



BONE PROBLEMS

WHAT IS BONE?

Bone is a living, growing material. It has a framework of protein. Calcium strengthens the bone framework. The outer layer of bone has nerves and a network of small blood vessels.

Old bone is removed and new bone is added all the time. In young people, more bone is added than is removed. Our bones get heavier and stronger. After age 30, more bone is removed. Bones become lighter and more brittle.

People with HIV have unusually high rates of two bone disorders: osteoporosis and osteonecrosis. We don't know if these are caused by HIV or by the medications used to treat it.

WHAT IS OSTEOPOROSIS?

Osteoporosis, or porous bone, occurs when too much mineral is removed from the bone framework. The bones become brittle and fracture more easily. The most common fractures are in the hip, the spine (vertebrae) and the wrist. **Osteopenia** is loss of bone minerals that is less severe than osteoporosis.

WHAT CAUSES IT?

As we age, our bones lose their mineral content. You may lose bone mineral faster if you are over age 50, a woman after menopause, Caucasian or Asian, or are slender and lightweight. Osteoporosis is also linked to a lack of calcium or vitamin D in your diet, smoking, significant use of caffeine or alcohol, and lack of physical activity. We don't yet understand why people with HIV have higher rates of osteoporosis. However, a recent study found a relationship between bone loss and the length of infection with HIV.

HOW DO I KNOW IF I HAVE OSTEOPOROSIS?

Unfortunately, many people find out they have osteoporosis by fracturing a bone. The only way to tell how fast your bones are losing mineral content is through tests. A DEXA scan, or Dual Energy X-ray Absorptiometry, is the most common test to measure bone mineral density.

Bone mineral density is reported as grams per square centimeter. This value is compared to the "peak" mineral density for a healthy 30-year-old of the same sex. A "T-

score" measures how far your bone mineral content is below the peak value. Osteoporosis is defined as having a T-score of -2.5 or lower. T-scores between -1.0 and -2.5 indicate osteopenia.

Bone density results can also be reported as a "Z-score." This compares your bone mineral content to people of your same age and sex.

WHAT CAN I DO ABOUT IT?

To prevent osteoporosis, get plenty of calcium while you are building bone (up to age 30). The higher your peak bone density, the better.

If you have osteopenia or osteoporosis, you can reduce your risk of fractures:

- **Take calcium supplements**, especially calcium carbonate or calcium citrate. Vitamin D can help with calcium absorption. Talk to your health care provider about the right amounts of supplements to take.
- **Do more weight-bearing exercise.** This seems to signal the bones to retain more mineral content.
- **Stop smoking and reduce your intake of caffeine and alcohol.**
- **Reduce your risk of falling.** Clear your walkways at home. Be careful on stairs or steep slopes.

The drug alendronate (Fosamax) is currently being studied in a phase III trial for treatment of osteoporosis related to HIV.

WHAT IS OSTEONECROSIS?

Osteonecrosis means bone death. It is also called avascular necrosis. It usually affects the femur, which connects your leg to your hip.

WHAT CAUSES IT?

Osteonecrosis is caused by a loss of blood supply to the bone. Injuries, excessive use of alcohol, and long-term use of corticosteroid drugs (to reduce inflammation) can cause osteonecrosis. Fat can clog blood vessels in the bone.

HOW DO I KNOW IF I HAVE OSTEONECROSIS?

Osteonecrosis causes pain in the joints. For example, pain in the hip area could be a sign of osteonecrosis. At first the pain might only occur when you put weight on the joint.

In more severe cases the pain could be constant.

A magnetic resonance imaging (MRI) scan can detect early stages. X-rays and other scans can detect advanced osteonecrosis. Some health care providers also use surgery to test for osteonecrosis.

WHAT CAN I DO ABOUT IT?

A healthy person can sometimes recover from osteonecrosis, especially if it was caused by an accident. The body can repair damaged blood vessels and rebuild damaged bone.

If alcohol or steroid use causes osteonecrosis, you should stop using them. You can also reduce the weight you put on your joints. This is the opposite of treatment for osteoporosis.

Serious cases require surgery to repair the affected bone, or to replace a damaged joint, usually the hip.

THE BOTTOM LINE

People with HIV have unusually high rates of two bone disorders: osteoporosis and osteonecrosis. We don't know if HIV itself, or the antiretroviral medications used to treat it, are responsible for this.

You can help prevent osteoporosis by taking calcium or vitamin D supplements, stopping smoking, and reducing alcohol and caffeine. If you don't have joint pain, weight-bearing exercise can also help.

The drug alendronate is currently being studied for treatment of osteoporosis related to HIV.

You need special tests to know if you have osteoporosis. However, pain in the joints, especially the hip area, could be a sign of osteonecrosis. If you have joint pain, talk to your health care provider before you increase your exercise program.

FOR MORE INFORMATION

- National Osteoporosis Foundation, Washington, DC (202) 223-2226, <http://www.nof.org/>
- (In Spanish) Argentine Society for Osteoporosis, Buenos Aires <http://www.osteoporosis.org.ar/>

Revised July 19, 2006