

Frequently Asked Questions about Bone Marrow Transplant- Allogeneic

Bone marrow transplant is a very complex process that includes many steps. This handout provides answers to common questions patients and caregivers have. We hope it will help you better understand the process and learn the medical terms we often use. Please do not hesitate to ask us more questions as they come up.

How are stem cells collected?

There are several ways to collect stem cells for future re-infusion.

Cord Blood is collected from the umbilical blood vessels in the placenta at time of the delivery and then frozen.

Bone Marrow is collected by multiple needle aspirations from the bone marrow space in the hips or chest.

Peripheral Blood - it is possible to collect stem cells directly from the patient's bloodstream. In order to have enough stem cells in the bloodstream, the patient receives growth-factor drugs (Granix)[®] and/or Mozobil[®]) with or without chemotherapy. The drugs stimulate the movement of stem cells out of the bone marrow space into the bloodstream. This process is called **mobilization of stem cells**. After the stem cells mobilized into the bloodstream the blood is collected through an IV connected to a special machine called an apheresis machine. The machine separates the stem cells and returns the remaining blood back to the donor.

Aspiration- procedure that removes something from an area of the body
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How are stem cells stored?

Some cells are fresh, which means they will be infused shortly after collection. Some stem cells are collected, mixed with a preservative called DMSO, and frozen in liquid nitrogen at a temperature below 50° celcius. Cells can be stored indefinitely. Extra cells are sometimes stored in case the patient needs more cells.

How many cells are needed for transplant?

The number of cells necessary for transplant has not been established and varies from center to center. At Michigan Medicine we want 2-5 million cells.

What are conditioning regimens?

Conditioning regimens are treatment plans that include a combination of chemotherapy and/or radiation before transplant. The purpose is to:

- Kill off any existing cancer cells
- Make room in the bone marrow for new cells
- Suppress your immune system to allow the transplanted stem cells to start growing and maturing.

How will the new stem cells grow in my body?

You will receive the stem cells through your central line. Stem cells have a “homing” (from the word “home”) ability that allows them to migrate to the bone marrow where they will grow and mature. You will receive Granix® several days after transplant to help increase your white blood cell counts.

How do I know transplant is successful?

Transplant is successful when the new cells begin to grow and mature in the bone marrow. This is called **engraftment**. White blood cells are the first to engraft; platelets will engraft second and red blood cells third. When the

new stem cells have engrafted you will see a gradual but steady increase in blood counts. We define engraftment in one of two ways:

- ANC is over 0.5 or 500 for two days in a row,
or
- Platelet count is over 20,000 **and** ANC is higher than 1,000 for 1 day

ANC = Absolute Neutrophil Count.
Neutrophils are a type of white blood cell that fights infection.

When will I engraft?

Time of engraftment varies per type of transplant and where stem cells are collected.

Autologous: Peripheral stem cells: average 10-14 days
Bone Marrow: average 15-20 days

Allogeneic: Peripheral stem cells: average 12-14 days
Bone Marrow: average 15-20 days

Cord Blood: Average 25-45 days

When can I go home?

We will discharge you when the following have occurred:

- Your cells have begun to engraft and your ANC is more than 1.0 or 1,000
- You have been without fever for 24 hours
- You are eating and drinking adequately
- Side effects such as pain, nausea, vomiting or diarrhea are all under control with oral medications
- You are not requiring daily blood transfusions

Will my blood type change?

If you received stem cells from a donor, your donor may have a different blood

type than yours. A blood bank technician will provide you with a blood ID card with your current blood type and donor's blood type. To assess changing of blood type, we will do frequent blood-type tests during your stay. This will help you to prepare for future transfusions. It will take approximately one year for your blood type to convert.

How long do I have diet restrictions?

Transplant recipients receive specific food safety guidelines to help protect against bacteria and other harmful organisms found in some food and drinks. A FDA *Food Safety* booklet for bone marrow transplant recipients is included in this binder. You will be required to follow these guidelines for the first 100 days or until you are off all medications that suppress your immune system (if you received donated stem cells.) The unit dietician will review guidelines in this booklet with you.