CHU Sainte-Justine
Le centre hospitalier universitaire mère-enfant

Université de Montréal

Collection of hematopoietic cells

(stem cells or lymphocytes)

Brochure for children, teens and their families

Your child will be undergoing hematopoietic cell collection in preparation for a hematopoietic cell transplant for themselves (autologous transplant) or for a family member (allogeneic transplant). Here is some important information to remember.

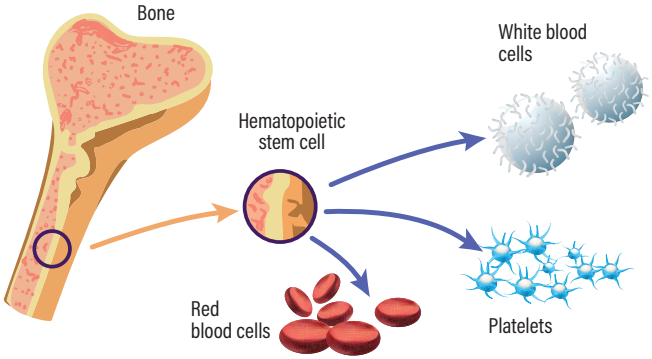
What is hematopoietic cell collection?

Hematopoietic cell collection is a non-surgical procedure that separates the main components of blood: red blood cells, white blood cells, platelets and plasma.

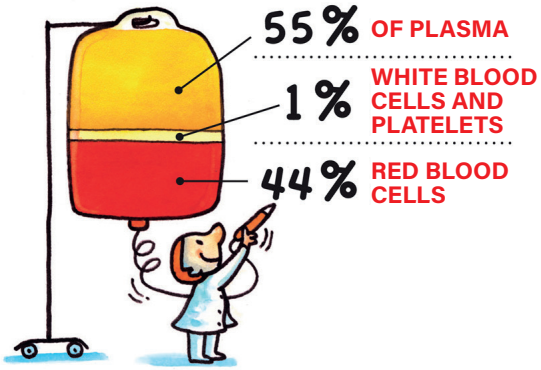
Whole blood is collected from the patient through a venous line that contains a clot-preventing drug. Stem cells, or lymphocytes, are separated by a centrifuge and transferred to a collection bag. Other blood components are not required for the transplant and are returned to the patient through a second venous line.

Two types of cells can be collected depending on the needs.

Stem cells



Stem cells are young cells in the bone marrow (bone) that develop and divide into adult cells with specific functions: red blood cells, white blood cells or platelets.



Lymphocytes

Lymphocytes are small cells that are part of leukocytes (white blood cells) and play a role in the immune system. There are usually plenty of lymphocytes in the blood. No medication is required before the procedure.

Before the procedure

Prior to stem cell collection, your child will be given medication by subcutaneous injection for about five days. The medication will increase the number of stem cells in the bone marrow and allow them to pass from the marrow into the bloodstream. During these five days, your child should not engage in any contact sports.

If your child is too small for proper gauge needles to be placed in their elbow creases, a double-lumen central catheter will be needed. With your consent, the catheter will be inserted into a vein in the groin or neck area while under sedation in radiology the day before the procedure. The catheter will be removed once the procedure is done.

During the procedure

- Cell collection takes two to four hours.
- The procedure can be done only once a day. If more than one harvest is required, additional harvests will be made in the following days until the required number of cells has been obtained.
- The patient is allowed to eat and drink during the procedure.
- However, they must remain lying in bed the whole time.

Is it painful?

Setting up the two venous lines and being unable to move can be uncomfortable. Pain relief measures will be taken in accordance with the Gentle Care (Tout doux) Program.

Otherwise, cell collection is painless.

You can stay with your child throughout the procedure.

Risks and side effects

The amount of blood collected is small compared to the total volume, but dizziness or fatigue can still occur. Children under 20 kg are less likely to undergo this procedure. Red blood cell transfusion is necessary for this procedure and will be done simultaneously.

Some drug classes are not recommended in the days leading up to and during the procedure (anticoagulants, ACE inhibitors). This will be discussed with your child's doctor.

The anticoagulant used to prevent clots from forming in the tubing can cause a drop in calcium in the blood, resulting in tingling or cramping in the lips and fingers. To compensate for this, calcium is given by intravenous infusion during the procedure.

Nausea and vomiting may occur. Anti-nausea medication will be given as needed.

A specially trained nurse will be present throughout the procedure to ensure the safety of your child, monitor their condition and answer any questions you may have.

After the procedure

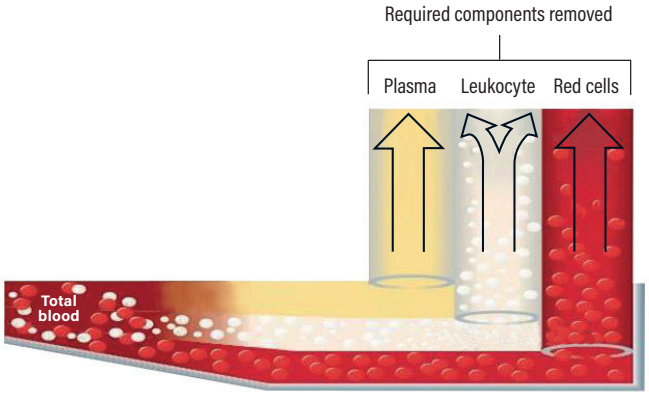
When the harvest is done, your child will return to the Care Unit while the final cell count is taken. If the cell count is sufficient, the doctor will remove the central catheter, and your child will be discharged after adequate monitoring. If the cell count is insufficient, your child will have to stay at the hospital to undergo the procedure again the next day.

Removing the catheter is not painful — your child will not need to be sedated.

Illustration of blood separation

The higher-density red blood cells are concentrated on the outer wall of the ring, while the lower-density plasma adheres to the inner wall.

The cell layer we need to collect lies between these two layers.



Notes

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If you have any questions about the procedure, you can reach the Cellular Therapy Program nurse coordinator at **514 345-4931, ext. 2450.**

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Printed by
Imprimerie du CHU Sainte-Justine

F-4716A GRM 30006377 (Rév. 12-2022)