

# **Related Donor Guide:**

## **Donating Peripheral Blood Stem Cells at Vancouver General Hospital**

Read this guide to learn:

- How Donors are matched with Patients
- What are Stem Cells and Stem Cell Transplants
- Steps To Donating Stem Cells
- How We Collect Your Stem Cells
- Frequently Asked Questions

## **Important Contacts:**

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### **Hematology Apheresis Unit (HAU): 604 875 4626**

Leon Blackmore Pavilion, 6th Floor Vancouver General Hospital

899 West 12<sup>th</sup> Ave, Vancouver

Weekday Hours: 7:00 am – 7:00 pm

Weekends and Holidays Closed

### **Leukemia/BMT Navigator Office: 604 875 4863**

Gordon and Leslie Diamond Health Care Centre

2775 Laurel St, Vancouver

Ask to speak to an “Allo Navigator”

Weekday Hours: 8:00 am – 4:30 pm

Weekends and Holidays Closed

## **For Weekend and Afterhours Medical Concerns:**

Call Vancouver General Hospital switchboard: **604 875 4111**

Ask to speak to the “Apheresis Doctor on call” (“AY-fur-REE-sis”)

## When to Call the Doctor:

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If you have any symptoms that worry you once you've started your GCSF injections, please contact the Hematology Apheresis Unit.

**If the following signs and symptoms occur, contact us immediately:**

- Have a fever of 38°C (100°F) or higher
- Have chills
- Develop a rash or symptoms of an allergic reaction
- Pain when urinating
- Are bleeding, or have a problem such as a lump, swelling or bruising at the injection site that doesn't go away
- Notice any new symptoms you have concerns about

## About this Manual

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Our team at the Leukemia/Bone Marrow Transplant Centre of BC (L/BMT) thanks you for your interest in becoming a stem cell donor. We hope this manual will help you learn how stem cell collection works and what to expect. As you read through it, we recommend writing down any questions to ask our team.

There are many caring and knowledgeable people on your health care team to help you through this experience. We are committed to your safety and the safety of your family member in need of a stem cell transplant.

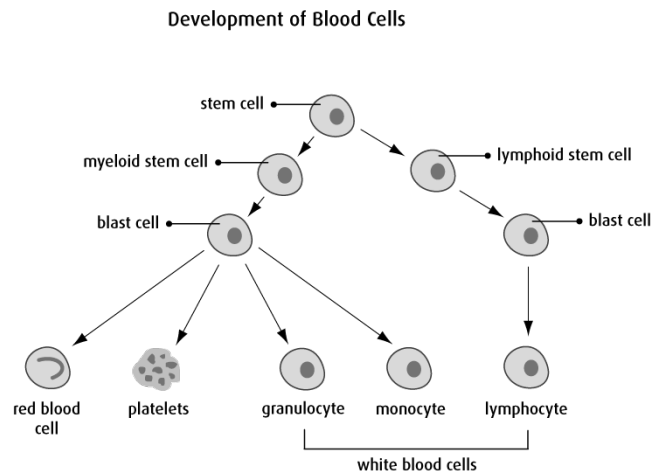
# What are Stem Cells?

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Stem cells are the body's primary cells. All of your body's cells, tissues, organs and bones are made from stem cells. The stem cells that create blood cells are found in your bone marrow.

Bone marrow is the spongy tissue found inside your bones; it could be called the "factory" where your blood cells are made.

Blood stem cells create lots of different types of blood cells, including white blood cells, red blood cells and platelets. These blood cells help the body fight infection, deliver oxygen and help clot the blood, respectively.



# What is an Allogeneic Stem Cell Transplant?

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The recipient of your stem cells is preparing to have an allogeneic stem cell transplant. This type of transplant is used for treatment when:

- Bone marrow or blood cells have become diseased.
- The bone marrow has failed and the body cannot make the blood cells it needs
- A new immune system to fight infections or cancer cells is required.

**Allogeneic stem cell transplantation** involves transferring the stem cells from a healthy person (you the donor) to a patient's body (the recipient).

Before their stem cell transplant date, recipients are given chemotherapy medications and sometimes radiation treatment. These "conditioning treatments" kill any remaining diseased or cancerous cells in their body and suppress (weaken) their immune system so their body will accept your donated cells.

After conditioning treatment, your donated stem cells are given to the recipient as an intravenous (IV) "infusion" (similar to a blood transfusion). The new stem cells enter the recipient's bloodstream and find their way to the bone marrow. They allow the recipient's bone marrow to start producing healthy blood cells again.

# Matching a Donor and Recipient

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**Human leukocyte antigen (HLA) typing** is used to match patients (recipients) and donors for stem cell transplants. HLA are proteins – or markers – found on most cells in the body. The body’s immune system uses these markers to recognize which cells belong to the body and which do not.

Patient and donors can be a good match, even if they do not share the same blood type. Blood type and HLA type are completely different.

A close match between the patient’s HLA markers and the donors can reduce the risk that the patient’s body will attack the donor cells or that the donor cells will attack the patient’s cells after the transplant.

**A video explaining HLA Matching:**

<https://www.youtube.com/watch?v=YVer3IUv6HQ>

## How is HLA testing done?

HLA testing requires a blood sample or a cheek swab to determine whether individuals are a good match. At the testing stage, you do not have to come to Vancouver. Blood samples can be drawn at your nearby clinic and sent by courier to Vancouver. If you live outside North America, you will be sent a cheek swab kit.

Search Coordinators will arrange this testing and will cover courier and testing costs.

## How long will it take to know I’m a match?

HLA test results take up to 4 weeks to process. If you are a preliminary match, more testing is required. If results show there is more than one matched family member, our doctor will determine the “first choice” donor based on factors including age and medical history.

**IMPORTANT: Your status as a match, or not a match, will be revealed to your family member (the patient). You will not receive a call stating your results. Please follow up with your family member.**

## **What if I'm not a match for my family member?**

If you're not a match for your family member, thank you for your time and willingness to help. We will continue to search for a match for your family member.

Please consider helping others by giving blood regularly at your local blood donation clinic. You could also register to be a part of the global stem cell registry and donate stem cells to another child or adult in need. For more information in Canada, contact Canadian Blood Services [www.blood.ca](http://www.blood.ca) or 1-888-2-DONATE. Outside Canada, contact your national blood donation and stem cell registry.

## **What happens if I'm selected as a donor?**

When you are selected as the first choice donor, the stem cell collection process follows the steps below.

1. Phone call with Navigator to discuss the process and timeline.
2. Diagnostic Tests and Screening Questions
3. Doctor's consultation and vein assessment
4. Medication injections
5. Central intravenous line insertion (not required for everyone)
6. Stem cell collection
7. Recovery Period

# 1. Discussion with your Navigator

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6-8 weeks prior to the planned collection, a Navigator will contact you to discuss the stem cell collection process and help you plan travel dates.

Your Navigator will be your main point of contact and can assist with any questions about the testing process, stem cell collection and travel plans. Please don't hesitate to contact them.

## How long do I need to be in Vancouver?

The stem cell donation must take place in Vancouver; we cannot organize it in a centre closer to your home.

If you live in the Vancouver area, you will have 6-7 days of appointments. Both the doctor's consultation and 4 days of daily medication injections at VGH are shorter appointments scheduled sometime between 1pm and 5pm. You may choose to continue to work on these days. You will then have 1 to 2 whole days for stem cell collection. Recovery after collection will take 1-2 days. You will not be able to work on your collection days and recovery days.

If you are not in the Vancouver area, your Navigator will discuss your specific travel dates. Please plan to stay approximately 2 weeks in Vancouver. We will arrange as much of the testing in your home clinic prior to your arrival. Your first appointment when you arrive will be a doctor's consultation and "vein check". You will have 4 days of daily medication injections followed by 1 to 2 whole days of stem cell collection. Recovery after collection will take 1-2 days. You may fly after 2 days of recovery.

**Your Navigator will provide you with a detailed schedule of appointments and will discuss a clear travel plan if are from out of town or country. Please do not book any travel plans before receiving your schedule.**

## 2. Tests and Screening

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Further testing is needed after you have consented to be a stem cell donor. These tests are done to ensure it is safe for you to donate and safe for your family member to receive your stem cells. Tests include:

- Bloodwork
- A urine sample
- A medical history and physical examination by a local doctor
- A health screening questionnaire. This confidential form includes questions on your health, travel and sexual history. It also asks about any alcohol and recreational drug history. You will complete this health history form TWICE – once via email and once in person at your doctor's consultation at VGH.
- For donors over 40 years of age, a chest X-ray and an electrocardiogram (ECG).
- Additional testing may be added depending on your results and health history.

These tests can be done with your family doctor or local clinic as long as the results are in English.

**You will notice some repetition in the questions we ask as you go through the screening process. This repetition is to ensure the safety of both the donor and the patient.**

### 3. Doctor's Consultation and "Vein Check"

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VGH, Leon Blackmore Pavilion, 6<sup>th</sup> Floor

This appointment generally takes one hour. The nurses in Apheresis ("AY-fur-REE-sis") will teach you about the stem cell collection process and check your veins. **Please drink plenty of water or fluids prior to this appointment, as this will assist with the vein assessment.**

During stem cell collection, we place one intravenous (IV) line into each arm (two IVs total). Checking your veins is important because the machine that collects your stem cells needs 2 good veins to work properly. If your arm veins are suitable, we will use them to collect your stem cells.

If your veins are too small or delicate, we will plan for you to have a special central intravenous (IV) line temporarily inserted on the first day of collection. This flexible IV line used for collecting your stem cells is removed at the end of the collection procedure. For more information on this central IV line, please see page 11.

During your visit to the Apheresis clinic, you will also meet an Apheresis Doctor. They will review your medical history, explain the stem cell collection process and obtain your consent for the procedure.

## 4. Medication Injections

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VGH, Leon Blackmore Pavilion, 6<sup>th</sup> Floor HAU and L/BMT Daycare

Our doctor will review your test and screening results and confirm we can proceed with the stem cell collection. Your daily injections begin 4 days before the stem cell collection date.

### **Why do I need G-CSF medications?**

Your stem cells will be collected from your blood. Since stem cells live in your bone marrow, we will give you a medication to move or “mobilize” these stem cells into your bloodstream. This type of medication is called G-CSF (granulocyte-colony stimulating factor).

### **How is G-CSF given?**

G-CSF is an injection under the skin using a small needle. You may feel a slight stinging sensation at the injection site while it is being given. Any pain or redness you notice after the injection should go away soon. If you see a “bump” at the injection site, please do not rub it. The bump will often go away within a few hours.

### **How many G-CSF injections will I need?**

You will need 4 days of daily G-CSF injections prior to stem cell collections. We will supply each dose to you during your injection appointments at VGH (starting 4 days before your first collection date). If a 2<sup>nd</sup> day of collection is required, you will receive a 5<sup>th</sup> dose of G-CSF.

### **Where will I receive my G-CSF injections?**

Our nurses will administer your G-CSF at Vancouver General Hospital, Leon Blackmore Pavilion, 6<sup>th</sup> floor.

G-CSF works best when given at the same time every day. Your injection appointments will be between the hours of 4:00 pm and 6:00 pm. This timing ensures you will have the most stem cells in your blood at the time of your stem cell collection.

## **What should I tell my doctor before starting G-CSF?**

Other drugs may interact with G-CSF. Tell our doctors if you are taking any other medications, even if you only take them sometimes. This includes over-the-counter drugs, naturopath/herbal remedies, vitamins, teas, etc.

## **What are the side effects of G-CSF?**

Generally, G-CSF is well tolerated. Some people may experience:

- Bone pain, especially in the lower back, hips or leg bones. It can also sometimes cause bone pain in the sternum which can feel like chest discomfort.
- Flu-like symptoms, like muscles soreness, aches, and a low fever
- Headache
- Fatigue (feeling tired)

If you feel uncomfortable or have any concerns with side effects from G-CSF, please contact the Apheresis Unit. During the G-CSF mobilization, you can take acetaminophen (Tylenol®) for discomfort or a low fever.

## 5. Central Intravenous (IV) Line Insertion

VGH, Jim Pattison Pavilion, Radiology Unit Ground Floor

**\*\*If the nurse determines your arm veins can be used for stem cell collection, you will not need a central IV line insertion.\*\***

If your arm veins were fragile or too small to be used for stem cell collection, you will need a temporary central intravenous (IV) line inserted. The central IV line our program uses for stem cell collection is an apheresis catheter, which is a flexible tube that is put into a large vein in your neck.

### How will this IV line be inserted?

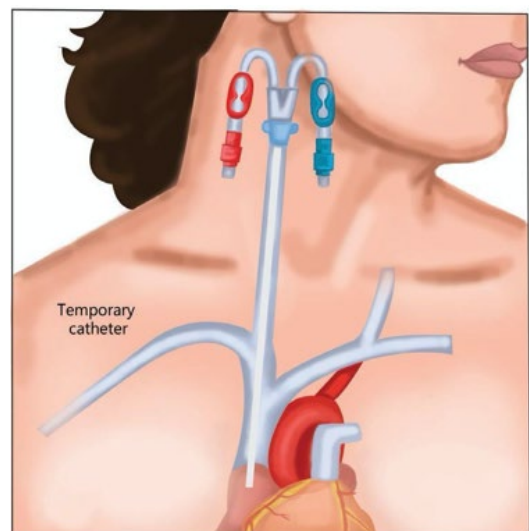
A doctor will insert your central IV line in the VGH Radiology Department, using a local anaesthetic. You may have some minor pain or stiffness in the neck and shoulder area after your line is inserted. You will see a bandage dressing covering your IV line.

### What happens after it is inserted?

You will be sent directly to the Apheresis Unit after the line has been inserted to start the stem cell collection process.

Once adequate numbers of stem cells have been collected, the line will be removed at your bedside by the Apheresis Doctor this procedure is simple with minimal discomfort.

Right: A picture of a central IV line similar to an apheresis catheter. The white plastic catheter enters your bloodstream through a neck vein. The tip of the catheter sits above the heart. The other end will sit along your neck.

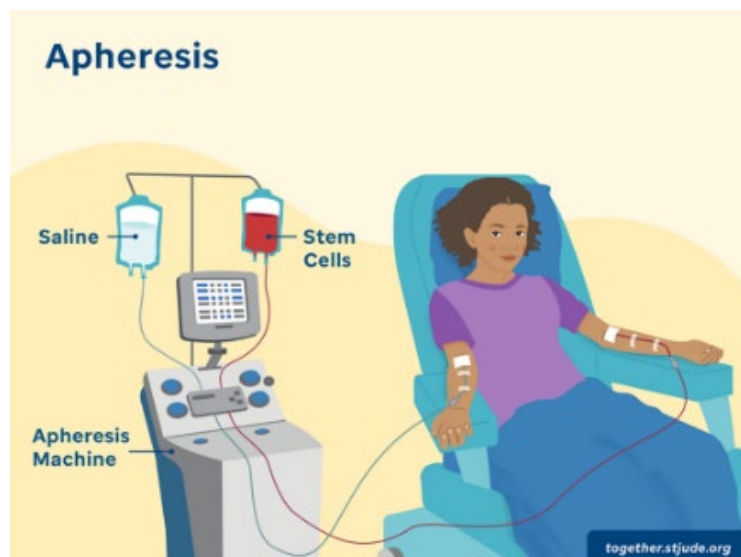


## 6. Collecting Your Stem Cells

VGH, Leon Blackmore Pavilion 6<sup>th</sup> Floor, Wing C, Apheresis Unit

Your stem cells are collected by a procedure called apheresis (“AY-fur-REE-sis”) in the Hematology Apheresis Unit (HAU). During the collection, your blood will be circulated through an apheresis machine that will separate and collect the stem cells. All your remaining blood is returned to you.

- You will be sitting up comfortably in a hospital bed for 6-8 hours while your stem cells are being collected.
- Your nurse will connect you to an apheresis machine by an intravenous (IV) line in each arm.
- Your blood will be drawn into the machine through one IV line.
- The machine will collect and separate the stem cells from your blood. The rest of your blood is returned to your body through the other IV line.
- For patients whose veins were too small to be used, the same process will take place using 2 different “ports” on their apheresis catheter.
- You may want to bring headphones and music to listen to as you will have limited use of your arms (because of the 2 IV lines). You may eat and drink during collection.
- You may have 1 family member at the bedside during the collection. This is subject to change based on program regulations.



## Are there any side effects to stem cell collection?

During the collection, you may feel:

- **Light-headed or dizzy:** This is due to your blood going through the machine.
- **Tingling** in your lips, fingers and toes, **and cramping** in your hands and feet. This is due to a drop in calcium levels in your blood and caused by the anticoagulant used to prevent your blood from clotting in the apheresis machine. Calcium will be added to your intravenous (IV) and these symptoms should fade.

Tell your nurse if you feel any of these or any side effects, they can help you feel more comfortable.

## What happens after the stem cells are collected?

At the end of the first day of collection, a sample from the bag of collected stem cells is sent to the lab where the stem cells are counted. If enough cells have been collected, you may begin your recovery period.

If not enough cells have been collected, you will be asked to come back the next day to have the process repeated, and a 5<sup>th</sup> dose of G-CSF will be administered to you. **This is normal and there is no need for concern.**

Your stem cells are usually given to your family member within 24 hours of collection; this process is very similar to a blood transfusion. In some cases, we “cryopreserve” or freeze your stem cells after the collection to be given to the patient at a later date.

## What if I have a central IV line and I need a second day of stem cell collection?

In the rare occasion that you have a central IV line and need to return for a second day of collection, you may be admitted to hospital for the night. Your safety is our main priority and our team will discuss with you once we know this is a possibility after your first day of collection.

## 7. Recovery Period

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### **What does recovery look like after your stem cell collection?**

You will be given instructions from your Apheresis Nurse and Doctor regarding recovery from your collection. You will be contacted by the Apheresis Unit staff 24 hours after and 2 weeks post collection to ensure you are doing well.

You should expect to return to work in 2 days and more strenuous activities within a week. Your body will naturally replenish the donated stem cells.

### **In the immediate days after your collection:**

- eat well and stay hydrated
- listen to your body and rest if you feel tired

### **If you had IV's inserted for the procedure:**

- Avoid using your arms
- No heavy lifting for 72 hours
- Remove the tensor wraps 2 hours after the collection and the bandaids after 24 hours.

### **If you had a central IV catheter for the procedure:**

- After the HAU Doctor removes the catheter, they will apply a dressing. Leave this on and keep dry for 48 hours.

# Frequently Asked Questions

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## **What happens if I choose not to donate?**

You are under no obligation to donate. Please let us know as soon as possible if you are unable to participate so we can continue our search for another donor.

## **Will my travel, accommodation and living expenses be covered?**

These expenses are not covered and will be your responsibility.

## **If I come from out-of-province, do I need to purchase insurance?**

It is strongly recommended that you purchase travel, medical and flight cancellation insurance if you do not have such coverage. We also suggest to book accommodations with a flexible cancellation policy.

Changes are very often made to admission and transplant schedules, based on the health of your family member. Cancelling flight reservations is costly if you do not purchase cancellation insurance.

Please discuss any travel and insurance questions with your Navigator as soon as possible, they are happy to assist.

## **What if English is not my first language?**

We will arrange translators to assist in all our conversations with you, over the phone and in the clinic.

## **Can I get a flu and/or a COVID shot before donating stem cells?**

We do recommend you receive these seasonal vaccinations, your Navigator can discuss the timing with you.

*We sincerely thank our donors for the considerable amount of time and sacrifice they devote to stem cell donation when their family members are unwell.*

2025 Leukemia / Bone Marrow Transplant (BMT) Program of British Columbia

Please note that the information contained in this manual is not intended to replace the advice of your health care team. Use this as a reference and education guide. Consult your health care team if you have any questions or concerns. Revision 11/2025