

Collecting Blood Stem Cells for Transplant

Stem cells are found in the marrow space of your bones. They can be moved (mobilized) into the blood by using chemotherapy and white cell growth factor. Sometimes, growth factor is used by itself. After the stem cells are moved into the blood, they can be collected. This process is called mobilization and apheresis.

Stem Cells

Bone marrow is liquid. The liquid contains stem cells. Most people have millions of stem cells. Stem cells are 'parent' cells that produce red blood cells, white blood cells, and platelets. When these cells mature they leave the bone marrow space and enter the blood. Stem cells mostly stay inside the bone marrow. They can be moved from the bone marrow with a medicine called growth factor, and sometimes, by giving chemotherapy. Once the stem cells are in the blood, some of them can be collected and used for a blood stem cell transplant.

Mobilization

Before your collection, your doctor will pick one of three treatment plans for you.

- Chemotherapy plus white cell growth factor is the most common choice for autologous (from your own body) stem cell transplants.
- White cell growth factor alone is the most common choice for healthy donors giving cells to someone else.
- No chemotherapy or white cell growth factor is the most common choice for healthy donors giving lymphocytes (a type of white cell).

Chemotherapy

Chemotherapy (cytoxan or cyclophosphamide) makes your bone marrow more ready to move stem cells into the blood. It will also treat your cancer. About 10-12 days after cytoxan is given, your white blood cell count will be very low. The goal is that your body will move stem cells into your blood as your white cell count recovers. A nurse will place an IV in your hand or arm. You will receive lots of fluids through your vein before and after the cytoxan. There are special orders for you to follow.

- Drink 12 cups of fluid on the day of treatment and for the next 2 days.
- Call your doctor right away if you have blood in your urine or painful urination.
- Call if you have nausea and vomiting that will not stop.

Growth Factor

White cell growth factor (Neupogen or G-CSF) helps new white cells grow and develop quickly. This can cause stem cells to be moved into the blood. Growth factor is given as an injection just beneath the skin once or twice per day. Most people give it to themselves after they are taught how to do it. If you receive chemotherapy, it may take up to 12 days of injections to get a high enough white blood cell count to start the stem cell collection. You will be given a schedule for when to have blood work drawn. Your lab work will be checked and you will receive a call to let you know when your stem cells are ready to be collected. Healthy donors for a relative will receive Neupogen and will inject for 4-5 days.

Apheresis

Apheresis means “to separate.” An apheresis machine separates stem cells or lymphocytes from the other blood parts. The stem cells or lymphocytes are collected into a bag. Two arm veins or a catheter are used. One vein is needed to draw blood into the machine to separate out cells. A second vein is needed to return the rest of the blood back to you from the machine. If veins cannot be used for some reason, a central catheter will be inserted most often in the neck or groin.

An anti-clotting drug is needed during the collection. This drug may cause tingling in the fingers, toes, and lips. Some people also have body chills. You should tell the nurse or doctor if you are having any of these symptoms. These symptoms go away within 30 minutes of ending the collection.

You will be connected to the apheresis machine for 3 – 4 hours. It may take 1 to 3 days in a row to collect enough stem cells to be used for the stem cell transplant. Lymphocyte donors most often finish collection in one day. Most patients lie in a bed and sometimes sleep or watch TV

during the collection process. Apheresis is done on an outpatient basis. A nurse or a doctor will be present throughout the process. Vital signs will be checked often. Some side effects from apheresis can be: fatigue, feeling weak, dizziness, sore arms, and nausea. It is best to have someone drive you home.

After each day, the collected bag of stem cells is removed from the apheresis machine and taken to the Stem Cell Lab. The stem cells will be counted and either infused into the recipient or frozen until they are needed for transplant.

Phone Numbers

Cancer Clinic Triage, Monday – Friday, 8:00 am – 5:00 pm **(608) 265-1700**. Or **Toll Free: 1-800-323-8942 (ask for 5-1700)**. After hours and weekends, this number will be answered by the paging operator. Ask to speak with the BMT doctor on call. Leave your name and phone number with the area code. The doctor will call you back.

If you are a patient receiving care at UnityPoint – Meriter, Swedish American or a health system outside of UW Health, please use the phone numbers provided in your discharge instructions for any questions or concerns.

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person's health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright ©7/2019. University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#4940.