

PERSONAL RESPONSIBILITY—HEALTH AND COMMUNITY



FACT SHEET: Bone Bank Deposits and Withdrawals

Osteoporosis, a disease of fragile bones, is a costly illness. While it doesn't usually kill people outright, it is a contributing cause of malnutrition, pneumonia, and loss of independence due to broken bones and inability to move about. It sends people to nursing homes or necessitates expensive home care. In 1995, total costs were estimated at \$13.8 billion for nearly 25 million people with osteoporosis.

An elderly woman's risk of fracturing a hip is greater than her combined risk of getting breast, uterine or ovarian cancer. One of every two women and one of every eight men will develop osteoporosis during their lifetimes.

Osteoporosis, like hypertension, is a "silent" disease. Calcium can dribble out of a person's bones for years without him or her being aware anything is wrong. Loss of spinal bone can be painful. The infamous "dowager's hump" and shorter stature are signs, but often a broken hip, wrist or spine first makes a person aware of what is happening.

Bones are living, changing tissue. Throughout life, bone is being removed and rebuilt. During adolescent and early adult years, more new bone is formed than is broken down. Later, particularly after menopause, more bone is lost than replaced. All women 50 years and older should have a bone scan to determine risk for osteoporosis.

BONE ROBBERS

Age, sex, race and heredity. (The person most at risk is an older, Oriental or non-Hispanic white woman who inherits certain genes, e.g. a thin, slender frame and a susceptibility to osteoporosis because of a low level of a vitamin D receptor gene.)

- Low levels of estrogen in women after menopause or from excessive dieting.
- Low testosterone level in men.
- Cigarette smoking and/or excessive alcohol or caffeine intake.
- Not enough weight-bearing exercise, such as walking or jogging.
- Certain drugs, including corticosteroids, excessive thyroid medications, barbiturates and anticonvulsants.

BONE-BUILDING NUTRIENTS

Calcium

Dairy products are the best source of calcium, especially milk, yogurt and most cheeses. Tofu made with calcium sulfate, canned fish with bones, and calcium-fortified orange juice are also excellent. New recommendations specify 1,000 milligrams (mg) for adults, except 1,200 mg for women and men 51 years and older.

Vitamin D

Calcium needs vitamin D to be absorbed. Milk, cereals with vitamin D added and sunlight are best sources.

Most foods are without vitamin D. Many people, especially the elderly, do not get enough vitamin D. New recommendations are 5 micrograms (mcg) a day, or 200 International Units (IU), for children and adults; 10 mcg, or 400 IU, for those 51-70 years; and 15 mcg or 600 IU, for those over 70 years.

Phosphorus

Bones need phosphorus, but it is best to keep it in balance with calcium. Most phosphorus comes from protein-rich foods, grains, processed foods and colas. Some research suggests that diets high in phosphorus and low in calcium increase susceptibility for osteoporosis.

Magnesium

Best sources are dark green, leafy vegetables. It is also found in nuts, whole grains and seafood.

Other trace nutrients

Minerals (fluoride, copper, manganese and zinc) may be important in maintaining bone health. Even vitamin K appears to help prevent bone fractures.

BONE-BUILDING INHIBITORS

Sodium and Salt

After menopause, each 500 milligrams of sodium increases calcium loss by about 10 milligrams per day.

Protein

Recommendations for calcium in the United States are

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higher than in other countries because of our generally high protein consumption. Every gram of protein can result in 1 milligram of calcium loss, likely due to sulfur-containing amino acids, but other factors are involved. Many elderly individuals do not get enough protein and may need more protein to mend fractures.

Alcohol

Moderate amounts of alcohol do not appear to have an effect, but high amounts interfere with many nutrients.

Caffeine

Caffeine has a small effect, if calcium intake is adequate.

Phytate/Oxalate

High amounts of phytate (in wheat bran and dried beans) and oxalate (in spinach and rhubarb) can lower the amount of calcium absorbed. Phytic acid and oxalic acid can combine with free soluble calcium to make calcium phytate and calcium oxalate, which are more difficult to absorb.

Preventing osteoporosis is more than just taking a calcium pill: It involves the whole diet. People who are most susceptible to fragile bones are those who use crash diets or are chronic dieters, eat unbalanced diets, or leave out one or more of the five food groups, particularly dairy foods.

WHAT YOU CAN DO

The three most important things you can do to prevent or reduce symptoms of osteoporosis are:

1. Diet

Bones cannot be built and maintained without the right balance of nutrients. Two nutrients that are most apt to be low are calcium and vitamin D. Other minerals, vitamins and protein are also important. Some experts recommend that women 70 years and older without estrogen replacement therapy should consume 1,500 mg of calcium daily. Ask for a bone scan if you are 50 years or older, check with your health-care provider about what is best for you, and follow the Food Guide Pyramid and Dietary Guidelines for Americans.

2. Exercise

Weight-bearing exercise such as walking, jogging, running and hiking can help preserve bones. Even being overweight can help maintain calcium; however, gaining weight just to protect bones is not recommended. Swimming, bicycling and stretching are good exercises, but they do *not* preserve bones.

3. Drugs

Calcium and vitamin D supplements can help. Supplements need to be considered drugs, because excessive amounts can endanger health. The Tolerable Upper Intake Level (UL) for calcium is 2.5 grams (2,500 mg); for vitamin D it is 50 mcg (2,000 IU) daily. Check labels to see exactly how much calcium and vitamin D are present.

Hormone Replacement Therapy (HRT)

The hormones estrogen and testosterone help protect women and men from osteoporosis and heart disease. Unless women are at high risk for breast cancer, their physicians will likely recommend hormone replacement therapy, such as low-dose estrogen. Older men may need low-dose testosterone if their hormone levels are low. Overall for most older adults, the risk of osteoporosis and heart attack is much higher than that of breast cancer.

Calcitonin and biphosphonates, such as alendronate and etidronate, are used to treat osteoporosis or slow bone loss. Other drugs are being tested.

SUMMARY

Treating osteoporosis and protecting your bones is more than just taking calcium supplements and preventing falls. The whole diet is important, but calcium and vitamin D are particularly critical. The other two most important bone protectors are weight-bearing exercise and proper hormone levels, especially estrogen for women.

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