



Statement on Calcium and Vitamin D supplements

Reviewed June 2015

Bone is a complex material whose resistance to bending is provided by crystals of calcium and phosphate integrated into a protein matrix. Although bone is continually regenerating as we age, bone structure deteriorates. Women in particular require a higher calcium intake to reduce the loss of calcified bone from the skeleton. Vitamin D deficiency can also have an impact on bone health, as this vitamin plays an important role in the transport of calcium into the body from the gut. Small amounts of vitamin D are absorbed from food, but most is made in the skin through direct exposure to sunlight. Lifestyle changes in recent years have resulted in a general reduction in sun exposure and increased prevalence of vitamin D deficiency. There has been much discussion of the ideal amount of calcium and vitamin D required to reduce skeletal deterioration as we age. In addition, some investigators have raised concerns about an increase in heart disease risk in people taking calcium supplements. Osteoporosis Australia has been considering the evidence.

Several reviews of intervention studies of whole older populations, mainly women, have shown that consuming vitamin D of at least 400IU/day and calcium of at least 800mg/day reduces fracture risk in those with low calcium and vitamin D intakes ^{1 2}. On average, the studies have shown a small but significant reduction in new non-spinal fractures over approximately 2 years. In people consuming calcium tablets at 500mg/day or more (in addition to dietary calcium intake) and vitamin D at more than 500IU/day (in addition to sun exposure), the fracture rate fell to 11.0%, compared to 12.5% in those taking inactive tablets.

There is also evidence of a reduction in mortality from the use of calcium given together with vitamin D³. It should be noted that those with a high risk of fracture due to osteoporosis may also need to take anti-osteoporosis drugs, in addition to increasing their calcium and vitamin D intake.

Calcium intake and the risk of heart attack and stroke is the subject of ongoing research. Because adverse events have not been a major focus of osteoporosis prevention trials, it is important that adverse outcomes are verified in the available studies. When externally verified cardiovascular disease event rates (such as heart attacks) in women ⁴, as opposed to self-reported but non-verified events and events occurring in men ⁵ are considered, no adverse effect of calcium supplementation and vitamin D supplementation on heart attacks or cardiovascular events have been identified. Adverse effects of calcium on the gastrointestinal tract, including indigestion, constipation and occasionally severe pain, have however been noted ⁶.

Thus Osteoporosis Australia continues to support the National Health and Medical Research Council advice that a total daily intake of 1000 mg to 1300 mg of calcium per day in older women. Ideally, the RDI (recommended dietary intake) should be achieved by consuming a diet rich in calcium; selecting foods that are naturally high in calcium, and including foods that have had calcium added to them - so called 'calcium-enriched' foods.

When the calcium RDI cannot be achieved through the diet alone, supplements are indicated. In these circumstances Osteoporosis Australia recommends a daily supplement of 500-600mg of calcium.

Maintenance of vitamin D levels often requires sun exposure, which can increase the risk of skin ageing, cataract and skin cancer. Thus in older people, consumption of at least 500IU of vitamin D per day as a supplement is indicated.

Taken as recommended, combined calcium and vitamin D supplements remain both safe and effective for the majority of people at high risk of fracture, especially ageing women.

References

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