Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Bone Marrow Aspiration and Biopsy

This information explains what to expect before, during, and after your bone marrow aspiration and biopsy procedure.

About Bone Marrow

Bone marrow is found inside your bones. It's made up of fluids (thick liquid) and solids (soft, spongy tissue). Your bone marrow has many stem cells in it. Stem cells are immature cells that make all the blood cells in your body. This includes:

- White blood cells, which help your body fight infections and other diseases.
- Red blood cells, which carry oxygen from your lungs to the rest of your body.
- Platelets, which stop you from bleeding and help your wounds heal.

Your healthcare provider may need to take a sample of your bone marrow to see:

- How many blood cells you have and if they are growing normally.
- If there are any cancer cells or scar tissue in your bone marrow.
- If your cancer treatment is affecting your bone marrow.
- The results of an allogeneic stem cell transplant. This is a procedure that replaces your abnormal stem cells with healthy stem cells from a donor.

Some MSK patients give their consent (permission) to be part of a research study. If you gave your consent, a research sample of your bone marrow may also be taken during this procedure.

About Your Procedure

There are 2 different methods that your healthcare provider may use to get a sample of your bone marrow. One method is called a bone marrow aspiration. The other method is called a bone marrow biopsy. Your healthcare provider may use one or both of these methods as part of your procedure. Your healthcare provider will decide which method they will use.

- In a **bone marrow aspiration**, your healthcare provider will put a thin needle into your bone. They will use the needle to take out a small amount of your liquid bone marrow.
- In a **bone marrow biopsy**, your healthcare provider will put a slightly larger needle into your bone. They will use the needle to take out a small sample of your bone marrow tissue.

If you're having both methods done, the aspiration is usually done first. The aspiration and biopsy together take about 30 minutes. Your healthcare provider will give you more information about the procedure you will be getting.

Before Your Procedure

Tell your healthcare provider if you have any bleeding issues, or if you have any allergies to these:

- Chlorhexidine (a liquid cleanser put on your skin to kill germs and bacteria)
- Local anesthetics, such as lidocaine. A local anesthetic is a medication that numbs your skin or a small area of your body.
- Sedative medications, if the procedure is being done under sedation. A sedative is a medication that makes you feel very relaxed and sleepy.
- Latex
- Adhesives (such as tape or glue)

Ask about your medications

You may need to stop taking some of your medications before your procedure. Talk with your healthcare provider about which medications are safe for you to stop taking. The following are some common examples.

Anticoagulants (blood thinners)

If you take a blood thinner, talk with your healthcare provider before your procedure. Ask them if you should stop taking your blood thinner medication and for how long. A blood thinner is a medication that affects the way your blood clots.

We've listed some examples of common blood thinners below. There are others, so be sure your care team knows all the medicines you take. **Do not stop taking your blood thinner without talking with a member of your care team.**

- Apixaban (Eliquis®)
- Aspirin
- Celecoxib (Celebrex®)
- Cilostazol (Pletal®)
- Clopidogrel (Plavix®)
- Dabigatran (Pradaxa®)
- Dalteparin (Fragmin®)
- Dipyridamole (Persantine®)
- Edoxaban (Savaysa®)
- Enoxaparin (Lovenox®)
- Fondaparinux (Arixtra®)
- Heparin injection (shot)
- Meloxicam (Mobic®)
- Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Advil®, Motrin®) and naproxen (Aleve®)
- Pentoxifylline (Trental®)
- Prasugrel (Effient®)
- Rivaroxaban (Xarelto®)
- Sulfasalazine (Azulfidine®, Sulfazine®)
- Ticagrelor (Brilinta®)
- Tinzaparin (Innohep®)
- Warfarin (Jantoven®, Coumadin®)

Read *How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil* (https://mskcc.prod.acquia-sites.com/pe/check-med-supplement). It has important information about medications you might need

to stop taking for this procedure and what medications you can take instead.

During Your Procedure

The bone marrow sample is usually taken from the back of one of your hip bones. You will lie on your stomach or your side for this. In some special cases, the sample may be taken from your breastbone (chest bone) or the front of one of your hip bones. If this is the case for you, you will lie on your back for the procedure.

Depending on the type of cancer you have, the procedure may be done on both of your hip bones on the same day. If this is the case, your healthcare provider will talk with you about it before the procedure.

Bone marrow aspiration

1. Your healthcare provider will clean a small area of your skin with chlorhexidine. This liquid cleanser will kill any germs or bacteria that are on your skin.
2. Your healthcare provider will inject the area with a local anesthetic (such as Novocain® or lidocaine) to numb it. You may feel some burning during the injection (shot). This usually goes away after a few seconds.
3. Your healthcare provider will then use a small needle to put more anesthetic medication deeper under your skin and on the surface of your bone.
4. Once the anesthetic starts working, your healthcare provider will insert a larger needle through your bone and into your bone marrow. You will feel pressure as the needle is inserted. If you feel any pain, tell the healthcare provider who is doing the procedure. They can give you more anesthetic medication if needed.
5. While the needle is inserted, your healthcare provider will take out a small amount of liquid bone marrow through the needle. This liquid is called the aspirate, and the method for taking it out is called the aspiration. You may need to have multiple samples taken. During the aspiration, you may feel a pulling or dragging sensation, which can move down your leg. You may also feel some pain while the aspirate is being taken out. This usually goes away

after a few seconds. The anesthetic will not help with this pain. If the pain does not go away, tell the healthcare provider who is doing the procedure. They can take the aspirate out more slowly, which may help to ease the pain.

Bone marrow biopsy

The bone marrow biopsy will be done in the same area. Your healthcare provider will use a different needle for this procedure. A sample of bone marrow tissue will be taken for the biopsy. You may feel more pressure in your hip or leg during this procedure. You may also feel a twisting sensation as the needle is inserted and taken out.

After Your Procedure

When the procedure is done, a small bandage will be put on the area(s) where the bone marrow was taken. You will then be asked to sit up on the procedure table for a few minutes. After the procedure, you may feel:

- A little lightheaded (like you might faint). This usually goes away after a few minutes. Do not walk until the feeling goes away.
- Numbness in your leg or foot on the side where you had the procedure. If this happens, tell your healthcare provider. This usually goes away after a few minutes. Do not try to stand up on your own until the numbness goes away.
- Soreness in the area(s) where the bone marrow was taken. Ask your healthcare provider about medication to help with this.

At home

- Do not take naproxen (Aleve®), ibuprofen (Advil®, Motrin®), or similar medicines for 24 hours after your procedure. For a list of similar medicines, read the “Common NSAID Medications That Don’t Contain Aspirin” section in *How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil* (https://mskcc.prod.acquia-sites.com/pe/check-med-supplement).
- Most people who get this procedure should not take aspirin for 24 hours

after the procedure. But if you have a condition where you need to take aspirin, another medicine containing aspirin, or pain medication after your procedure, talk with your healthcare provider. For a list of medicines that contain aspirin, read the "Common Medications Containing Aspirin" section in *How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil* (https://mskcc.prod.acquia-sites.com/pe/check-med-supplement).

- If you stopped taking your blood thinner medication, ask your healthcare provider when you should start taking it again.
- Keep your bandage(s) on for 24 hours after your procedure. Do not get the bandage(s) wet.
- Do not shower, bathe, or go swimming for 24 hours after your procedure. After 24 hours, you can take a bath or shower and take off your bandage(s).
- If you have bleeding at the area(s) where the bone marrow was taken, apply direct pressure on the area(s). Press firmly on the area(s) with a clean, dry gauze pad, towel, or cloth. Keep pressing for several minutes, applying pressure until the bleeding stops. If the bleeding does not stop, call your healthcare provider.
- You may have bruising at the area(s) where the bone marrow was taken. This will look black and blue for the next few days. The bruising will clear up on its own.

When to Call Your Healthcare Provider

Call your healthcare provider if you have:

- Redness at the area(s) where the bone marrow was taken.
- Bleeding (at the area(s) where the bone marrow was taken) that does not stop after applying pressure for several minutes.
- Pain that goes down your leg (on the side where you had the procedure) and does not get better.
- A fever of 100.4 °F (38 °C) or higher.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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