

Chronic Myeloid Leukemia (CML): Stem Cell Transplant



What is a stem cell transplant?

Stem cells are immature cells that make all the blood cells. A stem cell transplant uses stem cells to replace bone marrow that contains cancer. The bone marrow with cancer is first destroyed with high-dose chemotherapy (chemo). Or this may be done with radiation to the whole body. Healthy stem cells are then put in your body. Over time, these stem cells grow and become new and healthy bone marrow that makes healthy blood cells.

When might a stem cell transplant be used for CML?

This treatment is not often used for chronic myeloid leukemia (CML). But it still may be a choice for some people. In most cases, a healthcare provider waits to see how you respond to targeted therapy before doing a stem cell transplant.

A stem cell transplant may cure CML. But the benefit has to be weighed against the risks. Transplant is very hard on the body. There's a possibility that you can die from the complications of the transplant.

Stem cell transplant might be advised if you're young, fairly healthy, and any of these apply:

- **Your CML is in the chronic phase, and targeted therapy isn't working** . Most people with CML are first treated with targeted therapy. A stem cell transplant may be offered if you've tried at least 2 types of targeted therapy and it doesn't work or stops working, especially in children, teens, and young adults.
- **You've tried, but cannot tolerate any of the targeted therapy medicines used for CML.**
- **Your CML is in the accelerated phase.** Targeted therapy doesn't work as well during the accelerated phase. In these cases, a stem cell transplant may be advised.
- **Your CML is in the blast phase.** Targeted therapy alone is unlikely to work in the blast phase. In these cases, a stem cell transplant may be advised.

Types of stem cell transplants

There are 2 kinds of stem cell transplants:

- **Allogeneic transplant.** This means the stem cells come from another person. This may be a brother or sister, or it might be someone not related to you.
- **Autologous transplant.** This means the stem cells are collected from your own body and saved. This is done before you get chemo.

Allogeneic transplant is used for CML. In many cases, the best matched donor is a family member. But stem cells may also come from a matched, unrelated donor who has the same tissue type as you.

How stem cells are collected

Stem cells are collected from the donor's blood or bone marrow:

- **From the blood.** This is the most common source of stem cells for a transplant. Your donor may get a shot (injection) of a growth factor medicine for several days. This forces the bone marrow to make stem cells and push them out into the blood. The process for collecting the stem cells from the blood is called apheresis. It's a lot like giving blood, but it takes longer. A thin, flexible tube called a catheter is used to get blood from the donor's vein. The blood goes into a machine that removes the stem cells. Then the

extra blood is returned to the donor. This process may need to be done more than once to collect the right amount of cells. The stem cells are then frozen until needed later.

- **From the bone marrow.** Stem cells may also be taken right from the donor's bone marrow. This process is done using medicine (general anesthesia) to make your donor sleep and not feel pain. A thick needle is used to make several holes (punctures) in the pelvic or hip bone to remove marrow. These stem cells are filtered and frozen until they are needed.

Having the transplant

- You may be admitted to the hospital the day before your transplant.
- You'll be given chemo or radiation therapy to treat the CML.
- After the chemo or radiation therapy is finished, you'll be given the stored stem cells. They go right into your blood through a catheter that's put in your vein. It's a lot like a blood transfusion.
- You'll then have to wait for your stem cells to start multiplying. You may have to limit your time around people and take other precautions to prevent getting an infection. Once part of your white blood cell count (the absolute neutrophil count) reaches a safe level, your immune system is working and your other blood counts should start slowly going up. This may happen in a few weeks, or it may take longer.
- You'll need to have your blood drawn a lot for the next few weeks to check your blood cell counts. This can be done on an outpatient basis. This means you go home the same day.

What is a minitransplant?

A minitransplant is sometimes used for a person with CML who can't handle a standard stem cell transplant. It's also called a nonmyeloablative transplant or a reduced-intensity allogeneic transplant.

The treatment is done with a lower dose of chemo or radiation. This doesn't fully destroy the cells in the bone marrow. But it's enough to keep the immune system in check. Then you get the donor stem cells. These stem cells will develop an immune reaction to the leukemia cells and kill them. Because this treatment uses lower doses of chemo or radiation, it often has less severe side effects. Older adults or people with other health problems might do better with this treatment.

Many healthcare providers still consider minitransplants to be experimental for CML. They believe that they're best done as part of a clinical trial.

Possible short-term side effects

Most of the short-term side effects of a stem cell transplant are from the high doses of chemo or radiation. These should go away over time as you recover from the transplant. Common side effects can include:

- Infections
- Low blood cell counts
- Bleeding
- Low blood pressure
- Shortness of breath
- Chest pain or tightness
- Coughing
- Fever or chills
- Hair loss

- Nausea
- Vomiting
- Mouth sores
- Loss of appetite
- Diarrhea
- Tiredness (fatigue)
- Weakness

Possible long-term side effects

Some side effects of a stem cell transplant may be long-lasting or show up years later, such as:

- Bone pain
- Growth of another kind of cancer
- Shortness of breath, often caused by radiation damage to the lungs
- Damage to the liver, kidneys, heart, or other organs
- Lack of menstrual periods, which may mean ovary damage and infertility
- Vision problems caused by damage to the lens of the eye
- Weight gain, which may be a sign of thyroid gland damage

Another possible long-term side effect of allogeneic transplant is graft-versus-host disease. This is when the immune system cells in the donor's stem cells attack your body. The cells can attack your skin, liver, gastrointestinal (GI) tract, mouth, or other organs. This can cause symptoms, such as:

- Skin rashes with itching
- Yellowing of the skin (jaundice)
- Severe diarrhea
- Severe tiredness (fatigue)
- Muscle aches

Making a decision

It's important to discuss the details of stem cell transplant with your healthcare provider to make sure you understand the possible risks and benefits.

Stem cell transplant is a complex procedure. It's only done by healthcare providers with special training. If you decide to have one, go to a hospital that specializes in stem cell transplants, such as a major cancer center. The procedure also costs a lot. Check with your insurance provider to see how much of it will be covered and how much you will have to pay.

© 2000-2027 The StayWell Company, LLC. All rights reserved. This information is not intended as a substitute for professional medical care. Always follow your healthcare professional's instructions.
This information is not intended as a substitute for professional medical care. Always follow your Healthcare professional's instructions. Copyright Krames LLC.