How Is Osteoporosis Screened and Diagnosed?

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Getting an Osteoporosis Diagnosis

The International Osteoporosis Foundation (IOF) estimates that approximately 54% of postmenopausal white women are osteopenic, and 30% are osteoporotic. This number increases at age 80, with 27% of women being osteoporotic, but 70% being osteoporotic.

Unfortunately, care related to fractures related to osteoporosis and osteopenia is costly. The IOF states, "In 2005, there were predicted over 2 million fractures costing $17 billion. Nonvertebral fractures represented 73% of total fractures and accounted for 94% of total costs. The majority of costs are incurred by inpatient care (57%) and long-term care (30%) vs. 13% by outpatient care." These costs just account for fractures, not medications, and examinations related to diagnoses.

Understanding Osteopenia and Osteoporosis

You'll notice that we used the words "osteopenia" and "osteoporosis." The prefix osteo- relates to "bone" – thus, both medical diagnoses are conditions of the bones. Are osteopenia and osteoporosis the same thing? Almost – but not quite!

WebMD defines osteopenia as "when your bones are weaker than normal but not so far gone that they break easily, which is the hallmark of osteoporosis."

The National Osteoporosis Foundation defines osteoporosis as "a bone disease that occurs when the body loses too much bone, makes too little bone, or both. As a result, bones become weak and may break from a fall or, in serious cases, from sneezing or minor bumps."

Basically, osteopenia is a precursor to osteoporosis; however, having osteopenia does not mean that you will develop osteoporosis if proper steps are taken to ensure that you keep your bones strong.

Both conditions occur primarily in women, though men can also get them. They tend to occur mostly in people who are genetically predisposed to them. Other potential causes include:

- Eating disorders, such as anorexia and bulimia
- Overactive thyroid
- Untreated celiac disease
- Having been treated with chemotherapy or radiation in the past
- Having been prescribed certain medications, such as steroids and anti-seizure medications
  Smoking
- A diet lacking in vitamin D and calcium
- A diet rich in carbonated beverages
- Too much alcohol intake

Screening Guidelines for Osteoporosis

The US Preventive Services Task Force (USPSTF) published recommendations for screening for osteoporosis in 2018. According to Medscape, these guidelines were implemented so as to prevent fractures – "The updated guidelines include level B recommendations for the screening of women aged 65 years and older, as well as for younger women who have experienced menopause and also have an increased risk."

The USPSTF states, "Clinicians can help women avoid fractures by routinely screening those who are 65 and older, as well as younger, postmenopausal women at higher risk for osteoporosis — such as women who have low body weight, who smoke cigarettes, or whose parent has broken a hip."

Although the screening tool is complicated and takes into consideration various factors, women over the age of 65 generally should be screened with bone measurement testing to ensure that they are not high risk for fracture. Those under the age of 65 if they are at risk as deemed by a clinical assessment tool. Unfortunately, there are no specific guidelines for assessing men at this time.

How Is Osteoporosis Diagnosed?

Various tools can be used to assist with the process of osteoporosis diagnosis.

Initially, bone density testing is performed. Bone density testing "uses X-rays to measure how many grams of calcium and other bone minerals are in a square centimeter of bone." Basically, the higher the value, the higher the mineral count of the bone. When a number is high, there is less likely to be a fracture.

There are various types of central densitometers which can be used to test bone density:

- **Dual-energy x-ray absorptiometry (DXA)**: a DXA uses two x-rays to visualize the bone (generally the femur) and the lumbar vertebrae. This test only takes a few minutes. Using two x-rays makes the x-ray more accurate.
- **Quantitative computed tomography (QCT)**: a QCT measures bone density using a CT scanner. Similar to a DXA, a QCT measures bone density in the lumbar vertebrae and the femur.

Additionally, your physician may order peripheral densitometry. Peripheral densitometry is less accurate than central densitometry, but it more portable. A positive diagnosis on a peripheral densitometry test generally is followed up with a DXA of QCT test:

- **Quantitative ultrasound (QUS)**: often called "heel ultrasound," this test measures the bone density in the heel. QUS uses high-energy sound waves; dense bone bounces the sound waves back more quickly.
- **Peripheral dual-energy x-ray absorptiometry (pDXA)**: similar to a traditional DXA scan, this test measures bone density in the wrist or heel. This test is portable but costly.
- **Peripheral quantitative computed tomography (pQCT)**: similar to the QCT, this test measures bone density in the wrist or heel. It is costly and produces high amounts of radiation.

What Do the Test Results Mean?

The test results provide a T-score and a Z-score. The T-score is most commonly reported for older women, while the Z-score is more appropriate for younger women.

Here's what those results tell us.

T-score, according to Mayo Clinic, is "bone density compared with what is normally expected in a healthy young adult of the same sex. The T-score is the number of units — called standard deviations — that an individual's bone density is above or below the average."

- **-1 and above: normal bone density**

- **-1 to -2.5: low bone mass (osteopenia)**. Osteopenia can lead to osteoporosis.
- **-2.5 and below: Osteoporosis**.

Z-score, according to Mayo Clinic, is "the number of standard deviations above or below what's normally expected for a person's age, sex, weight, and ethnic or racial origin. A Z-score of -2 or lower in a premenopausal woman is considered to be low bone density."

Osteoporosis Diagnosis: The Bottom Line…

If you are over the age of 65 or you believe that you are at risk for developing osteopenia or osteoporosis, please discuss your concerns with your physician. They will be able to recommend a course of action if an osteoporosis diagnosis is suspected.