

DEXA: Bone Scans and Bone Health Screenings

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When an elderly person falls and breaks a hip or any other bone, it can be painful and debilitating. Often old age comes with problems and mostly, these problems are health-related. Osteoporotic fractures are very common among the old people. The impact of these fractures is tremendous. It affects the physical, psychological and financial aspects of a patient's life and family. The quality of life is substantially affected.

BONE LOSS AND OSTEOPOROSIS

Bone is made up of calcium and protein. Bones undergo change constantly, with old bone broken down and new bone formed daily. More bone is formed than broken down when one is young, especially in childhood. However, after about 30, more bone is broken down than is formed. This gradual and small amount of bone loss continues throughout one's life. While a little bit of bone loss does not cause problems, excessive loss results in osteoporosis, which is characterised by weak bone strength, resulting in an increased risk of fracture.

BONE SCANS AND DEXA

A bone density scan can detect thinning bones at an early stage. If one already has osteoporosis, bone scans can also tell how fast the disease is progressing. Most bone scans use a technology called DEXA (dual energy X-ray absorptiometry). In a DEXA scan, a person lies on a table-like surface while a technician aims a scanner mounted on a long arm. DEXA is the easiest and the most standardised form of bone testing. The DEXA scanner uses beams of very low-energy radiation to determine the density of the bone. The test is completely painless and can be completed in one sitting. Measurements are usually taken at the hip, and sometimes the spine and other sites.

HOW DOES A DEXA SCAN WORK?

A DEXA scan uses low-energy X-rays. A machine sends X-rays from two different sources through the bone being tested. Bone blocks a certain amount of the X-rays. The denser the bone is, the less X-rays get through to the detector. By using two different X-ray sources rather than one, it greatly improves the accuracy in measuring bone density. The amount of X-rays that comes through the bone from each of the two X-ray sources is measured by a detector. This information is sent to a computer which calculates a score of the average density of the bone. A low score indicates that the bone is less dense than it should be, some material of the bone has been lost, and it is more prone to fracture.

WHO SHOULD HAVE A DEXA SCAN?

A DEXA scan may be advised if one is at an increased risk of osteoporosis. Osteoporosis usually causes no symptoms at first. However, if one has osteoporosis, one has an increased risk of breaking a bone. A DEXA scan will show if one has osteoporosis, and in such cases, one may be given advice and treatment to help strengthen the bones. A DEXA scan may therefore be advised if one has:

- A fracture following a minor fall or injury.
- Loss of height due to a fracture of a vertebra (back bone).

- Taken steroids for three months or more.
- An early menopause (aged less than 45).
- Eating disorders like anorexia nervosa and bulimia.
- Uterus removed (hysterectomy) before the age of 45.
- Other disorders associated with osteoporosis such as rheumatoid arthritis or coeliac disease.
- A family history of hip fracture on mother's side of the family.
- A body mass index (BMI) less than 19 (i.e., if one is underweight).

WHAT DOES THE RESULT MEAN?

The results of one's test are usually reported as a T-score and Z-score. The T-score compares one's bone density with that of a healthy 30-year old of the same sex. The Z-score compares a person's bone density with that of an average person of the same age and sex. A low T-score signifies osteoporosis or osteopenia. Z-scores are not used to formally diagnose osteoporosis but a low score can sometimes be a clue to look for a cause of osteoporosis.

WHEN SHOULD ONE GET A BONE DENSITY SCAN?

When, and how often, one should get a bone density scan depends on the age, risk factors, and whether one already has been diagnosed with thinning bones. The general rule: anyone at risk for osteoporosis should get a bone density scan. Bone density testing does not diagnose fractures. It helps predict one's risk of having a bone fracture in the future.

ALTERNATIVE NAMES

Bone density scans are known by different alternative names: BMD test; Bone Density Test; DEXA scan; DXA; Dual-energy x-ray absorptiometry; p – DEXA.

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