

# Calcium, Vitamin D May Prevent Hip Fracture in Postmenopausal Women

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The Women's Health Initiative (WHI) clinical trial previously addressed the question of whether calcium and vitamin D supplementation reduces risk of hip fracture, as well as the risk of any fracture and risk of colorectal cancer, in a population with widespread use of such supplements. That study observed an association between supplement use and bone mineral density, but interestingly found no evidence for an effect on fracture risk. Questions remained following publication of the study, however, including whether findings would be different if the population had been restricted to women who were not already taking supplements, or if supplements had been taken for a longer period of time. Subsequent studies addressed these and other issues, including some which reported a possible adverse effect of vitamin D and calcium supplementation on cardiovascular outcomes.

To address these concerns and remaining questions, Dr. Ross Prentice and colleagues in PHS, along with other WHI investigators, conducted additional analyses. Special emphasis was placed on women in the clinical trial who were not already using supplements. Researchers also investigated possible effects of the duration of supplement use, both comparing and combining data from the WHI observational study and the WHI clinical trial. Special care was taken in the analyses to account for the fact that observational studies can be confounded by underlying factors. For example, women who take supplements may also be more health-conscious in general, and therefore less likely to suffer certain health outcomes. Also, women with underlying conditions (e.g. heart disease) might be more likely to take supplements for their supposed beneficial effects on these conditions, and thus supplement users might be more likely to experience certain adverse outcomes.

In these analyses, Prentice et al. observed some evidence of a protective effect of calcium and vitamin D supplementation on hip fracture risk when clinical trial data were restricted to women not taking these supplements at the start of the study. Among such women, those randomized to take supplements were almost 40% less likely to experience a hip fracture (95% CI 0.38-1.00, for at least 5 years of vitamin D and calcium supplement use). Findings were similar when data from the observational study were combined with trial data (hazard ratio (HR): 0.65, 95% CI 0.44-0.98). There was also some suggestion of a lower risk of breast cancer and total cancer among supplement users, though authors interpret these findings cautiously, as they were limited to the subset of

women not using supplements at baseline. No association was seen between vitamin D and calcium supplementation and cardiovascular outcomes studied.

Use of calcium and vitamin D supplements for 5 or more years may reduce the risk of hip fracture, according to this study in postmenopausal women. Supplements were not found to adversely affect cardiovascular or other health outcomes, except for a 17% higher incidence of urinary tract stones, reported in the original study (HR: 1.17, 95% CI 1.02-1.34). Additional research into the potential effects of vitamin D and calcium supplementation on breast cancer and overall cancer risk is warranted.

[Prentice RL, Pettinger MB, Jackson RD, Wactawski-Wende J, Lacroix AZ, Anderson GL, Chlebowski RT, Manson JE, Van Horn L, Vitolins MZ, Datta M, Leblanc ES, Cauley JA, Rossouw JE.](#) 2012. Health risks and benefits from calcium and vitamin D supplementation: Women's Health Initiative clinical trial and cohort study. *Osteoporos Int*. Epub ahead of print.

Also see: [Jackson RD, LaCroix AZ, Gass M, Wallace RB, Robbins J, Lewis CE, Bassford T, Beresford SA, Black HR, Blanchette P, Bonds DE, Brunner RL, Brzyski RG, Caan B, Cauley JA, Chlebowski RT, Cummings SR, Granek I, Hays J, Heiss G, Hendrix SL, Howard BV, Hsia J, Hubbell FA, Johnson KC, Judd H, Kotchen JM, Kuller LH, Langer RD, Lasser NL, Limacher MC, Ludlam S, Manson JE, Margolis KL, McGowan J, Ockene JK, O'Sullivan MJ, Phillips L, Prentice RL, Sarto GE, Stefanick ML, Van Horn L, Wactawski-Wende J, Whitlock E, Anderson GL, Assaf AR, Barad D.](#) 2006. Women's Health Initiative Investigators. Calcium plus vitamin D supplementation and the risk of fractures. *N. Engl. J. Med.* 354: 669.



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X-ray image of a hip fracture