In an allogeneic stem cell transplant, the patient gets high-dose chemotherapy and sometimes radiation to treat the disease. After the treatment, the patient gets stem cells from another person, called the donor. The donor is often related to the patient. Sometimes the donor is not a relation. Either way, the transplant team does tests to make sure the donor’s stem cells are the right match for the patient’s.

Types of Transplant Donors

There are four types of transplant donors:

- **A matched related donor (MRD).** Usually, the search for donors begins with looking at your brothers or sisters who may be the closest match. Each of your brothers and sisters has a 25% chance of being a full match.

- **A matched unrelated donor (MUD).** A worldwide registry called the National Marrow Donor Program (NMDP) coordinates and oversees donations from unrelated donors.

- **Haploidentical donor.** Your brothers and sisters, parents, and your children who are half-matched can be donors.

- **Cord blood donor.** Stem cells are collected and stored from a newborn infant’s placenta or umbilical cord. These cells are kept frozen in a blood bank until needed.

Finding the Best Donor

Finding the best donor lowers your chances of getting graft-versus-host disease (GVHD). GVHD happens when the immune system of the donor’s cells (graft) attacks your body’s own tissues (host). The cells from the donor do not recognize the tissues and organs of your body.

The transplant team uses human leukocyte antigen (HLA) testing to find the best donors. HLAs are proteins on the surface of most cells in the body. The proteins help the body tell which cells belong to it and which do not.

Once the donor is chosen, your transplant team will determine the best source of stem cells—either the donor’s bone marrow or blood.

Types of Stem Cell Donation

There are two sources of stem cells: peripheral blood stem cell (PBSC) and bone marrow (BM). Your transplant doctor chooses the donation method best for you.

**PBSC donation.** It takes place at the Blood and Marrow Transplant (BMT) clinic or the BMT unit in the cancer hospital. Blood goes from a catheter (IV line) placed in one of the donor’s veins to an apheresis machine. The machine takes the stem cells from the donor’s blood. The rest of the donor’s blood goes back through a second IV line into a different vein. The stem cells are frozen and saved.

**Bone marrow donation.** The collection takes place in an operating room at the HCI cancer hospital. Your donor gets medicine to make sure he or she feels no pain. The doctor uses a large needle to take bone marrow from your donor’s hip bone. Usually, the donor goes home the same day and recovers from the procedure in about a week. The stem cells from the fresh bone marrow are processed and then given to you through your IV line later.

Pre-Transplant Workup Tests

Before your transplant, your transplant team will do tests to check the current status of your disease.

Preparation for the Transplant

All patients have treatments to prepare for the stem cell transplant. These are called pre-transplant conditioning. You will get high doses of chemotherapy. You will also get medicines to help prevent GVHD and other side effects. Depending on your treatment plan, you may also get radiation treatments to your entire body. This is called total body irradiation (TBI).

Most patients will come to the hospital for conditioning and stay until they are well enough after the transplant to go home or to local lodgings. They are called *inpatients.*

Some patients don’t need to stay in the hospital because of the type of transplant they get. They are called *outpatients.*

continued on page 2
For both inpatients and outpatients, the conditioning treatments destroy any remaining disease and prepare your marrow for new stem cells. However, they can harm other healthy cells in your bone marrow. Your transplant team will tell you about the possible risks.

Transplant

After the conditioning treatments, the transplant team will give you your donor’s stem cells. The stem cell technician will prepare the stem cells for infusion. Your transplant nurse will give them to you through your IV line.

The day your stem cells are returned is called your transplant day. It is numbered Day 0. All days before the transplant have “minus” numbers. All days after it have “plus” numbers. For example, you may have chemotherapy on Day -4 through Day -1. The day after your transplant is Day +1.

Your transplanted stem cells will move from your bloodstream to the bone marrow. They will begin to create new blood cells. The transplant team will do lab tests on your blood often to keep track of this process.

Your immune system will be very weak. You will get several medicines to prevent infections. Your nurse will check your temperature often because fever is a sign of infection.

In the days after your transplant, you are likely to have side effects from chemotherapy and radiation:

- Nausea
- Vomiting
- Fatigue
- Fever
- Rashes
- Mouth sores
- Constipation
- Diarrhea

Your transplant team will tell you ways to prevent and ease these side effects.

Engraftment

Engraftment means that the transplanted stem cells have started producing white blood cells, red blood cells, and platelets. After your transplant, we test your blood often to see how many neutrophils, a type of white blood cell, are present. This test is called an absolute neutrophil count (ANC). When your ANC is more than 0.5 for three days in a row, engraftment has happened.

The engraftment date varies from person to person. Once you have engrafted, your immune system will begin to get stronger again. Your transplant team can then stop some of the medicines that prevent infections.

Leaving the Hospital and Recovery

After engraftment happens and you are well enough, you can leave the hospital. If you live within 40 miles (60-minute drive) of Huntsman Cancer Institute, you can go home. If you live farther away, you need to stay in local lodgings for 2–3 months.

If you are an outpatient, you must live within 20 miles (30-minute drive) for the entire conditioning and transplant process.

You will be in recovery. You will still have a high risk of infections. Some patients have a hard time with infections, nausea, or diarrhea after leaving the hospital. You will need a caregiver to help you at home 24 hours every day for 2–3 months after you leave the hospital. You must come for follow-up visits at our BMT Ambulatory Treatment Center (ATC) one to three times a week.

At these visits, the transplant team will check your health. You will have blood tests. You may get IV fluids or blood transfusions. The transplant team will adjust your medicines as needed. At these visits, your transplant team will also help you with infections or GVHD that may happen.

The transplant team also works with a home health care agency that can give IV medicines and fluids if you need them between visits. Some problems may require you to go to the ATC more often. You may need to stay in the hospital again.

About 3 months after you leave the hospital, you and your caregiver will meet with a BMT staff member. You will review skills and practices for your safety after your ATC visits end. You will also receive a survivorship care plan. It will include the following:

- Details of your transplant therapy
- What to watch for
- Schedule for follow-up visits with your transplant doctor at the clinic

If you have been staying in temporary lodgings, you can return to your home for the rest of your recovery.