



“From The Pharmacist” – Serve You’s Educational Series on Disease States

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Osteoporosis: What You Need To Know

What is osteoporosis?

Osteoporosis is a skeletal muscle disorder that is characterized by a loss in bone mineral density (BMD). This loss makes bones more brittle and porous, leading to an increased risk of fracture. A normal human skeleton undergoes a constant process of bone formation and destruction (resorption). Osteoporosis results when bone resorption exceeds bone formation. Osteoporosis is an incurable but preventable disease.

Who is affected?

In the United States alone, 10 million people already have osteoporosis and 34 million more have low bone mass, placing them at increased risk for the disease.¹ Osteoporosis is found primarily in women, but men also experience its effects. In fact, half of all postmenopausal women and one in four men over the age of 50 will have an osteoporosis-related fracture in their lifetime.¹

Am I at risk?

There are several risk factors that may make you more susceptible to osteoporosis. Some of the more common factors are: gender (female), minimal exercise, older age, smoking, some medications (**Table 1**), family history, ethnicity (Caucasians and Asians are at higher risk), body size (small, thin-boned are at higher risk), anorexia, minimal sun exposure, high caffeine intake, excessive alcohol use, and inadequate calcium and vitamin D intake.^{1,2} Obviously, some of these risk factors can be controlled and some cannot.

How will I know if I have osteoporosis?

A measurement of your BMD is a painless procedure easily accomplished by your physician. The measurement can be taken at any skeletal site, but a measurement of central BMD (hip and spine) is considered the gold standard.^{2,3} The results of the measurement are reported as a “T-score,” which compares your BMD to the average BMD for young healthy adults.^{1,2,3} The “T-score” is the number of standard deviations your BMD falls below this average.² Normal bone mass is a “T-score” greater than -1, osteopenia (low bone mass) is a “T-score” between -1 and -2.5, and osteoporosis is defined as a “T-score” of less than -2.5.⁴

Who should be tested?

The need to test for osteoporosis is based on several factors. Generally, testing should occur for: women aged 65 and older regardless of risk factors, younger postmenopausal women with one or more risk factors (excluding age or gender), or postmenopausal women who present with fractures.³ Your physician is best equipped to determine whether or not you should be tested.

What is the role of Vitamin D and Calcium?

Vitamin D is essential for intestinal absorption of calcium. If there is not enough vitamin D available, the body will start to pull calcium out of the bones, which will lead to a bone structure that is not as stable. Our bodies primarily get most of their vitamin D from two sources: the sun and our diet. Fortified milk, liver, saltwater fish, and egg yolks are all excellent dietary sources of vitamin D.⁵ Since some people living in the northern hemisphere may not get enough sunlight, they may have to rely on different sources for their vitamin D. Most experts recommend anywhere from 200 to 800 IU of vitamin D a day.^{1,5} This may vary depending on sun exposure and dietary intake. As with any supplement, it is always a good idea to check with your physician or pharmacist before starting. Well over 30 studies have documented that higher calcium intake prevents or reduces bone loss.⁶ Adults should get anywhere from 1200-1400 mg a day of elemental calcium. This can be achieved from dietary intake, supplements, or a combination of the two. Calcium is available in a variety of foods, but many people cannot tolerate dairy calcium (**Table 2**). Calcium supplements are an excellent alternative for those people and are available cheaply and in numerous formulations. The two most common forms of calcium are carbonate and citrate. It is very important that consumers read the label or enlist the help of a health care professional when choosing a calcium supplement since the elemental calcium content differs with each product (**Table 3**). Calcium carbonate generally contains the most elemental calcium and is the most inexpensive. The downside of the carbonate form is that it may cause constipation or bloating in older people. The carbonate form is best absorbed if it is taken with a meal and at a dose of no more than 500mg at one time.^{1,2,5} Because of its higher cost, the citrate form should be reserved for people who cannot tolerate the carbonate form. The citrate form can be taken without regard to meals.

Prevention and Treatment

Dietary changes, exercise, smoking cessation, and decreased alcohol consumption are all inexpensive and noninvasive ways to reduce your risk of fracture. Your physician can help you formulate an appropriate diet and exercise routine. There are many medications

available for the prevention and treatment of osteoporosis, but most (with the exception of calcium and vitamin D) are relatively expensive. Some commonly used medications are Actonel, Evista, Fosamax, Forteo, and Miacalcin. If warranted, your physician can help choose an appropriate drug therapy.

Table 1 - Medications that may increase the likelihood of osteoporosis

Class	Example(s)
Glucocorticoids	Prednisone (long-term use)
Aromatase Inhibitors	Arimidex, Femara
Anticonvulsants	Phenytoin, Phenobarbital
Mood Stabilizers	Lithium

Table 2 - Dietary calcium intake

Food	Serving Size	Calcium Content (mg)
Whole milk	8 oz.	291
1% milk	8 oz.	300
2% milk	8 oz.	297
Ice cream	1 cup	200
Yogurt	1 cup	345
Cottage cheese	1 cup	154
American cheese	1 oz.	150
Orange juice	8 oz.	300
Broccoli	1 cup	100
Spinach	1 cup	220

Table 3 - Popular calcium preparations

Calcium Product	Elemental Calcium (mg)	Carbonate or Citrate
Titalac® chewable	168	Carbonate
Tums® E-X	300	Carbonate
Mylanta® soothing lozenges	240	Carbonate
Viactiv® chewables	500	Carbonate
Citracal®	200	Citrate
OsCal®	500	Carbonate
Caltrate®	600	Carbonate
CalBurst®	500	Carbonate

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