

INFORMATION FOR PATIENTS

YOU, BONE ASSESSMENT and OSTEOPOROSIS

What you should know about osteoporosis ?

Osteoporosis is a condition which thins and weakens your bones, making you more likely to break (fracture) bones, even from minor knocks, bangs, or falls. People with osteoporosis most commonly experience fractures of the spine, hip or wrist.

There are approximately 25 million Americans affected by this « silent » (invisible) disease, and most of whom are not aware of the condition until a fracture occurs. Although osteoporosis is a significant health problem for many Americans, it is most common in middle-aged and elderly women. As many as one in three women, or one in five men over the age of 50, will suffer a fracture related to osteoporosis during their lifetime.

What causes osteoporosis ?

Your bones are made of living tissue. Although you are not aware of this, your bones are always changing. They are being both eroded and rebuilt in two, ongoing activities which together are called “remodelling”.

In your teens and twenties, the “rebuilding” dominates, and your bones get stronger and stronger. In your thirties and forties, the two activities more or less balance each other out, and your bones reach their peak strength. Peak bone strength depends on many factors, including genetics, lifestyle (diet and exercise), medication and chronic illness. After the age of forty, the “eroding” bone becomes dominant, and over time your bones gradually weaken.

Normally, there is no cause for concern – remodelling is part of the natural life cycle for us all. With osteoporosis, however, your bones become so weak that they have a greater tendency to fracture. Some people reach this state at a younger age than others, though everyone will if they live long enough.

Who is prone to osteoporosis ?

If you are a postmenopausal woman, you are in the group who will most likely be affected by osteoporosis. With the onset of menopause, your body slows its production of an important hormone, called estrogen. This hormone was important during your reproductive years, and also helped to maintain your bones strong.

There are other risk factors which may lead to osteoporosis. These include a family history of osteoporosis, a small and light body frame, smoking, and alcohol use, a lack of exercise, and long-term use of certain drugs such as corticosteroids, and an early menopause.

Other risk group can include the male population.

How do you check if you are at risk ?

The best place to start is your doctor. He or she will review your medical history, and if there is concern for osteoporosis, he/she may advise you to have a bone check-up. The results of this test, combined with your medical history, will help your doctor decide if you have, or might develop osteoporosis.



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What kind of bone check-ups are there ?

Until the 1970's and 1980's, the best way to check your bones was to x-ray your hip or spine. An experienced radiologist could then analyse the x-ray and identify the condition of your bones. Unfortunately, weak bones are only visible once they are damaged and have partially collapsed. Making this type of test ineffective as an "early warning system", as well as being unwise to expose patients to unnecessary x-ray radiation. More safe and better ways have since been developed to ensure earlier and more effective bone testing.

In the 1970's and 1980's, special radiological tests were developed to help detect osteoporosis earlier. These tests are called Bone Mineral Density (BMD) tests. BMD has been the most popular method for checking the healthiness of the bone. Its measurement tells the doctor how much bone there is at a particular site on your body, referred to as your bone density. The lower the density means the weaker your bone, and the more prone you are to having a bone fracture. This type of measurement can be performed at various sites such as the spine, hip, arms and legs. BMD measurements also involve x-ray radiation, although at lower levels than traditional x-rays.

In 1997, a new technology was approved by the U.S. Food and Drug Administration for testing bones. This new method, called "Bone Sonometry" is based on ultrasound, similar to that used by doctors to check the progress of pregnant women and their unborn child. If you are reading this pamphlet, it is most likely because your doctor has chosen to test your bones with this new generation of equipment.

BMD and Bone Sonometry are not always used on the same sites of the body, and the results of the tests are not always the same. Each technology measures different things at different places of the body. Nevertheless, since osteoporosis is a generalised disease, affecting your entire skeleton, it can be detected at various body sites. Your doctor understands this, and knows how to interpret the results so that between you and your doctor you can make more informed decisions about your health.

Why use ultrasound to check bones ?

Ultrasound has a long and successful history, dating back to the early 1900's. It has been widely used in industry to detect defects or flaws in materials – for example cracks in aeroplane wings and pipelines. Bone sonometry uses similar principles to provide information about your bone's status. The ultrasound wave picks up important information about your bones' density. Today's ultrasound bone sonometer measures peripheral sites such as the foot (heel), or the finger. It is a fast, comfortable, dependable and above all a radiation free method.

How is an ultrasound bone check-up done ?

You will sit in a chair in front of the machine, and place your foot smeared with standard water-soluble ultrasound gel into a footwell. The machine will then carry out a scan of your calcaneus (back of the heel). This operation may be repeated on your other foot too.

What should you wear ?

You need to expose your foot, and your leg from just below the knee. It is best that you wear loose fitting trousers or a skirt. If you wear pantyhose, you'll need to remove them.



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How long does this check-up take?

The complete test takes only 5-6 minutes.

Are there any risks involved in ultrasound bone testing ?

No, ultrasonic wave used in medical applications do not present any known risk or side effects.

What are the limitations of ALL bone measurement machines ?

1. A single reading (or examination) suggests a possibility, but does not mean you have or do not have a strong risk for or against fracture.
2. Readings obtained with one type of machine can only be compared to readings of the same make and model machine.

Test results and their meaning ?

Your ultrasound bone check-up provides important information :

1. Your value of the BUA (Broadband Ultrasound Attenuation) given in dB/MHz, which measures your bone density. The higher the density, the higher the BUA, and the more healthier your bones are.
2. Your results are compared with the results of a typical young **white woman**, and is given by a unit of measure called the "T-Score".
3. Your results are also compared to those typical of your own age and sex, and is summarised by a unit of measured called "Z-Score".

The two units of measure called the "T-Score" and the "Z-Score" are very useful as they enable the doctor to have a unit of measure which is comparable to the results given for the examinations made using x-rays (BMD) enabling the doctor's to have a better understanding of the results.

All this information is then printed out onto a report showing the image of your calcaneus along with the results.

Having a low BUA result does not mean that you will definitely fracture your bones in the future. Your doctor knows how to interpret the numbers and the results, and can discuss with you what they mean.

What should you do with your results ?

Your doctor will advise you as to what best to do. If your test results indicate that your bones may be weak, he / she will probably suggest preventive measures and/or prescribe medication. How long the doctor helps you to care for yourself depends on many factors. In any case you can help yourself by ...

- Eating healthy foods.
- Making sure your diet includes enough calcium and vitamin D (very important for building strong bone – for example, dairy products, fish with bones like sardines etc).
- Doing some weight bearing exercise (where your body supports its own weight, like walking, jogging, aerobics. Swimming is a great exercise for your heart and easy on your joints, but it's not the best choice for strengthening your bones).
- Avoid heavy smoking and alcohol use.