Autologous Peripheral Blood Stem Cell Harvesting

This information explains autologous peripheral (ah-TOL-o-gus per-IF-er-al) blood stem cell harvesting at Memorial Sloan Kettering (MSK).

Autologous peripheral blood stem cell harvesting is a procedure to harvest (collect) stem cells from your body. Stem cells are immature cells that produce all of the blood cells in your body—the white blood cells that fight infection, red blood cells that carry oxygen, and platelets that stop you from bleeding. Autologous means your own stem cells will be harvested, stored, and given back to you later. Peripheral blood is the blood that circulates in your blood vessels.

After your stem cells are harvested, you will receive a very high dose of chemotherapy to kill any remaining cancer cells in your body. This chemotherapy will also destroy most of the blood cells in your bone marrow and bloodstream.

Harvesting your stem cells beforehand allows us to give you this high dose of chemotherapy. Once the chemotherapy is finished, you will receive an autologous stem cell transplant. This means we will return your stem cells to you. Once they’re
back in your body, the stem cells will slowly start to grow, mature, and replace the destroyed cells.

**Before Your Procedure**

**Stem cell mobilization and granulocyte colony-stimulating factor injections**

There are only a small number of stem cells circulating in your blood. To increase the number of stem cells in your bloodstream, you will receive injections (shots) of a medication called granulocyte colony-stimulating factor (GCSF). GCSF causes your body to make more stem cells than usual. It also encourages the stem cells to move into your bloodstream, where they can be collected more easily. This process is called mobilization. GCSF medications include filgrastim (Neupogen®), pegfilgrastim (Neulasta®), and plerixafor (Mozobil®). Your nurse will review which injections you need.

You can either be taught to do the injections yourself or you can discuss other arrangements with your nurse. If you’re doing the injections yourself, your nurse will give you the resource *Giving Yourself an Injection of Filgrastim (Neupogen) or Pegfilgrastim (Neulasta) with a Prefilled Syringe*. You must store these medications in the refrigerator. The injections will be every day for about 5 to 6 days.

Common side effects of these medications include bone pain in your sternum, arms, legs, and lower back. They can also cause headaches and flu-like symptoms. Either regular or extra-strength acetaminophen (Tylenol®) may relieve these side
effects. If acetaminophen doesn’t help, your doctor will prescribe something stronger.

**Central venous catheter placement**
Before we collect your stem cells, a nurse or doctor will check your veins to see if they’re healthy enough for the procedure. If your veins aren’t healthy enough, you will have a central venous catheter (CVC) inserted into a large vein near your collarbone. The CVC will be used during the harvesting procedure and will remain in place for several weeks or months. It will also be used to take samples of your blood and to give you intravenous (IV) fluids and medications.

After your CVC is placed, your nurse will teach you how to care for it and will give you written information.

**What to eat**
As your stem cells are collected, your blood calcium levels may drop. We recommend that you eat dairy products and other foods that are rich in calcium (cheese, milk or ice cream). This will help to raise the calcium levels in your blood.

**The Day of Your Procedure**
**Where to go**
The harvesting procedure is done in the Blood Donor Room. The Blood Donor Room is located at:

MSK Schwartz Building Lobby
1250 First Avenue (between East 67th and East 68th Streets)
New York, NY 10065
You will have 3 to 5 appointments for harvesting sessions to collect enough cells. The exact number of sessions depends on the number of stem cells that are collected in each session. You will be told each day if you need to return for another harvesting session. Each session will last 3 to 4 hours.

What to expect
The harvesting is done while you’re on a bed or in a recliner chair. You will be connected to a machine either by IV tubes in your arms or by your CVC. Blood will be drawn through the IV line or CVC and circulate through the machine. The machine will collect your stem cells and the rest of your blood will be returned to you.

If you wish, you can watch TV or read during your procedure. A family member or friend may sit with you. You might feel cold during the procedure, so blankets will be available to make you comfortable.

As your stem cells are collected, you may have:

- Muscle cramps
- Twitching
- A tingling sensation around your lips and fingertips

These are signs of low calcium levels in your blood. The staff in the Donor Room will give you calcium carbonate in the form of Tums®, which are a quick and easy source of calcium.
After Your Procedure

After your procedure, if IV lines were placed in your arm(s), you will have a bandage on your arm to prevent bleeding. Leave the bandage in place for at least 3 hours, but not more than 5 hours. If your CVC was used, it will be flushed and recapped.

If there is bleeding when you remove the bandages, apply gentle but firm pressure on the site(s) for 3 to 5 minutes. Call your doctor if the bleeding does not stop.

Your stem cells will be brought to our stem cell laboratory, where they’ll be frozen and stored safely until your transplant day.

After a harvesting session, most people have minimal side effects and can resume their regular activities. The most common side effects are bruising where the needle was inserted and feeling tired.

Call Your Doctor if You:

- Develop a temperature of 100.4° F (38° C) or higher
- Develop flu-like symptoms
- Have any redness, bleeding, drainage, or pain at your catheter or needle insertion site
- Have numbness or tingling in your lips, hands, or feet
- Have significant pain on the left side of your body
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GCSF Injection Schedule

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Medication: ______________________________ Dose: ______________________________

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If you have any questions or concerns, talk with a member of your healthcare team. You can reach them Monday through Friday from 9:00 AM to 5:00 PM at ______________________. After 5:00 PM, during the weekend, and on holidays, please call____________________. If there’s no number listed, or you’re not sure, call 212-639-2000.

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