What is osteoporosis? What is osteopenia?
Osteoporosis is a problem in which bones are less dense and more fragile and thus at greater risk for fracture, even with a small amount of trauma. This disease often affects bones in the hip, spine, and wrist. Osteopenia is the term used for bones that have become somewhat less dense than normal, but not as severe as in osteoporosis. A person with osteopenia is at risk for getting osteoporosis.

My joints ache - what is the difference between osteoporosis and osteoarthritis?
Osteoporosis causes bones to be more fragile but rarely causes pain - unless you actually break a bone. Osteoarthritis is a disease of the joints and commonly causes pain and stiffness. Osteoarthritis can cause deformities of joints, but is not associated with an increase in risk of fracture.

What are the risk factors for osteoporosis?
In young healthy adults, bones continue to grow, reaching their greatest strength around ages 20 to 35. After that, bones slowly become weaker as you get older.

The risk of osteoporosis increases with age. Osteoporosis is most common in women after menopause, between the ages of 45 and 55. Women have less bone mass than men and lose bone mass sooner and faster than men. After menopause, women produce much less of the hormone estrogen. Estrogen helps women's bones stay strong. For example, it 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. In any given ethnic group, older women have about twice the risk for 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 fracture as an adult (in the absence of severe trauma)
- Current cigarette smoking
- Low body weight
- Frailty, for example: not being able to rise from a chair without help
- Long term use of certain drugs, like, prednisone, heparin, and some but not all anti-seizure drugs
- Medical conditions that impair 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
- 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 it occur?**

Bone density in later life depends in equal amounts on peak mass achieved in
youth and on later rate of loss. Skeletal mass is the highest in your 30s and depends mainly on diet (calcium and vitamin D), physical activity, and genetics. Although we all have gradual decline in bone density after middle age, most women during the first few years after menopause may have a faster rate of bone loss.

**What are the symptoms?**

You may have no symptoms until a bone breaks. Broken bones are the most common problem for people with osteoporosis. Often it's the hip, arm, or wrist that breaks. If you want to prevent or treat osteoporosis, the goal is to avoid fracture.

All bones can be affected by osteoporosis, but the worst osteoporotic fractures occur in the vertebrae of the spine and in the hip. Vertebral fractures can cause back pain, loss of height, curved spine, and stooped posture. Many vertebral fractures do not, however, cause any pain. A hip fracture almost always requires hospitalization and surgery. About half of women who have a hip fracture spend at least some time in a nursing home. About half of those (or a quarter of women with hip fractures) require long term nursing care. One in five persons who have an osteoporotic hip fracture die within the next year.

**How is it diagnosed?**

Your health care provider may suspect that you have osteoporosis based on your risk factors, loss of height, or even from an x-ray taken for some other problem. There are no practical methods to assess overall bone strength, but bone mineral density (which can be measured) accounts for about 70% of bone strength and is the best way to predict the risk of fracture.

A DEXA [Dual Emission X-ray Absorptiometry] scan of the spine and/or hip is most often used and is the best test to predict bone mineral density. A DEXA
scan uses x-rays, but instead of creating a picture by exposing film, it uses a
detector and a computer to calculate bone density. The test is painless and
typically takes less than 10 minutes. The radiation exposure per site tested is
approximately the same as that in daily background radiation from space. A
screening test of the heel or wrist by ultrasound (for example, sometimes
offered at health screening fairs) may also provide helpful information about
bone density. You should discuss such results with your physician to determine
if you need further evaluation.

Among several numbers produced from a DEXA scan, T-scores are most often
used for interpretation. A T-score compares your bone density to that of
healthy young adult; -1 or greater is normal; -2.5 or lower is osteoporosis; and
between -2.5 and -1 is considered osteopenia. Deciding when to treat depends
on both an individual's T-score and risk factors.

**What is the treatment?**

Treatment does not cure osteoporosis, it but can slow down the loss of bone
and rebuild some bone. To maintain good bone health and prevent
osteoporosis you should eat a balanced diet that includes adequate calcium and
vitamin D (using supplements when necessary), engage in regular physical
activity, refrain from smoking, and avoid heavy alcohol use. It is important to
consume enough calcium and vitamin D throughout your life, in order to
achieve maximal peak bone density in early and middle years and to maintain
bone in later years. For most adults, a daily intake between 1200 and 1500 mg
of calcium and 400-800 IU of Vitamin D is both safe and effective. If you have
low bone density but not osteoporosis, you doctor may, depending on your
situation, recommend a medication to reduce 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
may 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 risk of fracture your doctor may suggest a medication, although the exact recommendation will likely depend on your situation. Both alendronate (Fosamax®) and risedronate (Actonel®), which are bisphosphonates, have been shown to decrease risk for hip and spine fractures in postmenopausal women with osteoporosis. They also appear to reduce risk of fracture in men with osteoporosis and in persons who take glucocorticoid medications, such as prednisone.

Hormone replacement therapy (HRT) may be used 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 excellent relief of menopausal symptoms such as hot flashes, night sweats, and vaginal dryness. However, HRT increases the risk for deep venous thrombosis (blood clots in the leg) and pulmonary embolus (blood clots in the lung). Estrogen combined with a progestin slightly decreases risk for colon cancer, but increases risk for coronary artery disease (heart attack), stroke, and breast cancer. Estrogen alone, without a progestin, increases the risk for stroke and for uterine cancer.

Raloxifene (Evista®) is a medication that has some but not all of same properties as estrogen; it decreases risk for spine fracture, may reduce risk the for breast cancer, but in a small number of women (3-6%) 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.
How long will the effects last?
The risk of a broken bone resulting from osteoporosis increases with age. Once menopause begins, most women, especially Caucasian and Asian women, need to take precautions for the rest of their lives to prevent osteoporosis.

If I have osteoporosis, what can I do to reduce my risk of injury?
You can reduce the 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 support for walking, such as a cane, 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?
Osteoporosis and Related Bone Diseases National Resource Center (ORBD-NRC)
1232 22nd Street, NW
Washington, DC 20037-1292
Phone: (202) 223-0344
Toll-free: (800) 624-BONE (2663)
E-mail: orbdnrc@nof.org
http://www.osteo.org/

National Osteoporosis Foundation
1232 22nd Street NW
Washington, DC 20037-1292
Phone: (202) 223-2226
E-mail: patientinfo@nof.org
http://www.nof.org/