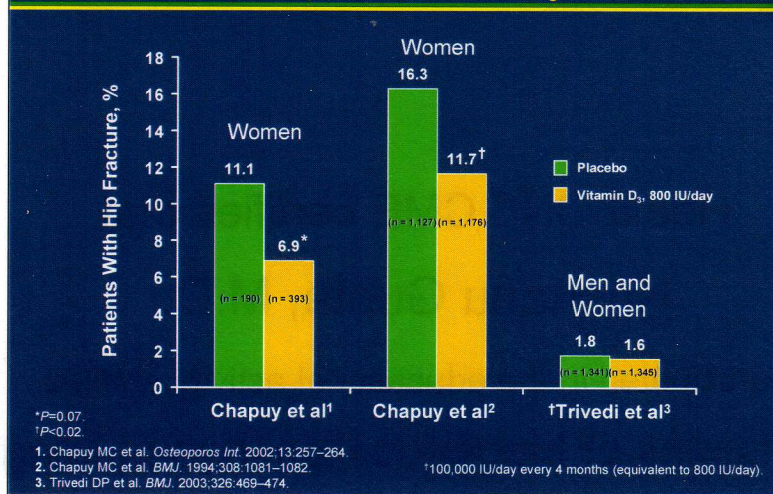


Impact of Vitamin D₃ Supplementation (800 IU/day) on Hip Fx in the Elderly



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This slide shows the results of 3 studies that examined the effect on hip Fx of a larger vitamin D₃ dose, that is 800 IU/d.^{1–3} The incidence of hip Fx in the first study, by Chapuy and colleagues, is shown in the left pair of bars.¹ This study was a 2-year, randomized, double-blind, placebo-controlled clinical study in which 583 ambulatory, institutionalized women with a mean age of 85.2 ± 7.1 were randomized to receive either calcium (1,200 mg/day) and vitamin D (800 IU/day) or placebo. Baseline mean serum 25(OH)D levels ranged from 8.5–9.1 ng/mL, mean vitamin D intake ranged from 40–42 IU/day, mean calcium intake ranged from 551–565 mg/day, and mean serum iPTH was about 71 pg/mL. By the end of the study, serum 25(OH)D levels rose to about 30 ng/mL in the group taking 800 IU of vitamin D₃ per day together with calcium, whereas serum 25(OH)D levels decreased to about 5 ng/mL in the placebo group, with the probability there being less than 1 chance in 10000. Femoral neck BMD increased an average of 0.29% in the vitamin D plus calcium group, whereas BMD decreased 2.36% in the placebo group. Most importantly, the vitamin D-supplemented group sustained significantly fewer fractures. The risk ratio for hip Fx in women in the placebo group was 1.69 compared to women in the active treatment groups.¹

The pair of bars in the middle of this slide show the incidence of hip Fx in a study of 3,270 mobile elderly women mean age 84 ± 6 who had been randomized to receive 800 IU of vitamin D₃ per day and 1.2 g of calcium per day or placebo for 3 years.^{2,3} The incidence of hip Fxs was 11.7% in the group taking calcium and Vitamin D compared with 16.3% in the placebo group for a reduction in risk of 28%; with the probability there being less than 1 chance in 50.³

In the third study, the one by Trivedi and her colleagues, 2,686 community-dwelling men and women ranging in age from 65–85 were randomized to receive either placebo or 100,000 IU vitamin D₃ every 4 months (which is approximately 800 IU/day) for a period of 5 years in a double-blind study. The mean calcium intake for the entire study population at the fourth year, assessed by a food frequency questionnaire, was 742 mg/day. The main outcome measures were the incidence of Fx and all-cause mortality. The incidences of Fx at any site were 12.9% in the vitamin D group and 18.0% in the placebo group ($P = 0.05$) or a reduction in risk of 28%.⁴ The incidence of hip Fx alone in the group receiving vitamin D₃ was 1.6%, and in the placebo group, 1.8%.

References:

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2. Chapuy MC, Arlot ME, Duboeuf F et al. Vitamin D₃ and calcium to prevent hip fractures in the elderly women. *N Engl J Med.* 1992;327:1637–1642.
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4. Trivedi DP, Doll R, Khaw KT. Effect of four monthly oral vitamin D₃ (cholecalciferol) supplementation on fractures and mortality in men and women living in the community: randomised double blind controlled trial. *BMJ.* 2003;326:469–474.