



Standing Tall: preventing & treating osteoporosis

What is it?

Osteoporosis is a disease of bone loss. Simply put, it means that the tissue in your bones has deteriorated, making them weak, brittle and more likely to fracture. A diagnosis of osteoporosis means you have at least 25-percent less bone mass than a healthy adult your age.

Osteoporosis occurs when more of your bone tissue is being taken away from your bones (a process called resorption) than is being created (formation). Bone formation usually peaks at age 30; after that, resorption happens slightly more quickly than formation, but has few ill effects in most people. However, in some people this process happens much more quickly than normal, causing osteoporosis. What is often not realized is that, untreated, osteoporosis is a crippling, painful and debilitating disease that can lead to other serious health complications and even death. Fortunately, it is also treatable and preventable.

Prevalence

- Osteoporosis is a major public health threat for an estimated 44 million Americans, or 55 percent of the people 50 years of age and older.
- In the U.S. today, 10 million individuals are estimated to already have the disease and almost 34 million more are estimated to have low bone mass, placing them at increased risk for osteoporosis.
- While osteoporosis is often thought of as an older person's disease, it can strike at any age.
- Of the 10 million Americans estimated to have osteoporosis, eight million (80%) are women and two million (20%) are men.

Diagnosis

A diagnosis of osteoporosis is usually made based on the following:

- When a hip or vertebral fracture or any "fragility fracture" has occurred. This is a broken bone that has happened with no trauma or minimal trauma, such as if you were to cough or fall to the floor from a standing position. The diagnosis in this case would be after you have experienced a fracture. Clearly the better choice is to find out if you have osteoporosis by measuring your bone density BEFORE a fracture occurs. ***If you have had a fracture in adulthood that you are not sure is fully explained by its circumstances, get a bone density scan.***
- A bone density T-score ≤ -2.5 at the femoral neck or spine after appropriate evaluation to exclude secondary causes.

Bone mineral density - The gold standard for osteoporosis screening is the dual energy X-ray absorptiometry (DXA or DEXA). This painless and quick procedure assesses the bone density of your hip and spine and will provide a T-score for each that tells you about your bone mineral density (BMD) relative to the bone density of a young adult female:

- If your T-score is between +1 and -1, your bone density is normal
- If your T-score is between -1.0 and -2.5, you have begun to experience bone loss, or osteopenia
- If your T-score is equal to or less than -2.5, you have osteoporosis

Each drop in bone mineral density by one point represents the loss of 10 to 15 percent of bone mass. For example, if you move from -1 to -2 between screenings, you have lost approximately 10 percent of your bone mass. Normal bone loss is about 1 to 2 percent a year as you age. T-scores are based on the NHANES reference values for women aged 20-29 years. The same absolute values are used in men.

You can take the DXA test every two years to monitor the effectiveness of medication or any changes in your bone density. Some doctors will prescribe annual screenings for patients whose bone loss should be monitored more often.

Risk factors

In general, bone density testing is strongly recommended if you:

- are a post-menopausal woman and not taking estrogen.
- have a personal or parental history of hip fracture or smoking.
- are a post-menopausal woman who is tall (over 5 feet 7 inches) or thin (less than 125 pounds).
- are a man with clinical conditions associated with bone loss.
- use medications that are known to cause bone loss; these include glucocorticoids (steroidal anti-inflammatories) such as Prednisone, taken for more than 3 months at a dose of 5mg daily or more; various anti-seizure medications such as Dilantin and certain barbiturates, or high-dose thyroid replacement drugs.
- have type 1 (formerly called juvenile or insulin-dependent) diabetes, rheumatoid arthritis, liver disease, kidney disease, osteogenesis imperfecta in adults, untreated long-standing hyperthyroidism, hypogonadism or premature menopause (<45 years), chronic malnutrition or malabsorption, chronic liver disease or a family history of osteoporosis. *Osteoarthritis is not considered a risk factor.*
- have high bone turnover, which shows up in the form of excessive collagen in urine samples.
- have a parathyroid condition, such as hyperparathyroidism.
- have experienced a fracture after only mild trauma.
- have had x-ray evidence of vertebral fracture or other signs of osteoporosis.

The Lateral Vertebral Assessment (LVA), a low-dose x-ray examination of the spine to screen for vertebral fractures that is performed on the DXA machine, may be recommended for older patients, especially if:

- they have lost more than an inch of height.
- have unexplained back pain.
- if a DXA scan gives borderline readings.

Alcohol - You may be at increased risk if you have 3 or drinks/day. One drink of alcohol varies slightly in different countries from 8-10g. This is equivalent to a standard glass of beer (285ml), a single measure of spirits (30ml), a medium-sized glass of wine (120ml), or 1 measure of an aperitif (60ml).

Previous fracture - A special situation pertains to a prior history of vertebral fracture. A fracture detected as a radiographic observation alone (a morphometric vertebral fracture) counts as a previous fracture. A prior clinical vertebral fracture from which the patient suffers consequences, is an especially strong risk factor. The probability of fracture computed may therefore be underestimated. Fracture probability is also underestimated with multiple fractures.

Prevention

About 85-90% of adult bone mass is acquired by age 18 in girls and 20 in boys. Building strong bones during childhood and adolescence can help to prevent osteoporosis later in life.

Together, the following five steps can optimize bone health and help prevent osteoporosis:

1. Get the daily recommended amounts of calcium and vitamin D
Age 19-50, each day you need 1000 mg of calcium & 200 IU of vitamin D.
Age 51-70, each day you need 1200 mg of calcium & 400 IU of vitamin D.
Age > 70, each day you need 1200 mg of calcium & 600 IU of vitamin D.

You can only absorb about 500 mg of calcium at a time. The best way to get it is in your food.

<u>Foods</u>	<u>Serving</u>	<u>calcium (mg)</u>
Milk, with added calcium	1 cup	430
Milk, whole, 2%, 1% skim	1 cup	300
Milk, evaporated	1/2 cup	367
Cheese, hard	50 gm	360 (average)*
Processed cheese spread	4 Tbsp	348
Cheese, processed slices	50 gm	276
Cottage cheese, 1 or 2%	2 cups	310
Cottage cheese, <0.1%	2 cups	156
Yogurt, plain	3/4 cup	290 (average)*
Tofu*, medium firm or firm	150 gm	347
White beans	3/4 cup	119
Navy beans	3/4 cup	93
Tahini (sesame seed butter)	2 Tbsp	130
Almonds, dry roast	1/4 cup	93
Almond butter	2 Tbsp	88
Sesame seed kernels, dried	1/4 cup	50
Sardines canned with bones	75 gm	286 (Atlantic)
Salmon, canned with bones	75 gm	208
Oats, instant, regular	1 pouch	165
Fortified rice or soy drink	1 cup	319** (shake well before drinking)
Orange juice fortified	1/2 cup	165
Regular soy beverage	1 cup	110

- Engage in regular weight-bearing and muscle-strengthening exercise. Weight-bearing exercise, like walking, dancing, or lifting even light weights, 30 minutes a day, which can be done in 10 minute segments, will do it.
- Avoid smoking and excessive alcohol
- Talk to your healthcare provider about bone health
- Have a bone density test and take medication when appropriate

A study of disease management in a rural healthcare population demonstrated that a preventive program was able to reduce hip fractures and save money.

Medications

Although there is no cure for osteoporosis, it can be treated. The following medications are approved by the FDA to prevent and/or treat osteoporosis:

Antiresorptive Medications –Bisphosphonates

- Alendronate and alendronate plus vitamin D3 (brand names **Fosamax®** and **Fosamax plus D™**). Alendronate is approved for the prevention and treatment of osteoporosis in postmenopausal women and for the treatment of osteoporosis in men. It also is approved for the treatment of glucocorticoid-induced osteoporosis in men and women as a result of long-term use of steroid medications.
- Ibandronate (brand name **Boniva®**). Ibandronate is approved for the prevention and treatment of osteoporosis in postmenopausal women.
- Risedronate and risedronate with calcium (brand names **Actonel®** and **Actonel® with Calcium**). Risedronate is approved for the prevention and treatment of osteoporosis in postmenopausal women and for the treatment of osteoporosis in men. It also is approved for the prevention and treatment of glucocorticoid-induced osteoporosis in men and women as a result of long-term use of steroid medications.

- Zoledronic Acid (brand name **Reclast®** aka **Zometa®**). Zoledronic acid is approved for the treatment of osteoporosis in postmenopausal women and men.

Other Antiresorptive Medications

- Calcitonin (brand names **Fortical®** and **Miacalcin®**). Calcitonin is approved for the treatment of osteoporosis in postmenopausal women who are at least five years beyond menopause.
- Estrogen (multiple brand names available). Estrogen therapy (ET) and estrogen with progesterone hormone therapy (HT) are approved for the prevention of osteoporosis in postmenopausal women. According to the FDA, postmenopausal women should consider other medications before taking ET or HT to prevent osteoporosis due to risks associated with these medications. They should also be used in the lowest possible dose for the shortest period of time to meet treatment goals.
- Estrogen Agonists/Antagonists also known as Selective Estrogen Receptor Modulators (SERMs) –Raloxifene (brand name **Evista®**). Raloxifene is approved for the prevention and treatment of osteoporosis in postmenopausal women. Tamoxifen, a breast cancer preventative, is also a SERM.

Bone Forming (Anabolic) Medications

Parathyroid Hormone –Teriparatide (brand name - **Forteo®**). Teriparatide, a type of parathyroid hormone, is approved for the treatment of osteoporosis in postmenopausal women and in men who have very low BMD or are at high risk for a fracture. The FDA recommends that individuals take teriparatide for no more than two years.

Prescriptive Nutritional Supplements

Fosteum®, which is a prescription supplement containing genistein aglycone, a soy ingredient; citrated zinc bisglycinate, a nutrient used by the body; and cholecalciferol (vitamin D). When taken with sufficient calcium and Vitamin D, it has been shown safely to build bone density in people with osteopenia without causing increased risk of estrogen-positive breast cancer. Fosteum has also been shown to decrease hot flashes & night sweats associated with menopause.

References

Please note: When you open this PDF file on your computer, you can click directly on the web links included below to connect to these websites.

Fosteum.Com, <http://www.fosteum.com/faqs/>
Internat'l Society for Clinical Densitometry, <http://www.iscd.org/Visitors/patient/PatientInformation.cfm>
National Health and Nutrition Examination Survey, <http://www.cdc.gov/nchs/nhanes.htm>
National Osteoporosis Foundation, www.nof.org
Radiology Info, <http://www.radiologyinfo.org/en/info.cfm?pg=dexa>
World Health Organization FRAX Risk Assessment Tool, www.shef.ac.uk/FRAX/index.htm
Food Sources of Calcium from <http://www.healthlinkbc.ca/healthfiles/hfile68e.stm>

This brochure was compiled by Kathi Kolb, M.S.P.T., who is a physical therapist and a certified osteoporosis educator. She is also a breast cancer survivor and the daughter of a woman who died of complications from osteoporosis.

Visit her blog at www.accidentalamazon.com.

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