

Bone Density Testing: A Guide for Families

Bone density test in children

Your child's doctor has ordered a bone density test for your child. This may be because your child has a history of multiple fractures or is suspected to have a specific bone health concern such as brittle bone disease or low bone density due to chronic medical conditions. The purpose of bone density testing is to assess bone health by measuring bone density or monitor effects of therapies to improve bone health.

What is a bone density test?

A bone density test is obtained using dual-energy x-ray absorptiometry (DEXA or DXA). This is a non-invasive, painless imaging study that uses a very small dose of x-ray to measure the density of bones. The tests usually scan the lower spine and the entire body. In certain circumstances, the tests may scan the forearm, hips or upper leg.

What should I prepare?

Bone density test requires little to no special preparation. Your child can eat normally. Your child should wear loose, comfortable clothing, with no metal items (e.g., metal buttons), zippers, or belts. Jewelry or objects such as wallets or keys need to be removed as they may interfere with the images. Your child may be asked to wear a gown. In adolescent girls, a urine pregnancy test may be performed to ensure no possibility of pregnancy. Tell your doctor and x-ray technologist if your child recently had imaging studies with contrast material (oral or intravenous).

How is the bone density test performed?

The process is like taking an x-ray (or taking a picture). Your child will be asked to lie down on a large, flat table, with a scanning device suspended overhead. A technologist may help your child with positioning for a proper scan. Each scan takes approximately 1-3 minutes. Your child will need to lie still during the test.

An additional procedure called Vertebral Fracture Assessment (VFA) is now being done on the DXA machine at many centers and adds only a few minutes to the DXA scan. VFA is a low-dose x-ray examination of the spine to evaluate for vertebral fractures.

How much radiation will my child be exposed to?

A DXA scan involves a very low amount of radiation exposure—less than a day's exposure to natural radiation, and less than one-tenth of the dose of a standard chest x-ray. There are no side effects.

Who interprets the results and what do they mean?

A specially trained physician will analyze the images and send a signed report to your ordering physician, who will discuss the results with you. The bone density test results need to be interpreted carefully and compared to other children of same age, gender, ethnicity, and height, reported as Z-scores. Therefore, it is important to have this study performed at a center with pediatric experience. If the bone density is low for age (i.e., Z-score less than -2),

your child may be referred to a pediatric bone specialist for further evaluation.

Follow-up DXA exams should be performed ideally with the same machine. Bone density measurements obtained with different DXA machines cannot be directly compared.

What are the limitations of DXA?

The DXA test results cannot predict who will experience a fracture but can provide information for your child's physician to determine if your child may be at risk or need further evaluation or intervention.

It is important to note that no child is diagnosed with osteoporosis based on bone density test results alone. The diagnosis of osteoporosis in children is usually made on the basis of the clinical history of low-impact fractures and/or vertebral compression fractures.

What is osteoporosis?

Osteoporosis (porous bone) is a condition of bone fragility with impaired bone strength that results in low-impact fractures. Osteoporosis can result from genetic causes (or primary bone disease), chronic medical conditions, or medical therapies for these conditions that cause bone loss (or secondary osteoporosis). Risk factors for secondary osteoporosis are low body weight, a long duration of missed periods, chronic inflammation, malabsorption, immobility, hormone disturbances, long-term use of medications (such as steroid medications or chemotherapy for cancers) or a ketogenic diet. Currently, there are effective therapies for some forms of osteoporosis in children. Your child should see a pediatric bone specialist if she/he/they are suffering from multiple fractures due to low-impact injuries or having chronic medical conditions with an increased risk of osteoporosis.



Copyright © 2022 Pediatric Endocrine Society. All rights reserved. *The information contained in this publication should not be used as a substitute for the medical care and advice of your pediatrician. There may be variations in treatment that your pediatrician may recommend based on individual facts and circumstances*