What Causes Osteoporosis?

by PATRICIA BRATIANU

Causes, Progression, and Treatment of Osteoporosis

The term osteoporosis means porous bone, which is an exact description of what the condition is. Osteoporosis is a common affliction, which is often preventable. Women are eight times more likely to develop osteoporosis than men are.

Can Osteoporosis be Prevented?

While osteoporosis usually appears in late adulthood, optimum prevention of the condition begins in childhood. Bone density, weight, and strength is greatest during adolescence.

Taking steps to build strong bones in childhood and adolescence is essential. This includes eating a diet rich in calcium, magnesium, zinc, copper, and vitamin D.

Regular exercise and exposure to natural light is important throughout the lifespan. High-risk individuals and people who have osteoporosis may require supplements and medication to prevent bone loss.

Your Genes and Osteoporosis

Heredity is the major determining factor for bone strength. Among women with osteoporosis, heredity is considered to be responsible for approximately 70% of bone loss. Osteoporosis in men is almost completely due to genetics.

You have a higher genetic risk of developing osteoporosis if you are a small framed Caucasian or Asian woman. Black women have a lower risk of the condition. You have an increased risk of developing osteoporosis if other members of your family have the condition.

The vitamin D receptor gene helps to build receptors in your cells that use vitamin D. Vitamin D is essential for bone health. It helps your body to use calcium and make strong bones. Dependent upon your genetic makeup, you may have the ability to use vitamin D and calcium well or you may not.

Medical experts are conducting research about the role of genetics and the formation of osteoporosis. In the future, people who have a high genetic risk for developing osteoporosis may receive preventative treatment early in life.

Next page: factors that impact the progression of osteoporosis.

Factors That Impact the Development and Progression of Osteoporosis

Bone loss in women accelerates after menopause. Women who undergo menopause at an early age have a higher risk of developing the condition than women who go through menopause later in life. Postmenopausal women have the highest risk of osteoporosis when compared to all other groups of people.

Several illnesses may predispose you to bone loss. Crohn's disease, kidney ailments, diabetes, and rheumatoid arthritis all increase your chances of developing osteoporosis, while chronic liver disease, advanced alcoholism and cirrhosis of the liver hastens the loss of bone.

Additionally, if you have an eating disorder such as anorexia or bulimia, you have a very high risk of developing osteoporosis. Being sedentary elevates the likelihood of osteoporosis. Smoking and excessive alcohol use are risk factors for osteoporosis.

Medications may increase the rate of bone loss. Corticosteroids, thyroid replacement medications, and drugs which are used to treat tuberculosis hasten bone loss. Antacids which contain aluminum, heparin, and tetracycline, may negatively impact bone health when used for an extended period of time.

Why Are Women More Likely than Men to Develop Osteoporosis?

There are many factors which make women more prone to osteoporosis than men are.

- Historically, women have consumed less calcium than men do. Adult women consume approximately half as much calcium in their diets than men.
- Generally speaking, women have less bone mass than men because their frames are usually shorter and smaller.
- Reabsorption of bone begins earlier in women than men.
- During and after menopause the protective, bone sparing effects of estrogen reduce dramatically. Rapid bone loss occurs during menopause. It slows again after 8-10 years.
- Unless women consume adequate amounts of calcium during pregnancy and breastfeeding, the mineral is leached from bones during these times.
- Women live longer than men do. As we age, the likelihood of bone loss increases.

Fortunately, most of these factors are preventable. Eating a healthy diet, taking supplemental calcium, and using natural hormone replacement therapies can reduce the impact of the factors which are not changeable.

While women are more likely than men to develop osteoporosis, it is important to keep in mind that both sexes can develop osteoporosis, particularly if other risk factors are present.

The Life of a Bone

Bone is made up of living tissue which is called collagen. It is also a storage area for minerals, including calcium and phosphorus. Compact bones are hard and dense. Spongy bones have many open spaces. Bones have several functions. They protect and support your body. Blood is manufactured in the marrow of bones.

You have three types of bone cells. Osteoblasts are young builders which form collagen. Collagen provides the framework that calcium and other minerals are deposited on. Osteocytes are mature, fully grown, "adult" bone cells that do the "work" of bones. Osteoblasts reabsorb osteocytes so that new, fresh, healthy bone cells can take the place of "worn out" osteocytes.

The insides of your bones are primarily made up of osteoblasts, while the outsides are largely osteocytes.

Like every other cell, tissue, and organ of your body, your bones are constantly being renewed. While it may seem like the bones that you have now were the same ones which you had last year, in truth, the cells have been replaced with new vital tissues.

Next page: what causes loss of bone density?

What Causes Loss of Bone Density?

When we are young, the osteoblasts are very active. Bones grow rapidly so that they can support the rest of our growing tissues. During young adulthood, the rate of new bone formation and old bone reabsorption is about equal.

However, as we age the rate of new bone formation slows down. If we have risk factors for osteoporosis, the resorption of bone may greatly exceed the production of new bone. Bones may weaken and develop a frail, lacelike structure which is prone to fractures.

Osteoporosis is most likely to develop in the vertebrae, hips, and wrists.

What are Signs of Osteoporosis?

Often there are no signs until pain or a fracture occurs. This is why screening tests are important.

Multiple fractures in the vertebrae may cause them to become displaced. A large hump may appear along the spine. This was historically known as a “dowager’s hump,” but medical professionals call this condition “kyphosis.” It is painful and may restrict mobility. Breathing may be difficult due to deformity.

If osteoporosis progresses, the bones may become so weak that they break with little provocation. A cough, minor bump, or even a hug may result in a fracture. A fractured hip may result simply from a change in position.

Preventing Osteoporosis, or Preventing it From Progressing

Fortunately, there are several strategies which you may use to enhance the health of your bones.

- Take a minimum of 1000 mg. per day of calcium. Ask your health care provider for an individualized recommendation.
- Take a vitamin D supplement. Many calcium supplements contain vitamin D, magnesium, and zinc. You need all of them. Ask your doctor to recommend or prescribe a good quality product.
- Obtain most of your calcium from your diet. Dairy products, enriched foods, sardines, and dark green vegetables are among the best sources.
- Get moderate exercise. If you have osteoporosis or other health problems, check with your doctor before beginning an exercise program.
- Do not drink more than one alcoholic beverage daily.
- Don’t smoke.

- Include soy and other foods in your diet which are high in phytoestrogens.
- Discuss options regarding natural hormone replacement therapy with your health care provider.
- Ask your health care provider about medications which slow bone loss.
- Protect your bones from injury.

If you are young, start protecting your bones today. You have the power to promote bone health regardless of whether or not you have osteoporosis. Take steps today which will prevent bone loss, pain, and debility.