



# bone marrow BIOPSY

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HEALTH SYSTEM



# BONE MARROW ASPIRATION AND BIOPSY

Your bone marrow has a story to tell. Bone marrow is responsible for the creation of your blood cells, and because of that, it holds a wealth of clues about your health. A bone marrow biopsy examines your bone marrow to look for those clues.

A bone marrow **biopsy** removes a small amount of bone and a small amount of fluid and cells from inside the bone (**bone marrow**). A bone marrow aspiration removes only the marrow. They are often done to find the reason for many blood disorders and may be used to find out if cancer or infection has spread to the bone marrow.

Bone marrow **aspiration** removes a small amount of bone marrow fluid and cells through a needle put into the bone.

A bone marrow **biopsy** removes bone with the marrow inside to look at under a microscope. The biopsy of bone marrow is done first, and taking fluid (aspiration) is often done after the biopsy.

## What is bone marrow?

Bone marrow is spongy tissue found inside some of your larger bones. Bone marrow has a fluid portion and a more solid portion.

Bone marrow in the breast bone, hips, ribs, skull and spine contains stem cells. These stem cells turn into white blood cells, red blood cells and platelets. These aren't the same as embryonic stem cells.

## What are the reasons to have a bone marrow biopsy and aspiration?

A bone marrow exam offers detailed information about the condition of your blood cells. Sometimes, a blood sample through a vein in your arm provides enough information about your health. But if those results don't offer enough details, you may need further evaluation with an examination of your bone marrow.

Because your bone marrow is essentially a blood cell factory, it's normally rich in young cells. Examining these cells gives a much more detailed picture of the types, amount and condition of these newly forming blood cells.

Your doctor may want a bone marrow biopsy and aspiration done in order to:

- » Diagnose certain conditions
- » Assess the stage or progression of certain conditions
- » Monitor treatment of certain conditions

Bone marrow biopsy and aspiration are useful for numerous conditions.

They're most often used in:

- » Anemias
- » Infectious diseases
- » Leukemias
- » Lymphomas
- » Multiple myeloma

If you have hemophilia, blood-clotting disorders or infections at the potential biopsy site you may not be able to have bone marrow exam. The procedure could cause excessive bleeding or worsen an infection.

## How do you prepare for a bone marrow biopsy and aspiration?

Bone marrow exams are often performed on an outpatient basis. In some cases, though, you may already be hospitalized when you need a bone marrow exam. Because bone marrow biopsy and aspiration can be uncomfortable, you will need some form of anesthesia to reduce the pain. You have two options:

- » **Intravenous (IV) sedation.** With this option, you're either completely or partially sedated during the bone marrow procedure.
- » **Local anesthesia.** With this option, you're fully awake during the procedure but the area to be biopsied is numbed to reduce pain.

No matter which option you choose, tell your doctor if you've ever had an allergic reaction to any type of medication or have become ill after anesthesia. Also tell your health care team if you're pregnant and what medications or supplements you take. Inform your healthcare provider of any bleeding problems.

## How are a bone marrow biopsy and aspiration done?

A bone marrow exam can be done in the hospital, a clinic or a doctor's office. A bone marrow biopsy is usually done by a doctor such as a hematologist or oncologist.

A bone marrow sample is usually taken from the back of one of your hip bones, in an area called the pelvic crest. Aspiration is usually done at the

same place. However, in some cases, the aspirate fluid can be obtained from the breastbone or from the front of the iliac crest near the groin.

## **What can you expect during a bone marrow biopsy and aspiration?**

The bone marrow exam typically takes about 30 minutes. If you have IV sedation, the procedure can take longer because of additional preparation and post-procedure care.

### **Bone marrow aspiration**

The bone marrow aspiration is usually done before the bone marrow biopsy. For the aspiration, a hollow needle is inserted through an incision and on through the bone and into the bone marrow cavity of your iliac crest. Anesthetics aren't able to numb the interior of your bone, you may feel a deep, aching pain when the needle is inserted.

A syringe is used to draw a sample of the liquid portion of the bone marrow into the hollow needle. As it is being drawn up, you may feel a painful stinging, sucking or pulling sensation, which may travel down your leg. It takes only a few minutes. You may need to have several samples taken.

Your health care team checks the sample to make sure it's adequate.

### **Bone marrow biopsy**

A different type of needle is inserted for the bone marrow biopsy. Getting this needle through the bone into the marrow can be difficult. You may feel a lot of pressure or maneuvering as the needle is positioned properly.

A core sample of bone marrow is taken with the needle. You may feel a dull, aching pain for a moment it is taken. Again, the pain may travel down your leg. You also may have a sensation of tugging or pushing. Like the aspiration, the biopsy takes only a few minutes.

Again, your health care team checks the sample, and if it's adequate, the needle is removed.

### **Risks**

Serious problems from a bone marrow aspiration or biopsy are not common. Problems may include:

- » Bleeding from the biopsy site. People with bleeding problems have a higher chance for this. If you have bleeding problems, pressure will be put on the biopsy site for at least 10 minutes after the biopsy. In rare cases, you may be given a blood product (clotting factor or platelets) in a vein in your arm before the biopsy to prevent bleeding after the biopsy.

- » Infection of skin or the bone (osteomyelitis) at the biopsy site.
- » Injury to your heart, a lung, or a major blood vessel if the sample is taken from the breastbone (sternum). This complication is very rare. Samples are not often taken from the breastbone, so most people do not have to worry about this risk. Injury to your heart, a lung, or a major blood vessel if the sample is taken from the breastbone (sternum). This complication is very rare. Samples are not often taken from the breastbone, so most people do not have to worry about this risk. Complications related to sedation are allergic reaction, nausea or irregular heartbeat.

### **After the biopsy**

You will lie down for 10 to 15 minutes after the biopsy so the site can be checked for bleeding. If you had a sedative, you will need someone to drive you home after the biopsy.

You may feel sore at the biopsy site for several days. Ice packs to the site, walking, and pain medicine, such as acetaminophen (Tylenol), can be used to help you feel better.

### **Call your doctor immediately if you have:**

- » More tenderness, pain, redness, or swelling at the biopsy site.
- » A fever.
- » Bleeding or drainage, such as pus, from the biopsy site. If you are bleeding, put pressure on the site and call your doctor.

### **Post-Biopsy Instructions**

1. Leave dressing in place 48 hours.
2. After 48 hours you may shower or bathe and leave the area open to the air. The area may be covered during the day but uncover at night and during bathing.
3. A small amount of swelling and discoloration of the area is normal.
4. If site bleeds through dressing, apply pressure until bleeding stops.
5. If the area around your incision becomes reddened, painful, swollen or if there is any drainage seek early medical attention.
6. A pathological report on the specimen will be ready upon your return visit
7. For pain or discomfort you may take Tylenol, Aspirin, or prescribed medication.
8. Call your physician if you have any concerns, 701.780.5000.





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