

SCIENTIFIC INFORMATION STEROGYL

REDUCING FRACTURE RISK WITH CALCIUM AND VITAMIN D

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Abstract

Studies of vitamin D and calcium for fracture prevention have produced inconsistent results, as a result of different vitamin D status and calcium intake at baseline, different doses and poor to adequate compliance. This study tries to define the types of patients, both at risk of osteoporosis and with established disease, who may benefit from calcium and vitamin D supplementation. The importance of adequate compliance in these individuals is also discussed. Calcium and vitamin D therapy has been recommended for older persons, either frail and institutionalized or independent, with key risk factors including decreased bone mineral density (BMD), osteoporotic fractures, increased bone remodelling as a result of secondary hyperparathyroidism and increased propensity to falls. In addition, treatment of osteoporosis with a bisphosphonate was less effective in patients with vitamin D deficiency.

Calcium and vitamin D supplementation is a key component of prevention and treatment of osteoporosis unless calcium intake and vitamin D status are optimal. For primary disease prevention, supplementation should be targeted to those with dietary insufficiencies.

Several serum 25-hydroxyvitamin D (25(OH)D) cut-offs have been proposed to define vitamin D insufficiency (as opposed to adequate vitamin D status), ranging from 30 to 100 nmol/l. Based on the relationship between serum 25(OH)D, BMD, bone turnover, lower extremity function and falls, we suggest that 50 nmol/l is the appropriate serum 25(OH)D threshold to define vitamin D insufficiency. Supplementation should therefore generally aim to increase 25(OH)D levels within the 50-75 nmol/l range.

This level can be achieved with a dose of 800 IU/day vitamin D, the dose that was used in successful fracture prevention studies to date; a randomized clinical trial assessing whether higher vitamin D doses achieve a greater reduction of fracture incidence would be of considerable interest. As calcium balance is not only affected by vitamin D status but also by calcium intake, recommendations for adequate calcium intake should also be met.

Clinical Endocrinology (Oxford). 2010;73(3):277-85.

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