



Vitamin D For Preventing Fractures (Older Adults in the Community)



No benefit found

In Summary, for those who took the Vitamin D supplements:

Benefits in NNT

- None were helped (fracture prevented)

Harms in NNH

- 1 in 36 were harmed (kidney stones, kidney damage)

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Source: Avenell A, Gillespie WJ, Gillespie LD, O'Connell D. Vitamin D and vitamin D analogues for preventing fractures associated with involutional and post-menopausal osteoporosis. In: Avenell A, with The Cochrane Collaboration, eds. Cochrane Database of Systematic Reviews.

Sanders KM, Stuart AL, Williamson EJ, et al. Annual High-Dose Oral Vitamin D and Falls and Fractures in Older Women. JAMA: The Journal of the American Medical Association. 2010;303(18):1815 -1822.

Bolland MJ, Grey A, Avenell A, Gamble GD, Reid IR. Calcium supplements with or without vitamin D and risk of cardiovascular events: reanalysis of the Women's Health Initiative limited access dataset and meta-analysis. BMJ. 2011;342:d2040.

Efficacy Endpoints: Prevention of fractures

Harm Endpoints: Kidney stones, kidney damage

Narrative: Vitamin D increases the absorption of calcium in the intestine and has a role in maintaining bone density. Sources of Vitamin D are limited other than exposure of the skin to ultraviolet light (sunlight) which stimulates Vitamin D production. Some authorities suggest Vitamin D as a supplement in the hopes that it might lead to reductions in fractures by increasing bone strength. The Cochrane review summarized here is the largest review of this topic to date.¹

Unfortunately, in large randomized trials (some of very high quality) there is one group that appears to have benefited and this was only true when Vitamin D was combined with calcium supplementation: frail, elderly individuals in institutional settings. Among this group there was a small reduction in hip fractures, which is an important and dreaded injury for a variety of reasons. The NNT for avoiding a hip fracture in this group [395/23123 for 17.1% vs 459/23535 for 19.5%] was approximately 42.

For all other groups there is no evidence of an identifiable benefit, and there does appear to be consistent harm associated with Vitamin D, in the form of an increase in kidney problems, either kidney stones or renal insufficiency. The NNH for this was [453/22529 for 20.1% versus 388/22449 for 17.3%] 36.

Caveats: The trials included amount to roughly 85000 participants, making it highly unlikely that there is even a tiny benefit that is, as of yet, undiscovered. However Vitamin D was delivered variably (injections, pills, infusions) and the compound itself was variable (cholecalciferol, calcitriol, alfacalcidol, etc.) therefore perhaps one of these forms and compounds may provide a benefit that was diluted out by the larger group. If present this benefit would be small, perhaps negligibly so.

There is recent data to suggest that Vitamin D supplementation may increase falls and fractures in non-institutionalized persons² and the Cochrane data demonstrate a nearly significant increase in hip fractures (OR 1.16, 95%CI; 0.99-1.35). Moreover, calcium supplementation has recently been implicated in heart attacks among post-menopausal women.³

Finally, the benefit seen in institutionalized elderly patients was recorded in two different trials, both performed at the same institution in France, and the Cochrane authors point out that this should be confirmed in other settings before it is widely accepted as accurate.

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