

# Counsel Patients on Nutrition to Prevent Fractures

BY KERRI WACHTER  
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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., declared 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. And studies have suggested that elderly patients with fractures are more likely to be malnourished. Dr. Binkley shared the following tips about diet and nutrition:

## Phosphorus

Phosphorus insufficiency is generally not a common problem; however, 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's 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 of vitamin D range from 1,200 to 1,500 IU per day. Levels in excess of 10,000 IU per day are now believed toxic, so there is a large margin of error.

Supplements may be necessary to get enough vitamin D. Dr. Binkley noted that 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, said Dr. Binkley. 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 among the assays 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 that 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. If one eats 6 pounds of carotenoids (retinol precursors), the body makes only 1 pound of retinol.

Yet it's theorized that excessive vitamin A will suppress osteoblast activity and stimulate bone reabsorption. In addition, epidemiologic data suggest 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. However, vitamin K doesn't linger in the blood for very long, so it's difficult to get an accurate measure, said Dr. Binkley.

Most of the 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 United States, however, is thought to be about 100 mcg per day. It's probably too early to recommend vitamin K 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 that high magnesium intake was not protective of BMD. The bottom line for patients 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 widely assumed that caffeine is harmful to bone because it leads to increased urinary calcium loss. However, a number of studies have shown that 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. What does that mean? It means that we need to put about 2 tablespoons of milk in our coffee," said Dr. Binkley.

The effect of these other caffeinated beverages on calcium absorption is largely negligible. The bigger issue is that soft drinks have replaced milk in the average American's diet.

## Protein

One study of elderly patients found that 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. There's no need to restrict protein after hip fractures. ■

## Tell Patients: Bisphosphonates Work, but Not in the Bottle

BY HEIDI SPLETE  
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WASHINGTON — Postmenopausal women with osteoporosis can reduce their risk for fractures by 26% if they stick to their bisphosphonate regimens, Ethel Siris, M.D., reported in a poster presented at an international symposium sponsored by the National Osteoporosis Foundation.

However, that "if" is a very big one, said Dr. S. Siris, director of the metabolic bone diseases program at Columbia University Medical Center, New York.

In a retrospective study of 6,285 women, 48% were compliant in terms of refilling their prescriptions, and 21% were persistent in terms of staying on the medication beyond the 2-year follow-up.

Overall, the relative risk of fracture over a 2-year period was 26% lower among refill-compliant women vs. noncompliant women (9.4% vs. 12.6%) and 21% lower among treatment persistent women vs. nonpersistent women (9.1% vs. 11.6%).

More than half (52%) of the women were noncompliant, based on insufficient refills, and approximately 21% were non-

persistent, defined as having a discontinuation of therapy within the 2-year period.

Data on the pharmaceutical claims of women aged 45 years and older who met the criteria for postmenopausal osteoporosis were taken from the Medstat MarketScan Research Database. The women had received at least one prescription for a bisphosphonate; 85% received alendronate (Fosamax) and 15% received risendronate (Actonel).

Although bisphosphonates are a popular choice for fracture risk reduction in osteoporotic women, their effectiveness depends on compliance for an extended period of time. And compliance is notoriously poor.

"If we actually get people to take these drugs, we might cut as many as 400,000 fractures in a given year," Dr. Siris said.

Studies on less frequent dosing regimens, such as the once-monthly regimen for the newly approved ibandronate (Boniva), suggest they are effective and may improve compliance.

Dr. Siris is a consultant for and has received honoraria from Eli Lilly & Co., Merck & Co., Sanofi Aventis, Procter & Gamble Pharmaceuticals, and Novartis. ■

## Monthly Ibandronate Rivals Daily Dose

BY HEIDI SPLETE  
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WASHINGTON — A monthly dose of oral ibandronate is at least as safe and as effective at increasing bone mineral density as a daily dose, according to data from a study of more than 1,200 postmenopausal women with osteoporosis.

The Monthly Oral Ibandronate in Ladies (MOBILE) study, a multinational randomized, double-blind, phase III study of women aged 55-80 years, will continue for 2 years, Michael Bolognese, M.D., said in a poster presented at an international symposium sponsored by the National Osteoporosis Foundation. Dr. Bolognese and his colleagues presented their 1-year results at the meeting.

A total of 318 women received a 2.5-mg dose of oral ibandronate (Boniva) daily; another 328 women received a 50/50 mg dose (two 50-mg single doses on 2 consecutive days) monthly; 311 received one 100-mg dose monthly; and 320 received one 150-mg dose monthly.

At 1 year, the increase in BMD at the lumbar spine was 3.9% in the daily group, compared with 4.3%, 4.1%, and 4.9% in the groups receiving 50/50 mg, 100 mg, and 150 mg monthly.

Increases in the total hip BMD were 2.2% in the daily group, compared with 2.2%, 2.7%, and 3.1% in the 50/50 mg, and monthly groups. Similar increases occurred at the femoral neck and hip trochanter. All treatment also groups had significant decreases in serum CTX, a bone resorption marker. The 150-mg group showed the most robust response.

The dosage of the newly approved monthly formulation of ibandronate (Boniva) is 150 mg; it has been shown to have maximal effectiveness when taken 60 minutes before eating, said Dr. Bolognese, of Bethesda (Md.) Health Research.

The incidence of adverse events and withdrawal rates were comparable across treatment groups. About 70%-80% of the adverse events were gastrointestinal, but the incidence was relatively low and comparable across all treatment groups. In fact, the rate of discontinuation due to upper GI events was lower among patients in the 150-mg group (3.3%), 100-mg group (4.0%), and 50/50-mg group (4.0%) vs. the daily group (5.3%).

Dr. Bolognese is a consultant for Eli Lilly & Co. and Procter & Gamble, and he has received grants or research support from Sanofi-Aventis, Pfizer, Lilly, and Wyeth Pharmaceuticals. ■