

Stem Cells and You

There are a number of reasons for donating stem cells. Some patients donate cells with the hopes of helping a family member. For others, making a stem cell donation is a way to give back to the community by selflessly helping a stranger. Lastly, some stem cells are harvested directly from the patient, and then frozen, stored, and given back after intensive therapy.

Regardless of the reason, donating stem cells can be a lifesaving decision that may cure or prolong patient survival when confronted by certain cancers and other life limiting illnesses.

What is a stem cell?

Stem cells are the most basic of all cells. In the case of a stem cell donation, hematopoietic stem cells are collected (Hematopoietic means ‘from the blood’.) These immature stem cells have the ability to develop into different kinds of cells such as:

- *White blood cells (WBCs)* that help fight injury and disease
- *Red blood cells (RBCs)* that carry oxygen to the body’s organs and tissues
- *Platelets* that help the blood clot and prevent bleeding

Where are stem cells located?

Stem cells are located in bone marrow, the spongy center of most major bones. However, there are also some stem cells floating around in your blood; these are called PBSCs or peripheral blood stem cells.

How are stem cells collected?

Years ago, stem cell collection was a surgical process. The donor had to undergo anesthesia and then have stem cells extracted directly from bone marrow. Today, most stem cell collections occur through a process known as peripheral harvesting. It is a rather uneventful procedure, called *apheresis*, where the donor’s blood passes through a machine that separates out the stem cells. After removing and collecting the stem cells, the remaining blood products are returned to the donor. Many say it is very similar to donating blood, except it takes longer.

The peripheral harvesting takes about 3-4 hours per session. You will have 1 collection session a day for 2-5 days until a sufficient number of stem cells are collected. On the days you are scheduled for collection, wear comfortable clothes. A family member or friend may accompany you and stay with you throughout the procedure. It is a good idea to bring a book, laptop, headphones, or some other activity to occupy your time.

A central venous catheter, or central line, is used to collect cells from patients that are donating cells for themselves. The catheter, in addition to improving the collection process, reduces the number of needle sticks. Central lines may be used for other donors if the veins in their arms are not large enough.

Possible side effects of the collection process:

- dizziness
- numbness in fingers and lips
- shortness of breath
- decrease in blood pressure
- muscle cramping
- infection
- blood loss (minimal)
- hematoma (blood collecting under the skin where the IV needle entered the skin)

We will watch you closely for any side effects during the procedure. If you still have any of these symptoms after the procedure, you should notify your doctor.

How do I prepare for stem cell collection?

In order to make stem cell collection successful, we need to increase the number of stem cells you have in your blood. To do this, we give you medication that increases the number of stem cells released from your bone marrow into the blood stream. This process is called *stem cell mobilization*.

There are two medications commonly used. Some patients may receive both medications. Donors will receive G-CSF only.

- **G-CSF** (granulocyte-colony stimulating factor*), which helps your body make more stem cells
*Generic: filgrastim. Brand: Neupogen®
- **Plerixafor**, which helps newly formed stem cells move from your bone marrow into the blood stream. Currently, this medication is only used with multiple myeloma or lymphoma patients (Brand name: Mozobil®).

Before starting Mozobil® or G-CSF, it is extremely important to tell your healthcare provider if you are:

- pregnant
- attempting to conceive a child
- breastfeeding

How will I receive G-CSF or Mozobil®?

Both medications are given as injections just under the skin (subcutaneous), usually in the arm or belly.

G-CSF for patients and donors

- The G-CSF regimen starts 4 days before the collection process begins.
- The first administration of G-CSF will occur in the TCT clinic, usually in the morning. You must stay in the clinic area for at least 1 hour if you have never received G-CSF before. The remaining injections can be done in the clinic or at home. If you wish to have the injections at home, you will need approval from your insurance company and training on how to give the injection.
- The G-CSF injection will continue each morning until the collection process is completed.

Mozobil® for specified patients only

- Starts the evening before collections begin.
- Patients get an injection each evening until the collection is complete (maximum of 4 doses).
- Mozobil® injections are given at the hospital only.

Are there any side effects or cautions?

The most common side effects are:

- pain, swelling, or skin irritation at the injection site
- flu-like symptoms such as fever, fatigue, headache, mild nausea, vomiting, diarrhea
- bone, joint, or muscle pain
- abdominal cramps
- loss of appetite, hair loss, and allergic reactions have been reported, but are rare

We strongly advise both women and men to avoid conceiving a child while taking G-CSF or Mozobil®.

If you think you may have become pregnant or fathered a child during stem cell mobilization or collection, tell your healthcare professional immediately.

When should I call the doctor after receiving G-CSF or Mozobil®?

The most common reaction to the mobilization and collection process is fatigue, which should get better every day. Call us immediately if you have:

- any sign of an allergic reaction such as itching, hives, swelling of face or hands, tingling or swelling in your mouth or throat, chest tightness, trouble breathing, dizziness, or palpitations
- any sign of infection: fever of 100.4° F (38° C) or higher; chills; cough; sore throat; pain or burning when urinating; or redness or tenderness at the injection site or any other skin wound
- unusual bruising or if you see blood in your urine
- slow or shallow breathing
- lightheadedness or fainting

When should I call the doctor after receiving G-CSF or Mozobil®? (continued)

- bone or muscle pain not relieved by medication
- nausea not relieved by medication
- vomiting more than 3 times in one day
- left side or shoulder pain, or feeling unusually full
- skin redness, blisters, sores, or white patches on your lips, mouth, or throat
- pain in the upper right side of your abdomen, just below your rib cage
- swelling in your hands, ankles, or feet

How do I contact with a TCT physician?

The TCT clinic phone number is **716-845- 1444**.

The Pediatric Clinic phone number is **716-845-4447**.

Hours are 7 a.m. – 5 p.m., Monday to Friday and flexible hours on weekends and holidays. If you call when the clinic is closed, our call center will answer. Tell them you are a TCT patient and a physician will return your call.

You can also call Roswell's main number at any time, **716-845-2300**.

If you have questions regarding mobilization or collection process or are having side effects, please do not hesitate to contact us.