Bone Mineral Density Tests

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The Importance of Bone Mineral Density Tests

As a female with a family history of osteoporosis (e.g. mother and two sisters with the condition), I have had many bone mineral density (BMD) tests performed over the last ten to fifteen years. I realized very soon after my initial diagnosis how important it is to have routine BMD tests since osteoporosis has very few outward signs and symptoms. However, it does put you at an increased risk for fractures.

If you think you are also at risk, you should discuss BMD tests with your family doctor as they are totally safe, quick and easy to undergo.

A BMD test measures the density of various minerals (e.g. calcium) within your bones by utilizing a specialized X-ray scan that estimates bone strength. Very low radiation doses are used during a BMD test.

As part of natural aging, everyone's bones become thinner. This process is referred to as osteopenia (i.e. existing bone breaks down faster than new bone is made). When this happens, our bones lose calcium as well as other minerals. Our bones become more porous as well as lighter in density making them weaker, thus increasing fracture risk.

If additional bone density is lost, osteopenia progresses to osteoporosis. The latter is most common in women 65 years of age and over. However, it can develop in people considerably younger.

How Bone Mineral Density is Measured

The most accurate way to measure BMD is by using what is known as dual-energy X-ray absorptiometry. Using two different x-ray beams, bone density in both the hip and spine are measured. Stronger (i.e. denser) bones let less X-ray beams pass through them.

The amounts of two kinds of X-ray beams, blocked by soft tissue and bone, are compared with each other.

Recommendations

A bone mineral density test is recommended for:

- All females 65+
- Younger women at an increased risk of osteoporosis (e.g. family history)
- Males with osteoporosis risk factors (e.g. 70+)
- Males and females with hyperparathyroidism
- Anyone who has been taking corticosteroids for a prolonged period
- Follow-up after osteoporosis treatment, lasting at least 2 years

The Actual Test

BMD scans are generally performed in either a hospital's X-ray department or at a clinic by a trained technologist.

With your clothes on, you lie down on a padded table. A BMD machine scans the bones of the hips and lower spine and measures the amount of absorbed radiation. The entire scanning process takes approximately 20 minutes.

Testing two different bones (e.g. preferably the spine and hip) every time is the most reliable bone mineral density measurement method.

A BMD causes absolutely no pain whatsoever but it may be uncomfortable to lie still on an examining table, if you happen to suffer from back pain.

Since low doses of radiation are used, having a BMD test is not recommended if you are pregnant.

Interpreting Test Results

Results of bone mineral density tests are reported as T-scores. A T-score is a patient's bone mineral density, as compared to that of an average, healthy 30-year-old person, expressed as a statistical "standard deviation" (SD). Average BMD is ascertained by measuring the bone density of a "reference range" of healthy 30-year-old individuals.

If you have a negative value, you have a lower bone density (i.e. thinner bones) than an average 30-year-old while a positive value indicates that you have a higher bone density (i.e. stronger and thicker bones) than an average 30-year-old patient.

	T-Score:
Normal:	< 1 SD below the reference range (i.e. > –1)
Low Bone Mass (Osteopenia):	1 to 2.5 SDs below the reference range (i.e. –1 to –2.5)
Osteoporosis:	> 2.5 SDs below the reference range (–2.5 or less)