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, your healthcare provider may also take a sample of your bone marrow for research during this procedure.

About your procedure

There are 2 different ways your healthcare provider may get a sample of your bone marrow. One way is called a bone marrow aspiration. The other 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 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.
- Are taking blood thinners.
- Have allergies to any of the following:
  - Chlorhexidine (a liquid cleanser put on your skin to kill germs and bacteria).
  - Local anesthetics, such as lidocaine. A local anesthetic is a medicine that numbs your skin or a small area of your body.
  - Sedative medicine, if the procedure is being done under sedation. A sedative is a medicine that makes you feel very relaxed and sleepy.
  - Latex.

- Adhesives (such as tape or glue).

Ask about your medicine

You may need to stop taking some medicine before your procedure. Talk with your healthcare provider about which medicines 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 medicine and for how long. A blood thinner is a medicine that affects the way your blood clots.

Here are some examples of blood thinners. 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®)

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 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. This usually goes away after a few seconds.
3. Your healthcare provider will use a small needle to put more numbing medicine deeper under your skin and on the surface of your bone.
4. Once the numbing medicine 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 put in. If you feel any pain, tell your healthcare provider. They can give you more numbing medicine if needed.
5. Your healthcare provider will take out a small amount of liquid bone marrow through the needle. This liquid is called the aspirate. 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 numbing medicine will not help with this pain. If the pain does not go away, tell your healthcare provider. They can take the aspirate out more slowly, which may help ease the pain.

Bone marrow biopsy

The bone marrow biopsy is done in the same area. Your healthcare provider will use a different needle for this procedure. They will take a sample of bone marrow tissue 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 put in and taken out.

After your procedure

Your healthcare provider will put a small bandage on the area where the bone marrow was taken. They will ask you 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 areas where the bone marrow was taken. Ask your healthcare provider about medicine to help with this.

How to take care of yourself at home

Medicine

- Do not take naproxen (Aleve®), ibuprofen (Advil®, Motrin®), or similar medicines for 24 hours after your procedure. Read *How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil* (www.mskcc.org/pe/check-med-supplement).
- Most people who get this procedure should not take aspirin for 24 hours after the procedure. If you have a condition where you need to take aspirin, a medicine containing aspirin, or pain medicine after your procedure, talk with your healthcare provider.
- If you stopped taking your blood thinner medicine, ask your healthcare provider when you should start taking it again.

Bandages

- Keep your bandages on for 24 hours after your procedure. Do not get the bandage(s) wet. After 24 hours, you can take off your bandages.
- Do not shower, bathe, or go swimming for 24 hours after your procedure.

After 24 hours, you can take a bath or shower.

Bleeding and bruising

- If you have bleeding at the areas where the bone marrow was taken, put direct pressure on the areas. Press firmly on the areas 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 areas 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 where the bone marrow was taken.
- Bleeding from where your bone marrow was taken that does not stop after putting 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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