DEXA

What is Osteoporosis?

Osteoporosis involves the gradual loss of calcium, causing the bones to become less dense, more fragile, and more likely to break. Osteoporosis often affects women after menopause, but may also be found in men. If your bone density is found to be low, you and your physician can work together on a treatment plan to help prevent fractures before they occur.

What is DEXA Bone Densitometry?

To detect osteoporosis accurately, doctors use an enhanced form of x-ray technology called dual-energy x-ray absorptiometry (DXA or DEXA). DEXA bone densitometry is today's established standard for measuring bone mineral density (BMD). DEXA is a quick, painless procedure for measuring bone loss. Measurement of the lower spine and hips are most often done. The wrist can alternatively be measured if there has been previous surgery or fracture of the hip or spine.

Who should have a DEXA Bone Densitometry?

DEXA bone densitometry is used to diagnose osteoporosis, assess your risk for developing fractures, and is also effective in tracking the effects of treatment for osteoporosis or for other conditions that cause bone loss.

Bone density testing is strongly recommended for the following:

- Post-menopausal women not taking estrogen.
- Post-menopausal women who are tall (over 5 feet 7 inches) or thin (less than 125 pounds).
- Personal or maternal history of hip fracture.
- Have experienced a fracture after only mild trauma.
- Have had x-ray evidence of vertebral fracture or other signs of osteoporosis.
- Personal history of smoking.
- Men or women with clinical conditions associated with bone loss.
- Use medications known to cause bone loss, including corticosteroids (i.e. Prednisone), various anti-seizure medications (i.e. Dilantin and certain barbiturates), or high-dose thyroid replacement drugs.
- Have type 1 (formerly called juvenile or insulin-dependent) diabetes, liver disease, kidney disease, or a family history of osteoporosis.
- Have high bone turnover, which shows up in the form of excessive collagen in urine samples.
- Have a thyroid condition, such as hyperthyroidism.

How should I prepare for the procedure?

On the day of the exam, eat normally, but don't take calcium supplements for at least 24 hours beforehand. Wear loose, comfortable clothing, avoiding garments that have zippers, belts, or buttons made of metal. Inform your physician if you recently had a barium examination or have been injected with a contrast material for a computed tomography (CT) scan or radioisotope scan (you may have to wait 10-14 days before undergoing a DEXA test). Women should always inform their physician or x-ray technologist if there is a possibility they are pregnant.
What does the equipment look like?
Our DEXA device has a large, flat table and a detector "arm" suspended overhead.

How does the procedure work?
The DEXA machine sends a thin, invisible beam of low-dose x-rays through your bones via two energy streams. It relies on two distinct energy peaks: one peak is absorbed mainly by soft tissue and the other by bone. The soft tissue amount can be subtracted from the total, and what remains is a patient's bone mineral density. The amount of radiation used is extremely small—less than one tenth the dose of a standard chest x-ray.

How long does the procedure take?
The DEXA bone density test takes between 10 and 30 minutes, depending on the parts of the body being examined.

What will I experience during the procedure?
You'll lie on a padded table with an x-ray generator below and a detector above. During an examination of the spine, your legs will be supported and padded to flatten your pelvis and lower (lumbar) spine. To assess your hip, the technologist will place your foot in a brace that rotates the hip inward. In both cases, the detector is slowly passed over the area, generating images on a computer monitor. In some patients the forearm and wrist may be imaged. It is important that you stay as still as possible during the procedure to ensure a clear, useful image. No anesthesia is required. The procedure is painless, and radiation exposure is minimal.

Who interprets the results and how do I get them?
The results of a DEXA bone density exam are interpreted by a radiologist, who is a physician specially trained to diagnose conditions and diseases by obtaining and interpreting medical images. The radiologist will send an interpretation of your results and a signed report to your primary care physician, usually available within a few days. Your physician will work with you to develop a treatment plan.

What do the results mean?
Your test results will be in the form of two scores:

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

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

**Bone Mineral Density (BMD)** – The measured bone density, in units of grams per cubic cm.

A low reading should not cause you to be anxious, but may help you set healthy goals. You and your physician can work together on a treatment plan to help prevent fractures before they occur. As with other diseases and conditions, early detection is the key to prevention of further bone loss and eventual fractures.
What are the risks?
No complications are expected with the DEXA procedure.

What are the limitations of DEXA Bone Densitometry?
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 surgery. The presence of vertebral compression fractures or osteoarthritis may interfere with the accuracy of the test. CT scans may be more useful in such instances. DEXA cannot predict who will experience a fracture, but can provide indications of relative risk.