

Learning About Low Bone Density

Low bone density may increase your child's risk for fracture, or broken bones. In this handout, you will learn about low bone density and what causes it. You will also learn how we diagnose and evaluate low bone density in children.

WHAT IS BONE DENSITY?

Bone density is a measure of how much material is in bone per unit volume of bone. Bone density is one of many things that can affect bone strength. In general, bones that are denser are less likely to **fracture** (break).

WHAT IS LOW BONE DENSITY?

Low bone density is a condition in which bones are less dense than is normal for age and sex. Low bone density used to be called **osteopenia**. However, this term is no longer used in children.

WHAT ARE THE RISKS OF LOW BONE DENSITY?

If your child has low bone density, she may be at higher risk of having a **fracture** (broken bone). Low bone density for age in children with a significant fracture history is called **osteoporosis**.

WHAT ARE THE DIFFERENT TYPES OF LOW BONE DENSITY?

- **Primary bone disorders** are diseases that directly affect bone density and strength
- **Secondary low bone density** is caused by underlying medical conditions.
- **Idiopathic low bone density** occurs without a clear cause.

HOW IS LOW BONE DENSITY DIAGNOSED?

We can diagnose low bone density with a **dual-energy X-ray absorptiometry (DXA) scan**. This scan uses low-energy X-rays to measure bone density.

For younger children, doctors measure the bone density of the whole body and the spine. In older children, doctors measure the bone density of the hip and spine. In certain cases, doctors may choose to measure other bones.

Did you know?

Children who are short or have delayed puberty may appear to have low bone density for their age on a DXA scan. Your **endocrinologist** (hormone doctor) will keep your child's height and pubertal stage in mind when he or she interprets your child's bone density results.

Often, children will turn out to have normal bone density after taking into account their height and pubertal stage.

WHICH CONDITIONS CAN CAUSE LOW BONE DENSITY?

The endocrinologist will help figure out if your child has an underlying condition that is causing bone density to be low.

Underlying medical conditions that can cause low bone density include (but are not limited to) the following:

- Low levels of calcium and vitamin D in the body
- Disorders that affect how well the gut absorbs nutrients that are important for building bone, including vitamin D
- Low levels of vitamin D because of other medical concerns
- Low muscle tone
- Disorders that cause inflammation in the body
- Long periods of not being able to move about
- Long periods of insufficient or absent weight-bearing activity (weight bearing activities include activities such as walking, running, hopping and jumping)
- Disorders of low weight
- Low levels of reproductive (sex) hormones
- Abnormal levels of certain other hormones that affect how well the body can use minerals and other bone building material to strengthen bones
- Certain genetic conditions, such as **osteogenesis imperfecta**.
- Certain medications may also affect bone density. These include glucocorticoids, certain epilepsy medications and some chemotherapy medications

HOW IS LOW BONE DENSITY TREATED?

The endocrinologist will go over with you the best way to treat low bone density in your child. This may include:

- Making sure that your child is getting enough calcium in their diet and their /vitamin D levels are high enough
- Increasing your child's weight-bearing activity. For children with mobility challenges, we may work with physical therapists to design a personalized program for your child.
- For children with low bone density due to an underlying medical condition, your endocrinologist will work with other members of the care team to choose the best treatment for that condition.
- In some cases, the endocrinologist may recommend a medication to increase bone density.

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