



## **What is osteoporosis?**

Osteoporosis means bones are less dense, more fragile, and at greater risk for breaking, even with small injuries. This problem often affects bones in the hip, spine, and wrist. Osteopenia means bones are somewhat less dense than normal, but not as bad as in osteoporosis. A person with osteopenia is at risk of getting osteoporosis.

## **My joints ache. What is the difference between osteoporosis and osteoarthritis?**

**Osteoporosis** makes bones fragile but rarely causes pain, unless you actually break a bone. **Osteoarthritis** is a disease of the joints that can cause pain and stiffness. Osteoarthritis can cause joint deformities, but it does not make your bones fragile.

## **What are the risk factors for osteoporosis?**

Osteoporosis increases with age. Bones are strongest around ages 20 to 35. After that, bones slowly become less dense and more fragile as you get older.

Osteoporosis is common in women after menopause. Women start with less bone density than men and lose bone density sooner and faster than men. After menopause, women produce much less of the hormone estrogen. Estrogen helps women's bones stay strong. For example, estrogen helps deposit calcium in the bones. Low levels of estrogen cause a weakening of the bones.

Osteoporosis is most common in white and Asian women, especially slender women, but it can occur in women of any race. Older women are about twice as

likely to get osteoporosis as older men. You are also at higher risk if you have a family history of osteoporosis.

In addition to aging, other causes of osteoporosis are:

- Prior broken bones as an adult (in the absence of severe trauma)
- Current cigarette smoking
- Low body weight
- Frailty, like not being able to rise from a chair without help
- Long term use of certain drugs like prednisone, heparin, and some anti-seizure drugs
- Poor gastrointestinal absorption, either due to surgery or illness such as sprue or Crohn's disease
- Hyperparathyroidism
- Alcoholism
- Severe liver disease
- Kidney failure
- Too little calcium in the diet
- Not enough weight-bearing exercise, such as walking, dancing, or lifting weights
- Too much intense exercise (such as marathon running), which reduces estrogen levels
- Long periods of bed rest during serious illness, which speeds up the loss of calcium from bones
- Eating disorders or too much dieting, which reduce estrogen levels.

### **How does osteoporosis occur?**

Bone density in later life depends equally on how strong your bones were when you were young, and on how quickly you lose bone density later on. Bone density improves until your 30s and depends mainly on diet (calcium and vitamin D), physical activity, and genetics. We all lose some bone density after

middle age, but many women lose bone density faster during the first few years after menopause.

### **What are the symptoms?**

You may have no symptoms until a bone breaks. Broken bones (called “fractures”) are the most common problem for people with osteoporosis. Often it is the hip, arm, or wrist that breaks.

Any bone affected by osteoporosis can break, but the worst are the vertebrae of the spine and the hip bones. Broken vertebrae can cause back pain, loss of height, curved spine, and stooped posture. A broken hip almost always needs hospitalization and surgery. About half of women who have a broken hip will spend some time in a nursing home. About a quarter of women with hip fractures require long term nursing care. One in five people with an hip fracture from osteoporosis die within a year.

### **How is it diagnosed?**

Your doctor may suspect that you have osteoporosis based on your risk factors, loss of height, or from an x-ray taken for some other problem. There are no easy ways to check bone strength. Bone density accounts for about 70% of bone strength, so measuring it is a good way to predict the risk of fracture.

A DXA (dual energy x-ray absorptiometry) scan of the spine and/or hip is the best way to check bone density. A DXA scan uses x-rays, but instead of creating a picture, it uses a detector and a computer to calculate bone density. A DXA scan is painless and typically takes less than 10 minutes. The radiation exposure per site tested is about the same amount we get in daily life due to background radiation from space. Ultrasound of the heel or wrist (sometimes offered at health screening fairs) can also provide helpful information about

bone density. You should discuss such results with your doctor to see if you need further testing.

Among several numbers produced from a DXA scan, T-scores are often used. A T-score compares your bone density to that of healthy young adult. A T-score of -1 or greater is normal, between -1 and -2.5 is considered osteopenia, and a score of -2.5 or lower is osteoporosis. Deciding when to treat depends on both your T-score and your risk factors.

### **What is the treatment?**

Treatment does not cure osteoporosis, but treatment can slow down the loss of bone and help rebuild some bone. To maintain good bone health and prevent osteoporosis you should eat foods rich in calcium and vitamin D (or take supplements if needed), get regular physical activity, avoid smoking, and avoid heavy alcohol use. Consuming enough calcium and vitamin D is important for everyone because it builds bone density in your early and middle years and maintains bone strength in later years. Most adults should consume 1200-1500 mg of calcium and 400-800 IU of vitamin D each day. If you have low bone density but not osteoporosis, your doctor may prescribe medication to reduce your risk of developing osteoporosis and fracture. Weight-bearing exercise, such as walking or stair climbing, also helps keep your bones strong. Doing this kind of physical activity every day can help stop further weakening of your bones.

### **What medications are used for osteoporosis?**

The goal of osteoporosis treatment is to avoid fracture. You should continue (or begin) to consume adequate amounts of calcium and vitamin D. To further reduce your risk of fracture, your doctor may suggest a medication, although the exact recommendation will depend on your situation. Both alendronate (Fosamax®) and risedronate (Actonel®), which are bisphosphonates, can

decrease the risk for hip and spine fractures in postmenopausal women with osteoporosis. They also reduce the risk of fracture in men with osteoporosis and in people who take glucocorticoid medications like prednisone.

Hormone replacement therapy (HRT) may be used in women for short term management of menopausal symptoms, but is generally not used for long term prevention of fractures. HRT reduces the chance of fracture and provides relief of menopausal symptoms such as hot flashes, night sweats, and vaginal dryness. However, HRT increases the risk of blood clots in the legs and lungs and can affect the risk of other health problems.

Raloxifene (Evista®) is a medication with some but not all of same properties as estrogen. It decreases the risk for spine fracture, may reduce risk the for breast cancer, but in a small number of women (3-6%) it increases hot flashes.

Calcitonin (Miacalcin®), available as a nose spray, is another medication used for osteoporosis. It appears to protect against spine fractures and is sometimes used to help treat the pain of an acute spine fracture.

### **If I have osteoporosis, what can I do to reduce my risk of injury?**

You can reduce your risk of injury and broken bones if you:

- Increase your activity level gradually (but avoid unusually high impact sports)
- Wear supportive shoes with low heels and non-slippery soles
- Use a cane or other support when walking, if you need it
- Maintain a safe, well-lit, and uncluttered home to help prevent falls
- Avoid throw rugs on your floors at home
- Avoid icy, wet, or slippery surfaces, especially in the bathroom
- Use nonskid mats in the shower and bathtub

## Where can I get more information about osteoporosis?

- NIH Osteoporosis and Related Bone Diseases National Resource Center  
1232 22nd Street, NW  
Washington, DC 20037-1292  
**Phone:** (202) 223-0344  
**Toll-free:** (800) 624-BONE (2663)  
**Fax:** 202-293-2356  
**Email:** NIHBoneInfo@mail.nih.gov  
**Website:** <http://www.bones.nih.gov>  
For information about resources in other languages, Email to  
NIHBoneInfo@mail.nih.gov
- National Osteoporosis Foundation  
1232 22nd Street NW  
Washington, DC 20037-1292  
**Phone:** (202) 223-2226  
**E-mail:** patientinfo@nof.org  
**Website:** <http://www.nof.org/>

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