



OSTEOPOROSIS

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 children and young adults, more bone is added than is removed. Our bones get larger, heavier and stronger. After age 30, more bone is removed than is added. Bones become lighter and more brittle.

People with HIV have unusually high rates of low bone mineral density and broken bones. This may be because of HIV infection itself. It may be made worse by some medications used to treat HIV.

WHAT IS OSTEOPOROSIS?

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

Loss of bone mineral density can occur without any pain or symptoms. Often, the first sign of osteoporosis is a bone fracture in the hip, wrist, or spine.

WHAT CAUSES IT?

As we age, our bones lose their mineral content. There are many factors that increase your risk for osteoporosis. Some you can control; others you can't.

Factors you cannot control include:

- Age older than 50
- Being a woman who has passed menopause
- Being Caucasian or Asian (African-Americans and Hispanics have lower risk)
- Having a parent who fractured a hip
- Being slender and lightweight

Factors that you can control include:

- Having low levels of calcium or vitamin D in your diet
- Smoking tobacco
- Drinking more than 3 alcoholic drinks a day
- Drinking a lot of coffee
- Being physically inactive. However, excessive physical activity also increases the risk of osteoporosis

Some **health conditions** also increase the risk of osteoporosis:

- Severe malnutrition
- Low testosterone levels
- Hepatitis C infection
- Rheumatoid arthritis and related diseases
- Advanced kidney disease
- Thyroid disorders
- Use of corticosteroid (anti-inflammatory) drugs such as prednisone or hydrocortisone for more than 3 months

HIV AND OSTEOPOROSIS

HIV infection causes a loss of bone mineral density. It is not clear how this happens. Studies suggest that HIV itself, chronic inflammation, other medical conditions or certain medications may contribute to bone disease.

Tenofovir (Viread, see fact sheet 419) is a drug used to fight HIV. Tenofovir use is linked to a reduction in bone mineral density.

ANTACIDS AND BONE MINERAL DENSITY

Long-term use of the antacids known as proton pump inhibitors can reduce bone mineral density. Common brands include Prevacid, Prilosec, and Nexium.

On the other hand, you might increase your calcium levels if you use calcium carbonate antacids such as Tums and Rolaids.

HOW DO I KNOW IF I HAVE OSTEOPOROSIS?

Unfortunately, there may be no signs of osteoporosis until you break 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. DEXA scans are quick, painless scans. DEXA scans are recommended for HIV+ people 50 years of age or older.

Bone mineral density is reported as grams per square centimeter. This is compared to the maximum bone 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 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 OSTEOPOROSIS?

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:

- **Make sure you are getting enough calcium.** Recommended levels vary by age:
 - 9-18 years old: 1300 mg / day
 - 19-50 years old: 1000 mg / day
 - Over age 50: 1200 mg / day

You might get enough calcium from your food, especially if you eat yoghurt or cheese, or drink milk. Almonds, beans, figs, broccoli, and many other foods are good sources of calcium. If you take calcium supplements, remember that Vitamin D helps your body absorb calcium.

- **Do more weight-bearing exercise.** This seems to signal the bones to retain more mineral content.
- **Reduce or quit smoking and reduce your intake of caffeine and alcohol.**
- **Reduce your risk of falling.** Clear walkways at home. Be careful on stairs or steep slopes. This is especially important for people who have peripheral neuropathy (see fact sheet 555) in their feet or legs.

Several studies showed that alendronate (Fosamax) increases bone mineral density in HIV+ individuals. Fosamax is a bisphosphonate medication. Some drugs of this type can be taken just once a month or once a year. The FDA has noted bone problems in the jaw and thigh as possible long term side effects of these drugs. Review with your doctor how long you should continue bisphosphonate therapy.

FOR MORE INFORMATION

- myHIVclinic, Osteoporosis, Key considerations for people living with HIV. <http://myhivclinic.org/osteoporosis>
- National Osteoporosis Foundation, Washington, DC (202) 223-2226, <http://www.nof.org/>
- Medline Plus at <http://www.nlm.nih.gov/medlineplus/osteoporosis.html>
- (In Spanish) Argentine Society for Osteoporosis, Buenos Aires <http://www.osteoporosis.org.ar/>
- Medline Plus in Spanish at <http://www.nlm.nih.gov/medlineplus/spanish/osteoporosis.html>
- [Information on bisphosphonates](#) from the FDA

Reviewed June 13, 2014