



# Osteoporosis

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## **WHAT IS BONE?**

Bone is a living, growing material. It has a framework of protein and 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. As we age, our bones get larger, heavier, and stronger. After age 30, more bone is removed than is added and 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 [antiretroviral medications \(ARVs\)](#) 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 OSTEOPOROSIS?**

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 person who has passed menopause
- Being Caucasian or Asian (Black/African American and Latinx/Hispanic people 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 (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 virus \(HCV\)](#) 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 DF \(Viread\)](#) 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 (PPIs) 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 (Dual Energy X-ray Absorptiometry) is the most common test to measure bone mineral density. DEXA scans are quick and painless. They are recommended for people with HIV who are 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.

## **TREATMENT FOR 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 yogurt 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 in their feet or legs.

Several studies showed that alendronate (Fosamax) increases bone mineral density in people with HIV. 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. Talk with your healthcare provider about how long you should continue bisphosphonate therapy.

## ***THE BOTTOM LINE***

Osteoporosis, occurs when too much mineral is removed from the bone framework. The bones become brittle and break (fracture) more easily. Osteopenia is mild or moderate loss of bone minerals.

People with HIV have unusually high rates of osteoporosis. HIV itself or some side effects of the medications used to treat HIV may contribute to this.

A bone fracture, especially the hip, wrist, or spine, could be a sign of osteoporosis. The only way to tell how fast your bones are losing mineral content is through tests. A DEXA scan (Dual Energy X-ray Absorptiometry) is the most common test to measure bone mineral density.

To prevent osteoporosis, get plenty of calcium while you are building bone (up to age 30). If you have osteopenia or osteoporosis, you can reduce your risk of fractures by increasing calcium in your diet, doing weight-bearing exercise regularly, reducing or eliminating smoking, caffeine, and alcohol, and taking care to prevent falls.

## ***MORE INFORMATION***

My HIV Clinic: [Osteoporosis: Key considerations for people living with HIV](#)

[National Osteoporosis Foundation](#)

MedlinePlus: [Osteoporosis](#)

FDA: [How Long Should You Take Certain Osteoporosis Drugs?](#)

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