

Osteoporosis *in older adults*

Osteoporosis is a skeletal disease characterized by low bone mass and microarchitectural deterioration of bone tissue. This condition causes increased bone fragility and susceptibility to fracture. Osteoporosis affects 25 million people in the United States, primarily postmenopausal women, and is the underlying cause of 1.5 million fractures annually.¹ Among individuals with osteoporotic hip fractures, 20–50 percent are unable to return to independent living and 12–20 percent die within one year.²

Currently, bone mineral density measurement is the best available tool for assessing risk of osteoporotic fracture, but the real key is prevention. If preventive interventions that are part of the process of care for osteoporosis are shown to be effective, they could reduce morbidity and mortality among the vulnerable elderly. The recent literature includes some promising preventive results:

Two randomized controlled trials have demonstrated that modest exercise, including brisk walking, reduces the rate of bone density loss among postmenopausal women.^{3,4} One prospective cohort study has demonstrated that walking regularly reduces the risk of osteoporotic fractures by 30 percent.⁵

Two randomized controlled trials suggest that calcium supplementation alone may exert an attenuating effect on bone loss.^{6,7} Vitamin D supplementation improved bone mineral density in four randomized controlled trials.^{8–11}

One meta-analysis and eight randomized clinical trials show that hormone replacement therapy is effective in preserving bone mineral density and decreasing fracture risk.^{12–20}

Selective estrogen receptor modulators (SERMs) have been shown to increase bone mineral density, and some SERMs do so without stimulating endometrial tissue.²¹

Numerous randomized clinical trials of bisphosphonates demonstrate vertebral fracture protection, with the greatest benefit seen among those with low bone density when therapy begins.^{22–30}

Preventive measures for osteoporosis include adequate calcium and vitamin D intake, and weight bearing exercises. The first line of pharmaceutical therapy for osteoporosis is hormone replacement. For patients who are unable or unwilling to take hormones, other pharmacologic treatment options exist including the use of SERMs and bisphosphonates.

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