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## Patient information: Osteoporosis prevention and treatment (Beyond the Basics)

### Author

Harold N Rosen, MD

### Section Editor

Clifford J Rosen, MD

### Deputy Editor

Jean E Mulder, MD

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### OSTEOPOROSIS OVERVIEW

Osteoporosis is a common problem that causes bones to become abnormally thin, weakened, and easily broken (fractured). Women are at a higher risk for osteoporosis after menopause due to lower levels of estrogen, a female hormone that helps to maintain bone mass.

Fortunately, preventive treatments are available that can help to maintain or increase bone density. For those already affected by osteoporosis, prompt diagnosis of bone loss and assessment of fracture risk are essential because therapies are available that can slow further loss of bone or increase bone density.

This topic review discusses the therapies available for the prevention and treatment of osteoporosis. A separate topic discusses bone density testing. (See "[Patient information: Bone density testing \(Beyond the Basics\)](#)".)

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### OSTEOPOROSIS PREVENTION

Some of the most important treatments for preventing osteoporosis include diet, exercise, and not smoking. These recommendations apply to men and women. (See "[Overview of the management of osteoporosis in postmenopausal women](#)" and "[Treatment of osteoporosis in men](#)".)

**Diet** — An optimal diet for preventing or treating osteoporosis includes consuming an adequate number of protein and calories as well as optimal amounts of calcium and vitamin D, which are essential in helping to maintain proper bone formation and density.

**Calcium intake** — Experts recommend that premenopausal women and men consume at least 1000 mg of calcium per day; this includes calcium in foods and beverages plus calcium supplements. Postmenopausal women should consume 1200 mg of calcium per day (total of diet plus supplements). However, you should not take more than 2000 mg calcium per day due to the possibility of side effects. (See "[Patient information: Calcium and vitamin D for bone health \(Beyond the Basics\)](#)".)

The main dietary sources of calcium include milk and other dairy products, such as cottage cheese, yogurt, or hard cheese, and green vegetables, such as kale and broccoli ([table 1](#)). A rough method of estimating dietary calcium intake is to multiply the number of dairy servings consumed each day by 300 mg. One serving is 8 oz of milk (236 mL) or yogurt (224 g), 1 oz (28 g) of hard cheese, or 16 oz (448 g) of cottage cheese.

Calcium supplements (calcium carbonate or calcium citrate) may be suggested for women who cannot get enough calcium in their diet ([table 2](#)). Calcium doses greater than 500 mg/day should be taken in divided doses (eg, once in morning and evening).

**Vitamin D intake** — Experts recommend that men over 70 years and postmenopausal women consume 800 international units of vitamin D each day. This dose appears to reduce bone loss and fracture rate in older women and men who have adequate calcium intake (described above). Although the optimal intake has not been clearly established in premenopausal women or in younger men with osteoporosis, 600 international units of vitamin D daily is generally suggested. (See "[Calcium and vitamin D supplementation in osteoporosis](#)".)

Milk supplemented with vitamin D is a primary dietary source of dietary vitamin D; it contains approximately 100 int. units per 8 oz (236 mL). Another good source is salmon, with approximately 600 int. units per 3.5 oz (98 g) serving. Experts recommend vitamin D supplementation for all patients with osteoporosis whose intake of vitamin D is below 400 int. units per day.

**Protein supplements** — Protein supplements may be recommended in some people to ensure sufficient protein intake. This may be particularly important for those who have already had an osteoporotic fracture.

**Alcohol, caffeine, and salt intake** — Drinking alcohol excessively (more than two drinks a day) can increase the risk of fracture due to an increased risk of falling, poor nutrition, etc., so it should be avoided.

Restricting caffeine or salt has not been proven to prevent bone loss in people who consume an adequate amount of calcium.

**Exercise** — Exercise may decrease fracture risk by improving bone mass in premenopausal women and helping to maintain bone density for women after menopause. Furthermore, exercise may decrease the tendency to fall due to weakness. Physical activity reduces the risk of hip fracture in older women as a result of increased muscle strength. Most experts recommend exercising for at least 30 minutes three times per week.

The benefits of exercise are quickly lost when a person stops exercising. A regular, weight-bearing exercise regimen that a person enjoys improves the chances that the person will continue it over the long term. (See "[Patient information: Exercise \(Beyond the Basics\)](#)".)

**Smoking** — Stopping smoking is strongly recommended for bone health because smoking cigarettes is known to speed bone loss. One study suggested that women who smoke one pack per day throughout adulthood have a 5 to 10 percent reduction in bone density by menopause, resulting in an increased risk of fracture. (See "[Patient information: Quitting smoking \(Beyond the Basics\)](#)".)

**Falls** — Falling significantly increases the risk of osteoporotic fractures in older adults. Taking measures to prevent falls can decrease the risk of fractures. Such measures may include the following:

- Removing loose rugs and electrical cords or any other loose items in the home that could lead to tripping, slipping, and falling.
- Providing adequate lighting in all areas inside and around the home, including stairwells and entrance ways.
- Avoiding walking on slippery surfaces, such as ice or wet or polished floors.
- Avoiding walking in unfamiliar areas outside.
- Reviewing drug regimens to replace medications that may increase the risk of falls with those that are less likely to do so.
- Visiting an ophthalmologist or optometrist regularly to get the optimal eye glasses.

