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## **Osteopenia**

Osteopenia refers to bone mineral density that is lower than normal peak bone mineral density but not low enough to be classified as osteoporosis. Bone mineral density is a measurement of the level of minerals in the bones, which indicates how dense and strong they are.

Bones naturally become thinner as people grow older because, beginning at about 30 years of age, existing bone cells are reabsorbed by the body faster than new bone is made. As this occurs, the bones lose minerals, heaviness (mass), and structure, making them weaker and increasing their risk of breaking. Both women and men are more apt to have osteopenia if they fail to reach their peak bone mineral density by age 30. Women are more likely to develop osteopenia than men. This is because women have a lower peak bone mineral density and because the loss of bone mass speeds up as hormonal changes take place at the time of menopause.

Prevention and treatment of osteopenia include regular exercise, a nutritious diet with plenty of calcium and vitamin D, and lifestyle changes such as quitting smoking and avoiding excessive alcohol.

## **Osteoporosis**

Osteoporosis is a disease that weakens bones, increasing the risk of sudden and unexpected fractures. Literally meaning "porous bone," it results in an increased loss of bone mass and strength. The disease often progresses without any symptoms or pain.

Many times, osteoporosis is not discovered until weakened bones cause painful fractures usually in the back or hips. Unfortunately, once you have an osteoporotic fracture, you are at high risk of having another. And these fractures can be debilitating. Fortunately, there are steps you can take to prevent osteoporosis from ever occurring. And treatments can slow the rate of bone loss if you already have osteoporosis.

### What Causes Osteoporosis?

Though we do not know the exact cause of osteoporosis, we do know how the disease develops. Your bones are made of living, growing tissue. An outer shell of cortical or dense bone encases trabecular bone, a sponge-like bone. When a bone is weakened by

osteoporosis, the "holes" in the "sponge" grow larger and more numerous, weakening the internal structure of the bone.

Until about age 30, a person normally builds more bone than he or she loses. During the aging process, bone breakdown begins to outpace bone buildup, resulting in a gradual loss of bone mass. Once this loss of bone reaches a certain point, a person has osteoporosis.

### How Is Osteoporosis Related to Menopause?

There is a direct relationship between the lack of estrogen after menopause and the development of osteoporosis. Early menopause (before age 40) and any prolonged periods in which hormone levels are low and menstrual periods are absent or infrequent can cause loss of bone mass.

### What Are the Symptoms of Osteoporosis?

Osteoporosis is often called the "silent disease" because bone loss occurs without symptoms. People may not know that they have osteoporosis until their bones become so weak that a sudden strain, bump, or fall causes a fracture or a vertebra to collapse. Collapsed vertebrae may initially be felt or seen in the form of severe back pain, loss of height or spinal deformities such as stooped posture.

### Who Gets Osteoporosis?

Important risk factors for osteoporosis include:

- Age. After maximum bone density and strength is reached (generally around age 30), bone mass begins to naturally decline with age.
- Gender. Women over the age of 50 have the greatest risk of developing osteoporosis. In fact, women are four times more likely than men to develop osteoporosis. Women's lighter, thinner bones and longer life spans account for some of the reasons why they are at a higher risk for osteoporosis.
- Ethnicity. Research has shown that Caucasian and Asian women are more likely to develop osteoporosis. Additionally, hip fractures are twice as likely to occur in Caucasian women as in African-American women. However, women of color who fracture their hips have a higher mortality.
- Bone structure and body weight. Petite and thin women have a greater risk of developing osteoporosis in part because they have less bone to lose than women with more body weight and larger frames. Similarly, small-boned, thin men are at greater risk than men with larger frames and more body weight.
- Family history. Heredity is one of the most important risk factors for osteoporosis. If your parents or grandparents have had any signs of osteoporosis, such as a fractured hip after a minor fall, you may be at greater risk of developing the disease.

- Prior history of fracture/bone breakage.
- Certain medications. The use of some medications, such as the long term use of steroids (such as prednisone), can also increase your risk of developing osteoporosis.

### How Can I Know if I Have Osteoporosis?

A painless and accurate test can provide information about your bone health before problems begin. Bone mineral density tests, or bone measurements, are X-rays that use very small amounts of radiation to determine bone strength.

### How Is Osteoporosis Treated?

Treatments for established osteoporosis (meaning, you have osteoporosis) include:

- Hormone therapy.
- Medications such as Actonel, Calcimar, Evista, Fosamax, Miacalcin and Boniva
- Calcium and vitamin D supplements.
- Weight-bearing exercises (which make your muscles work against gravity)
- Injectable Forteo or PTH - to build bone.

### Should I Consider Hormone Therapy?

Hormone therapy is believed to be useful in preventing or alleviating the increased rate of bone loss that leads to osteoporosis. It is generally recommended for postmenopausal women who:

- Undergo an early menopause.
- Have a low bone mass, as measured by a bone density test and/or symptoms of menopause.
- Have several other risk factors for osteoporosis, such as: a petite, thin frame; family history of osteoporosis; or a medical problem associated with osteoporosis.
- While all of the risks associated with HT are not yet known, studies have shown that some types of HT may increase your risk of developing:
  - Breast cancer
  - Gallbladder disease
  - Blood clots
  - Stroke
- Heart disease (NOTE: Recent studies suggest that the increased risk of heart disease may be more relevant to women of advanced age.)

If you are using HT only for osteoporosis prevention, be sure to talk to your doctor so you can weigh the benefits of HT against your personal risk and consider other medications for your bones. If needed, your doctor can prescribe different treatments to help prevent osteoporosis and fractures.

### Is There a Safe Alternative to Hormone Therapy?

For those women who cannot take hormone therapy for health reasons or choose not to because of personal reasons, there are alternatives, including:

- Bisphosphonates. This group of medications includes the drugs Actonel, Fosamax and Boniva. Bisphosphonates are used to prevent and treat osteoporosis. They have been shown to slow bone loss, increase bone density and reduce the risk of spine fractures. Actonel and Fosamax have also been shown to reduce risk of non-spine fractures.
- Calcimar, Miacalcin. These drugs are made up of a naturally occurring hormone, called calcitonin, involved in calcium regulation and bone metabolism. Calcitonin helps slow bone loss and increase spinal bone density. Women report that it may ease pain associated with bone fractures.
- Evista. This drug is a selective estrogen receptor modulator (SERM) that has many estrogen-like properties. It is approved for prevention and treatment of osteoporosis and can prevent bone loss at the spine, hip, and other areas of the body. Studies have shown that it can decrease the rate of vertebral fractures by 30%-50%. It may increase the risk of blood clots like estrogen.
- Ultra low-dose estrogen patch. Menostar is available for women aged 60-80 with osteopenia who want to prevent osteoporosis.

### How Can I Prevent Osteoporosis?

There are a variety of ways you can protect yourself against osteoporosis, including:

- Exercise. Establish a regular exercise program. Exercise makes bones and muscles stronger and helps prevent bone loss. It also helps you stay active and mobile. Weight-bearing exercises, done at least three to four times a week, are best for preventing osteoporosis. Walking, jogging, playing tennis and dancing are all good weight-bearing exercises. In addition, strength and balance exercises may help you avoid falls, decreasing your chance of breaking a bone.
- Eat foods high in calcium. Getting enough calcium throughout your life helps to build and keep strong bones. The U.S. recommended daily allowance (RDA) of calcium for adults with a low-to-average risk of developing osteoporosis is 1,000 mg (milligrams) each day. For those at high risk of developing osteoporosis, such as postmenopausal women, the RDA increases up to 1,500 mg each day. Excellent sources of calcium are milk and dairy products (low-fat versions are

recommended), canned fish with bones like salmon and sardines, dark green leafy vegetables, such as kale, collards and broccoli, calcium-fortified orange juice, and breads made with calcium-fortified flour.

- **Supplements.** If you think you need to take a supplement to get enough calcium, check with your doctor first. Calcium carbonate and calcium citrate are good forms of calcium supplements. Be careful not to get more than 2,000 mg of calcium a day very often. That amount can increase your chance of developing kidney stones.
- **Vitamin D.** Your body uses vitamin D to absorb calcium. Being out in the sun for a total of 20 minutes every day helps most people's bodies make enough vitamin D. You can also get vitamin D from eggs, fatty fish like salmon, cereal and milk fortified with vitamin D, as well as from supplements. People aged 51 to 70 should have 400-800 IU daily. More than 2,000 IU of vitamin D each day is not recommended because it may harm your kidneys and even lower bone mass.
- **Medications.** Actonel, Evista, Fosamax and Boniva are some of the drugs available to help treat or prevent osteoporosis.
- **Estrogen.** Estrogen, a hormone produced by the ovaries, helps protect against bone loss. Replacing estrogen lost after menopause (when the ovaries stop most of their production of estrogen) slows bone loss and improves the body's absorption and retention of calcium. But, because estrogen therapy carries risks, it is only recommended for women at high risk for osteoporosis and/or severe menopausal symptoms. To learn more, talk to your doctor about the pros and cons of estrogen therapy.
- **Avoid certain medications.** Steroids, some breast cancer treatments (such as aromatase inhibitors), drugs used to treat seizures (anticonvulsants), blood thinners (anticoagulants), and thyroid medications increase the rate of bone loss if not used as directed. If you are taking any of these medications, speak with your doctor about how to reduce your risk of bone loss through diet, lifestyle changes and, possibly, additional medication.
- **Other preventive steps.** Limit alcohol consumption and do not smoke. Smoking causes your body to make less estrogen, which protects the bones. Too much alcohol can damage your bones and increase your risk of falling and breaking a bone.

### How Can I Get the Calcium My Body Needs If I'm Lactose-Intolerant?

If you are lactose-intolerant, or have difficulty digesting milk, you may not be getting enough calcium in your diet. Although most dairy products may be intolerable, some yogurt and hard cheeses might be digestible. You can also eat lactose-containing food by first treating it with commercial preparations of lactase (which can be added as drops or taken as pills). There are also lactose-free dairy products you can buy. You can also eat lactose-free foods high in calcium, such as leafy green vegetables, salmon (with bones) and broccoli.

### What Are Weight-Bearing Exercises and How Do They Help Strengthen Bone?

Weight-bearing exercises are activities that make your muscles work against gravity. Walking, hiking, stair-climbing or jogging are all weight-bearing exercises that help build strong bones. Thirty minutes of regular exercise (at least 3 to 4 days a week or every other day) along with a healthy diet may increase peak bone mass in younger people. Older women and men who engage in regular exercise may experience decreased bone loss or even increased bone mass.

### What Can I Do to Protect Myself From Fractures If I Have Osteoporosis?

If you have osteoporosis, it is important to protect yourself against accidental falls, which may result in fractures. Take the following precautions to make your home safe:

- Remove loose household items, keeping your home free of clutter.
- Install grab bars on tub and shower walls and beside toilets.
- Install proper lighting.
- Apply treads to floors and remove throw rugs.

Reviewed by the doctors at The Cleveland Clinic Women's Health Center (2006).