

Understanding Bone Marrow Transplantation

What is bone marrow?

Bone marrow is the soft, spongy tissue in the center of bones that makes blood. Bone marrow does this through the use of immature cells called hematopoietic stem cells. These cells can grow into any type of blood cell the body needs to keep our blood—and ourselves—healthy. For example, they can turn into bone marrow cells, red blood cells, white blood cells, or platelets.

What is a bone marrow transplant?

A bone marrow transplant is a treatment for some types of cancer. Certain cancers and diseases keep hematopoietic stem cells from developing normally. A bone marrow transplant provides new stem cells after old, damaged, or cancerous cells have been removed using chemotherapy alone or in combination with radiation therapy. The transplanted stem cells can make new, healthy blood cells. This treatment is also called a stem cell transplant.



What is the bone marrow transplantation process?

In an autologous (AUTO) transplant, you receive your own previously removed stem cells. This type of stem cell transplant may also be called high-dose chemotherapy with autologous stem cell rescue. In this type of transplant, the first step is to collect and freeze stem cells from your blood. Next, you receive chemotherapy with or without radiation therapy. Finally, thawed stem cells are put back into your bloodstream using an intravenous injection into a vein. The stem cells find their way back into the marrow and begin to grow. After 10 to 14 days, the process is complete.

In an allogeneic (ALLO) transplant, you receive another person's stem cells. This person is called a donor. The donor's bone marrow should match yours. This reduces the likelihood of a serious condition called graft-versus-host disease (GVHD). A brother or sister may be the best match. But another family member or volunteer might work as well. Newer methods have greatly increased the number of potential donors for a transplant. With this type of transplant, the first step is to find a donor and coordinate when the transplant will happen. Next, the patient receives chemotherapy with or without radiation therapy. On the transplant day, fresh donor cells are given through a vein.

What are the side effects of a bone marrow transplantation?

Many side effects of bone marrow transplantation result from the cancer treatment(s) received before the transplantation. Learn more about these side effects at www.cancer.net/sideeffectsbmt.

The most noticeable side effects of an AUTO transplant are hair loss and intestinal upset. However, the most serious side effect is a higher risk of infections, particularly during the first few weeks after transplantation. ALLO transplants have additional side effects, including an increased risk of infections for months to years, the need for anti-rejection drugs, and the risk of GVHD.

Preventing and controlling side effects is a major focus of your health care team, so talk with them about any side effects that you experience. Learn more about managing side effects at www.cancer.net/sideeffects.

Questions to ask the doctor

Regular communication is important in making decisions about your health care. Consider asking the following questions of your health care team:

- Is bone marrow transplantation recommended for me? If so, why?
- Which type of bone marrow transplant would you recommend? Why?
- If I will have an ALLO transplant, how can we find a donor? What is the chance of a good match?
- What type of treatment will I have before the transplant? Will it include radiation therapy?
- How long will my treatment take? How long will I stay in the hospital?
- How will a transplant affect my life? What about my ability to work, exercise, and do regular activities?
- How will we know whether the transplant works?
- What will happen if the transplant doesn't work or the cancer comes back?
- What are the short-term and long-term side effects?
- What tests will I need later? How often will I need them?
- Whom should I call if I have questions or problems?
- Is there anything else I should be asking?

Additional questions to ask the doctor can be found at www.cancer.net/bmtp.

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TERMS TO KNOW

Anemia:

A low level of red blood cells

Anti-rejection drugs:

Medication that weakens the immune system to keep it from destroying the new cells

Chemotherapy:

The use of drugs to destroy cancer cells

Complete blood count:

A test that evaluates the number of white blood cells, red blood cells, and platelets

Graft-versus-host disease:

A condition when transplanted stem cells attack the body and cause inflammation; rarely, it is life threatening

Hematopoietic stem cells:

Cells that can grow into any type of blood cell the body needs to keep our blood—and ourselves—healthy

Human leukocyte antigen (HLA):

A protein on the surface of white blood cells and other cells that makes up each person's unique tissue type

HLA typing:

A special blood test to find a matching bone marrow donor

Neutropenia:

A low level of white blood cells

Radiation therapy:

The use of high-energy x-rays to destroy cancer cells

Thrombocytopenia:

A low level of platelets

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