



Osteoporosis: Silent No More

Recent scientific findings have led to significant advances in the diagnosis and treatment of osteoporosis.

SOME PEOPLE CONSIDER OSTEO- porosis an example of a “silent” disease because it progresses gradually with minimal symptoms. But today’s health care providers have learned that the effects of osteoporosis are definitely not silent. The disease may result in markedly decreased functional ability, increased pain and suffering, and vast- ly increased costs of health care.

Defining Osteoporosis

Osteoporosis has become one of the leading contribu- tors to disability and death for older people. The word osteoporosis refers to porous or thin bones. Although bone loss occurs normally with aging, osteo- porosis exists when bone mass decreases to a point that exacerbates the likeli- hood of a patient sustaining a fracture from minimal trauma.

Bones rebuild throughout life because of the interac- tion between osteoclast and osteoblast cells. Osteoclast cells break down old bone, and osteoblast cells replace it with new bone. In early life, the bone-forming osteoblasts work faster than the bone- destroying osteoclasts, producing strong and dense bones. Bone strength and density typically peak at between the ages of 25 and 30. After about age 30, however, the human body begins to

break down old bone tissue faster than new bone tissue forms in its place, leading to a gradual decrease in total bone mass.

Both men and women experience

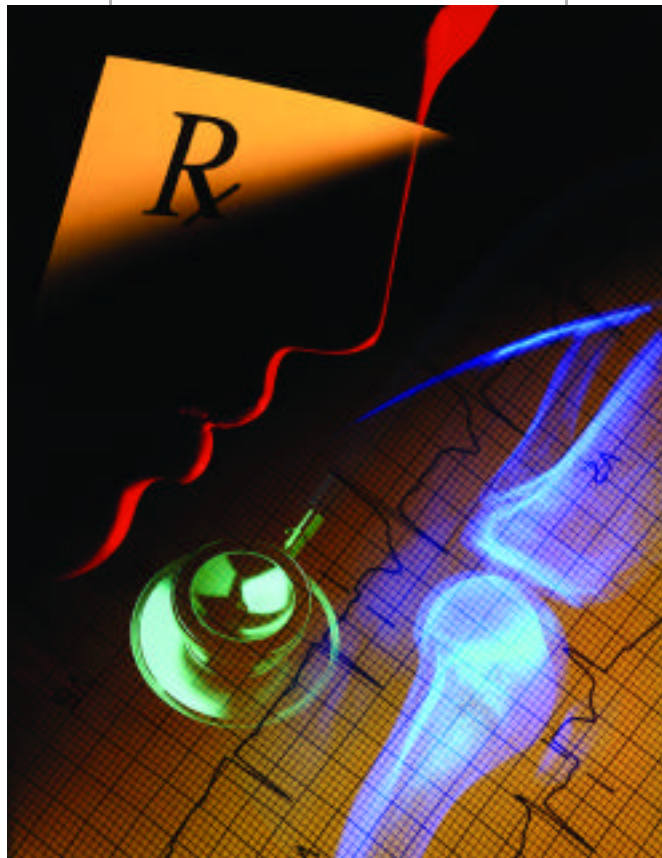
There are many risk factors for developing osteoporosis. Some are not modifiable. For example, men and women who have a small-boned and thin body type are at greater risk.

When bone begins to break down at a more rapid rate than it builds up, individuals with smaller, lighter bones have less reserve to safely withstand the changes in bone structure.

Increased age is associat- ed with a greater prevalence of osteoporosis, but heredity also plays a part. For exam- ple, Caucasian and Asian women have nearly twice the risk of hip fracture when compared with African- American women of the same age. Premature menopause or estrogen defi- ciency increases the risk of osteoporosis, as do chronic conditions such as liver dis- ease or bowel inflammation.

Hyperthyroidism or excessive treatment with thyroid hormone for hypothyroidism can con- tribute to bone loss. Steroids such as prednisone may also cause rapid bone

loss when given at high doses for lengthy periods. A deficiency of calci- um or of vitamin D—which aids in the absorption of calcium into the bone—



this decrease in bone mass. Because the estrogen hormone helps to maintain bone, women experience the loss at a greater rate after age 45 to 55 due to a decrease in production of estrogen. After age 65, studies show that men and women lose bone mass at nearly the same rate.

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can cause bone softening, increased bone loss, and increased risk of fracture. Vitamin D is formed naturally in the body after exposure to sunlight. Fifteen minutes per day is satisfactory for the body to form enough vitamin D, but some long term care patients may not even have this brief period of exposure, especially during winter months. In these cases, individuals can obtain vitamin D through their diet by eating fish, fortified dairy products, or fortified cereals. For those who do not eat adequate amounts of these foods, dietary supplements may be necessary.

Symptoms Of Osteoporosis

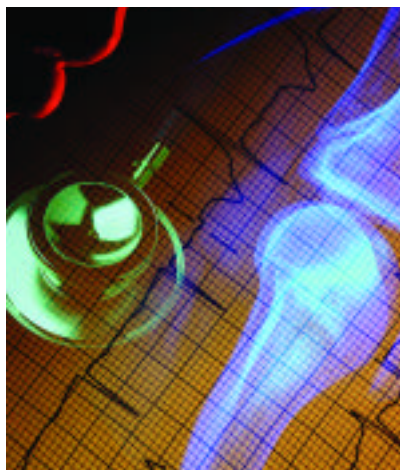
Although the bone loss associated with osteoporosis is often painless, the end result can be a very painful fracture. Wrist, spine, and hip fractures have the highest incidence. A common example is a Colles' fracture of the wrist, which usually results when a person attempts to break a fall using the hand. A Colles' fracture typically heals after four to six weeks in a cast; however, deformities may be visible if the bones do not align satisfactorily. In some cases, such a fracture may result in persistent pain and circulatory problems.

Unlike the wrist or hip, the vertebral bones of the spine can irreversibly compress as they fracture. Sometimes there is little discomfort. Other times, an individual may experience excruciating pain for months.

When several vertebrae compress, a person may lose several inches in height. This compression fracture may cause rounding of the spine—a deformity called kyphosis, or more commonly, a "dowager's hump." With this condition, the chest configuration changes in a downward direction, and the abdomen may protrude. Lifting the head sometimes results in neck pain.

The incidence of hip fracture increases with age. By age 80, the incidence of hip fracture in both men and women is quite substantial. The hip fracture usually occurs at the top section of the femur after a fall or, in

some cases, even spontaneously. A hip fracture usually produces severe pain and is likely to require hospitalization or surgery. Because of the advanced age and frailty of these individuals, complications of surgery are common. Hip fractures are also a bad prognostic sign: Nearly 20 percent of patients die



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of complications within one year of a hip fracture. Only 25 percent return to their previous functional status even after rehabilitation.

Diagnosing Osteoporosis

Measuring bone mass in the spine, wrist, and hip—areas of the skeleton where a fracture would be most likely to occur—can help doctors to identify patients at increased risk of fractures before they happen. Tests to measure

bone mass also help measure the effectiveness of treatment. The most widely used method for measuring bone mass—more specifically, bone mineral density—is dual-energy X-ray absorptiometry (DEXA). During a DEXA scan, a patient lies on a padded table with pillows placed to align the lower spine as much as possible. With the patient fully clothed, a technician records hip and spine measurements. When repeated and compared with the baseline measurements, these bone-density measurements can help determine whether the treatment of osteoporosis is producing the desired effect for a particular patient.

Markers of bone turnover can be used to augment a bone evaluation in selected cases. Analysis of urine or blood for markers of bone turnover can reveal and identify individuals who may be losing bone at an accelerated rate.

As part of a more extensive diagnostic evaluation, the doctor may order laboratory tests to help determine a cause for the increased rate of bone resorption. Levels of calcium, vitamin D, and several hormones may provide further information about the cause of osteoporosis and an approach to treatment.

Treatment Of Osteoporosis

The principal treatment goal for an older patient is prevention of fracture and its associated problems. Effective treatment can minimize or slow bone loss and protect the patient's function. Patients, families, and staff should learn about commonly used medications as well as the important roles of exercise, diet, and fall prevention.

Adequate intake of calcium is a first-line therapy, along with attention to adequate amounts of vitamin D. Both men and women should take at least 1,500 mg. of elemental calcium daily. Much of this can be part of a diet that includes dairy foods. A useful rule of thumb is that a glass (eight ounces) of milk has 250-300 mg of calcium. Thus,

a person needs the equivalent of five to six glasses of milk or equivalent portions of dairy food each day. There are many available calcium supplements, including multiple brands of calcium carbonate, calcium phosphate, and calcium citrate. The labels of each different supplement show the available elemental calcium in that preparation. Along with these, individuals who have inadequate daily exposure to sunlight should take 800 IU of vitamin D daily, either separately or combined with the calcium supplement into one tablet.

Estrogen Use Declines

Hormone replacement therapy with estrogen has become less prevalent over the past several years because of increased evidence linking estrogen to breast cancer. A class of medications called bisphosphonates is increasingly being used to treat osteoporosis. The bisphosphonates are very effective at deactivating the osteoclasts that destroy bone. They may be conveniently dosed just one time per week; however, it is important for providers to be aware of certain precautions for administering the tablets: The bisphosphonates must be swallowed whole with a full glass of water on an empty stomach in order to avoid esophageal side effects. Another alternative medication is calcitonin-salmon, which helps to increase serum blood levels by allowing bone to hold onto calcium rather than giving it up. Finally, medications such as raloxifene, a selective estrogen receptor modulator, mimic estrogen's actions without increasing the risk of breast cancer; however, raloxifene does not alleviate menopausal symptoms like night sweats or hot flashes.

Pain management is an essential part of treatment. Moderate weight-bearing exercise like walking is beneficial to bones of the spine and hips. Pain medication can help patients to ambulate without discomfort and thus maintain their mobility.

Providers should conduct a thorough

evaluation of a patient's immediate environment to avoid fall hazards like uneven pavement or floors, loose carpets or rugs, slippery floors or tubs, steep steps, and any loose cords. Canes or walkers provide added confidence and support for those with occasional balance problems. Adequate nighttime

lighting and shoes with good support also help prevent falls.

With early identification of patients at risk, attention to environmental hazards, and consistent follow-up of treatment, efforts to avoid falls, prevent rapid bone loss, and build bone density will provide a better quality of life. ■