

# Get the Facts Straight to Improve Bone Health

BY KERRI WACHTER  
Senior Writer

NEW ORLEANS — With a virtual alphabet soup of vitamin and mineral supplements available—and a constant barrage of new nutritional advice each week—it's a challenge to know what truly bolsters bone health, Neil Binkley, M.D., said at the annual meeting of the International Society for Clinical Densitometry.

General malnutrition is actually a common phenomenon in the United States, said Dr. Binkley, of the Institute on Aging at the University of Wisconsin in Madison. According to one study, 11% of patients older than 65 are undernourished. More importantly for bone health, some studies have suggested that elderly patients with fractures are more likely to be malnourished. Keeping an eye out for malnourished patients could help reduce the risk of falls and fractures, he said.

Although supplements provide an easy solution, food is still the best source of vitamins and minerals. Dr. Binkley shared the following diet and nutrition tips:

## Phosphorus

Phosphorus insufficiency is generally not a common problem, but it tends to occur in some of the more vulnerable populations. Phosphorus deficiency decreases mineralization and osteoblast function while increasing osteoclast function.

An estimated 15% of women over age 80 receive less than 70% of the U.S. recommended daily allowance (RDA) of phosphorus (1,000 mg). It has also been suggested that patients who fail to respond to calcium supplementation may, in fact, have inadequate phosphorus intake.

## Vitamin D

Make sure patients are aware that not all dairy products are fortified with vitamin D. "You can't get vitamin D in food unless you happen to like liver or lots of salmon or mackerel," Dr. Binkley said.

Vitamin D toxicity is less of a concern than it once was. Recommended levels range from 1,200 to 1,500 IU per day. Levels exceeding 10,000 IU per day are believed toxic, so there is a large margin of error.

Supplements may be necessary to get enough vitamin D. Dr. Binkley noted to get 1,000 IU vitamin D, you would need to drink half a gallon of milk or eat 40 egg yolks. Getting a little sun is also an option.

The bigger problem with ensuring that patients get enough vitamin D may be in obtaining a good assay, Dr. Binkley said. In one study, he and his colleagues used four different assays to measure patient vitamin D levels. Although the four methods agreed quite well for some patients, there were big differences for other patients.

Attempts to standardize vitamin D assays are ongoing. High-performance liquid chromatography (HPLC) appears to provide the best results. Dr. Binkley advised that if HPLC and commercial assays agree that a patient's vitamin D levels are low, they probably are. But if commercial assays indicate a patient's levels are not low, consider HPLC. He also noted if you give your patient very high, prescription-level doses (50,000 IU) of vitamin D, at least one of the commercial 25-hydroxy assays only detects about half of it in the blood.

## Vitamin A

A family of about 25 compounds constitute vitamin A, but the active component is retinol. The RDA for vitamin A is 2,600 IU (800 mcg) per day for men and 2,300 IU (700 mcg) per day for women.

The effects of getting too much vitamin A are unclear. Generally, it's been assumed that the body has built-in safeguards to avoid vitamin A toxicity.

Yet it's theorized that excessive vitamin A will suppress osteoblast activity and stimulate bone reabsorption. In addition, epidemiologic data suggest that the consumption of more than 5,000 IU daily increases fracture risk—but clinical studies have not confirmed this association.

Dietary sources of vitamin A include liver, fish, and fortified foods such as dairy products; certain fruits and vegetables are high in carotenoids. Vitamin A supplementation is considered necessary only in special situations, and patients should be counseled never to take synthetic retinol.

## Vitamin K

Low vitamin K levels have been reported in patients with osteoporotic fractures and epidemiologic data show an increased risk of hip fracture with low levels of vitamin K. But vitamin K doesn't linger in the blood for very long, so it's difficult to get an accurate measure, Dr. Binkley said.

Most existing data come from Japan, where a different form of vitamin K is taken from that used in the United States. The Japanese studies used 45 mg per day and showed sustained levels of bone mineral density (BMD) and vertebral fracture-prevention benefits. Adequate intake of vitamin K in the U.S., however, is about 100 mcg per day. It's probably too early to recommend supplementation, he concluded.

## Magnesium

Inadequate magnesium is associated with decreased parathyroid hormone. Epidemiologic studies suggest a positive association between increased magnesium intake and BMD. But data from the Women's Health Initiative found high magnesium intake was not protective of BMD.

The bottom line is to eat foods that contain magnesium, including whole grains, vegetables, and nuts. There are no data to support the use of magnesium supplements, Dr. Binkley said.

## Caffeine

It's been assumed that caffeine is harmful to bone because it leads to increased urinary calcium loss. But several studies have shown decreased calcium absorption is actually what occurs. "The gist is that for each cup of coffee that we drink, there is a calcium loss of about 5 mg." That means "we need to put about 2 tablespoons of milk in our coffee," Dr. Binkley said.

## Protein

One study of elderly patients found patients getting protein supplements were less likely to have fractures. In fact, those with higher protein intake and adequate calcium had the best outcomes, suggesting there may be a synergistic effect between protein and calcium. ■

## Low Calcium Intake Prevalent in Women Despite Socioeconomic Status

INDIAN WELLS, CALIF. — Even educated women of high socioeconomic status do not appear to get enough calcium, Andrea Stein, M.D., said at the annual meeting of the Pacific Coast Reproductive Society.

In a survey of 180 middle-aged patients seen in her gynecology practice, in a wealthy area of the Los Angeles region, more than 50% apparently consume less than 1,000-1,500 mg of calcium per day, Dr. Stein said. Overall, 86% of the patients had a college degree, and 36% had an advanced degree. All were 45 years old or older.

Of the 99 patients taking no medications, 75% took a calcium supplement once a day or less, and 48% had a milk product once a day or less. Of the 60 on hormone therapy, 68% took a calcium supplement once a day or less, and 43% had a milk product once or less a day.

For the 21 patients taking a bisphos-

phonate, raloxifene, or calcitonin, the percentages were 48% and 33%.

A single calcium supplement or a single serving will not provide the recommended amount of calcium for a woman aged 50 years or older, which is 1,200-1,500 mg/day, noted Dr. Stein, whose practice is in Santa Monica, Calif. Supplements contain 500-600 mg elemental calcium per tablet, because that is the maximum an individual can absorb at one time. A single serving of skim milk, yogurt, or cheese contains 300 mg or less of calcium.

The findings suggest women of high socioeconomic status are somewhat better at getting adequate calcium than those of low socioeconomic status, but only marginally so, Dr. Stein said. According to data, 80% of low-income women do not get adequate daily calcium.

—Timothy F. Kirn

## The Earliest And Most Effective Screen Available...

ULTRASCREEN®

FIRST TRIMESTER  
DOWN SYNDROME SCREEN



- **91% Detection**
- **free Beta (the acknowledged protocol)**
- **Dried Blood Technology**
- **Simple Finger Stick (no phlebotomist required)**
- **24-hour Turnaround On Results (same-day results also available)**

Available exclusively from the inventors  
of first-trimester Down Syndrome Screening,

 **NTD Laboratories, Inc.**

THE PRENATAL SCREENING SPECIALISTS

For more information call 1-888-NTD-LABS  
[www.ntdlabs.com](http://www.ntdlabs.com)