

High-dose vitamin D supplementation not associated with benefits for postmenopausal women

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High-dose vitamin D supplementation in postmenopausal women was not associated with beneficial effects on bone mineral density, muscle function, muscle mass or falls, according to the results of a randomized clinical trial published online by *JAMA Internal Medicine*.

Low levels of vitamin D contribute to osteoporosis because of decreased total fractional calcium absorption (TFCA) and nearly half of postmenopausal women sustain an osteoporotic fracture. However, experts disagree on the optimal vitamin D level for skeletal health. Some experts contend that optimal serum 25-hydroxyvitamin D levels are 30 ng/mL or greater, while the Institute of Medicine recommends levels of 20 ng/mL or greater, according to study background.

Karen E. Hansen, M.D., M.S., of the University of Wisconsin School of Medicine and Public Health, Madison, and colleagues compared the effects of placebo, low-dose cholecalciferol (a form of vitamin D) and high-dose cholecalciferol on one-year changes on total TFCA, [bone mineral density](#), sit-to-stand tests and [muscle mass](#) in 230 [postmenopausal women](#) (75 or younger) with vitamin D insufficiency.

Trial participants were divided into three groups: daily white and twice monthly yellow placebo, daily 800 IU vitamin D3 (low dose) and twice monthly yellow placebo, and daily white placebo and twice monthly 50,000 IU vitamin D3 (high dose). The high-dose regimen [vitamin D](#) regimen achieved and maintained 25-hydroxyvitamin D levels at greater than or equal to 30 ng/mL.

Results indicate that [calcium absorption](#) increased 1 percent in the high-dose group but decreased 2 percent in the low-dose group and 1.3 percent in the placebo group. The small increase in the high-dose group did not translate into beneficial effects because authors found no difference between the three study groups for changes in spine, average total-hip, average femoral neck or total-body [bone mineral](#) density, trabecular bone score, muscle mass or sit-to-stand tests. There also were no differences between the groups for numbers of falls, number of fallers, physical activity or functional status.

The authors note few African-American women participated in the study, which limits its ability to detect differential responses to cholecalciferol based on race. The study results also cannot be used to guide cholecalciferol therapy for young adults, men, or women older than 75, according to the authors. They point out individuals only participated for one year and perhaps longer exposure to high-dose cholecalciferol might yield greater effects on bone mineral density.

"Study results do not justify the common and frequently touted practice

of administering high-dose cholecalciferol to older adults to maintain serum 25(OH)D [25-hydroxyvitamin D] levels of 30 ng/mL or greater," the study concludes.

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