

What is a Bone Mineral Densitometry?

Bone mineral densitometry (BMD), also called dual-energy x-ray absorptiometry (DEXA) is an x-ray examination that is used to measure bone loss. DEXA is today's established standard for measuring bone mineral density.



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BONE MINERAL DENSITOMETRY

Bone Mineral Densitometry



Why do a BMD?

BMD is most often used to diagnose osteoporosis. Osteoporosis, which means “porous bone” is a disease in which there is a loss of bone tissue. This makes bones brittle and more prone to breakage. Some common causes of osteoporosis includes:

- Lack of physical activity
- Inadequate calcium in the diet
- Menopause
- Simultaneous illness, hormonal irregularities and thyroid disorders

BMD is also effective in tracking the effects of treatment for osteoporosis and other conditions that cause bone loss.

Who should have a BMD?

Individuals who have the following condition/s:

- a fracture following a minor fall or injury.
- loss of height due to fracture of a vertebra (back bone).
- taken steroid tablets for three months or more.
- an early menopause (aged less than 45).
- a history of periods stopping (amenorrhoea) for more than one year before the menopause.
- other disorders associated with osteoporosis such as rheumatoid arthritis or coeliac disease.
- a family history of hip fracture on your mother's side or smoking.
- a body mass index of less than 19. (That is, if you are very underweight).
- a post-menopausal woman who is tall (over 1.7 metres) or thin (less than 56.7 kilograms).
- a man with clinical conditions associated with bone loss.

Preparation for BMD

You should not have had a recent barium examination or have been injected with a contrast material for a computed tomography (CT) scan or radioisotope scan. You may have to wait 10 to 14 days before undergoing a DEXA test. No other preparation is required.

How is a BMD scan done?

You lie on your back on a couch and are asked to keep still while an x-ray detector (the ‘scanner’) comes over the area to be tested. An x-ray equipment is energized. The amount of x-rays that comes through the bone from the x-ray source 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 is more prone to fracture.

The bones commonly scanned are the vertebrae (back bones), hip and wrist. (These are the bones that most commonly fracture due to osteoporosis.) The scan is painless and takes 15-20 minutes.

Your test results will be in the form of two scores:

T score – This number shows the amount of bone you have compared with a young adult of the same gender with peak bone mass. A score above -1 and -2.5 is classified as osteopenia, the first stage of bone loss. A score below -2.5 is defined as osteoporosis. The T score is used to estimate your risk of developing a fracture.

Z score – This number reflects the amount of bone you have compared with other people in your age group and of the same size and gender. If this score is unusually high or low, it may indicate a need for further medical tests.

Small changes may normally be observed between scans due to differences in positioning and usually are not significant.



What are the benefits vs. risks?

BENEFITS

- DEXA bone densitometry is a simple, quick and non-invasive procedure.
- The amount of radiation used is extremely small – less than one-tenth the dose of a standard chest x-ray.
- DEXA bone density testing is the most accurate method available for the diagnosis of osteoporosis and is also considered an accurate estimator of fracture risk.

RISKS

- The effective radiation dose from this procedure is about 0.01 mSv, which is about the same as the average person receives from background radiation in one day.
- Women should always inform the radiographer if there is any possibility that they are pregnant.

What are the limitations of a DEXA Scan?

- A DEXA test cannot predict who will experience a fracture but can provide indications of relative risk.
- Despite its effectiveness as a method of measuring bone density, DEXA is of limited use in people with a spinal deformity or those who have had previous spinal or heat surgery. The presence of vertebral compression fractures or osteoarthritis may interfere with the accuracy of the test; in such instances, CT scans may be more useful.
- A test done on a peripheral location, such as the wrist, may help predict the risk of fracture in the spine or hip. But because bone mass tends to vary from one location to the other, measuring the wrist is not as accurate as measuring the spine or hip.