

# **Bone Mineral Density Testing**

## **What is bone mineral density testing?**

Bone mineral density testing is a way to see if your bones are healthy and strong. A bone mineral density test is used to measure the density (strength) of your bones. It is different from a bone scan, which is used to look for fractures or areas of bone inflammation.

## **Why is this test done?**

Your health care provider orders a bone mineral density test to check your bone health. Sometimes it is done as a routine screening test. At other times the test is done after you've broken a bone to see if your bones have lost strength and are at risk for breaking easily.

Your bones naturally lose some density as you get older. The loss of density weakens the bones. If your bones are somewhat less dense than normal, you have osteopenia. If your bones have lost a lot of density, you have osteoporosis.

Each year there are approximately 700,000 spine fractures and 250,000 hip fractures in the US. Most of these fractures occur in people who have osteoporosis. To help prevent such fractures, it is important to diagnose osteoporosis. Osteoporosis can then be treated with diet, exercise, and sometimes medicines to help make the bones strong again.

Bone mineral density tests are much more sensitive than normal x-rays. Normal x-rays do not detect bone loss until at least 30% of the bone mass has been lost. Bone mineral density tests allow health care providers to diagnose weakening bones at earlier stages. The test helps your health care provider decide if you need treatment for osteoporosis.

## **How do I prepare for this test?**

- You don't need to fast, stop taking any medicines, or limit your activity in any way before the test.
- Don't wear clothing with buttons, snaps, or zippers from the waist down on the day of the test. If you wear pants with an elastic waistband or cloth tie, you won't need to get undressed for the test.
- If you have recently had x-ray tests using barium or any nuclear medicine tests, you should have your bone density test at least a week after those tests.
- Tell your health care provider if you are or might be pregnant.

## **How is the test done?**

There are several different kinds of bone mineral density tests. Some use sound waves (ultrasound). Others use small amounts of radiation.

Dual energy x-ray absorptiometry (DXA or DEXA) is the most commonly done of the tests that use radiation. It is painless. During the test you lie down on a padded table. It's best not to move while the test is being done, but you can breathe normally. It takes just a few of minutes to check the bone density of your spine and hip. (The hip and spine are the most common areas checked because they are most prone to fracture if your bones are weakened.) The amount of radiation used for this test is very low. It is about the same amount you would get on a long plane flight and less than you are exposed to during a typical chest x-ray.

There are other tests besides the DEXA scan. Different tests have different strengths and weaknesses. Talk to your health care provider about which test is right for you.

## **How will I get the test result?**

Ask your health care provider when and how you will get the result of your test.

## **What does the test result mean?**

The test results are expressed as 2 types of scores:

- The T-score compares your bone mineral density (BMD) to the expected bone density value of a healthy young adult (about age 30) of the same sex and ethnicity.
- The Z-score compares your BMD to the BMD of a healthy person who is about the same age and body size as you.

The T score is usually used to make treatment decisions using a statistical measure called a standard deviation (SD). The SD measures the difference between your BMD and that of a healthy young adult (the reference value). Every -1 SD ("minus 1 standard deviation") equals a 10 to 12% decrease in bone density. T score results are classified as follows:

- A T score between 0 and -1 standard deviation (SD) is considered to be normal.
- A T score between -1 and -2.5 SD is classified as osteopenia (low bone mass).
- A T score of -2.5 SD or less is classified as osteoporosis (very low bone mass).

The Z score is used to interpret the test results if you are outside the normal testing range (very young or very old). It is the number of standard deviations (SD) above or below the reference value for your age.

## **What if my test result is not normal?**

The result of your test has to be interpreted along with your overall health, your risk factors for osteoporosis, and your lifestyle. Your health care provider will take all of these factors into account before deciding whether you need treatment and what the treatment might be. For some people, just getting more exercise and eating a better diet or taking a calcium and vitamin D supplement is enough. Other people need medicine to restore their bone density. You may need to repeat the test again in a year or two to see if the health of your bones has changed.

It's always a good idea to talk to your health care provider about your results and make sure that you understand what they mean. If your test results are not normal, ask your health care provider:

- if you need additional tests
- what you can do to work toward a normal value
- when you need to be tested again.

Written by Tom Richards

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