but other experts say it should be higher to assure maximum calcium absorption and bone health.

In any event, unless you are a year-round sun worshiper, a daily supplement of calcium with D, or even a separate supplement of 1,000 units of D, is likely to keep you well below the institute's upper safe limit. Based on current evidence, unless you have a severe deficiency requiring temporary megadoses to correct, there is no reason to go any higher.

At the same time, you'd be wise to get sufficient weight-bearing exercise and avoid several bone-robbing habits: smoking; eating a lot of salty foods; drinking more than two alcoholic drinks a day; consuming more than the caffeine equivalent of two cups of coffee a day (about 300 milligrams); and eating too little protein. As for soft drinks, Dr. Siris advises a daily limit of two 12-ounce cans, and she'd prefer that soda be only an occasional treat.