

## Cord Blood Transplants

Cord blood transplants can be curative for malignant and genetic diseases such as leukemia, sickle cell disease, lymphoma, immune system disorders, and neuroblastoma. Cord blood, the blood that remains in the umbilical cord after a baby is born, is rich in stem cells and can be an effective alternative in treating diseases that would otherwise require a stem cell transplant. Common types of stem cell transplants for cancer treatment include:

- **Autologous transplants:** Patients receive their own stem cells.
- **Allogeneic transplants:** Patients receive stem cells from a matched relative (usually a fully matched sibling) or an unrelated donor.

### Statistics

- Since the first cord blood transplant in 1988, over **40,000 cord blood stem cell transplants** have been performed worldwide.
- Cord blood transplants in the U.S. are **most commonly performed for children** because the amount of cord blood available from each unit is small compared to other stem cell sources (marrow or blood). Adults and larger children may receive multiple cord blood units.
- Cord blood stem cells, like bone marrow stem cells, develop into **red blood cells, white blood cells, and platelets**.

### The Transplant Procedure and Post-Transplant Activity

Cord blood is collected from the umbilical cord at birth and provided to a cord blood bank. A few ounces of blood are drawn from the umbilical cord and placenta, posing no risk to the child or mother, then kept frozen in a highly controlled environment at a public or private cord blood bank until needed. Public banks are searchable by physicians to find a match for their patients. Private banks reserve the cord blood only for the child and family members.

**Transplant:** The transplant process begins with the patient receiving a high dose of chemotherapy and/or radiation to ablate the patient's own bone marrow stem cells and to eradicate any cancer that is left in the patient's body. Then, the patient receives the cord blood stem cells intravenously, similar to a blood transfusion.

**Post-Transplant Activity:** Once the stem cells have been transplanted into the patient, they enter the bloodstream via the intravenous infusion and take up residence in the bone marrow. Through a process called "engraftment," the stem cells then start to produce new white blood cells, red blood cells, and platelets. The patient is closely monitored in the hospital or through daily outpatient clinic visits during the engraftment process, typically for several weeks, though it can take months and even years for patients to experience restoration of full immune function. Through blood tests, doctors evaluate and confirm that the cancer has not returned and new blood cells are being made appropriately. All cord blood transplant recipients have lowered immune systems after their procedures. Some patients may stay in special hospital units designed to prevent infections, which include specialized nursing, pharmacy and an air pressure system with special high-efficiency air filters.

**Side Effects:** There are many possible side effects that can occur during the cord blood transplant process. Among them is an increased probability of infection and bleeding related to low blood counts from the high dose of chemotherapy and radiation given prior to the transplant. Doctors give antibiotics, antiviral and antifungal medications to prevent or treat this possibility. Patients may also receive transfusions of platelets to prevent bleeding, and transfusion of red blood cells to treat anemia. Other short-term side effects include nausea, vomiting, fatigue, loss of appetite, mouth sores, hair loss, and skin reactions. As the new immune system or "graft" develops, it may also attack the organs of the patient or "host," in a disease called graft-versus-host disease (GVHD). Cord blood transplants cause less GVHD than other stem cell sources. There are other potential long-term side effects caused by the transplant and the high doses of chemotherapy and/or radiation therapy given prior to the transplant, and patients who have received a stem cell transplant continue long-term follow up with their transplant team for ongoing monitoring and treatment.

## About Texas Oncology

With more than 530 physicians and 280 locations, Texas Oncology is an independent private practice that sees more than 71,000 new cancer patients each year. Founded in 1986, Texas Oncology provides comprehensive, multi-disciplinary care, and includes Texas Center for Proton Therapy, Texas Breast Specialists, Texas Colon & Rectal Specialists, Texas Oncology Surgical Specialists, Texas Urology Specialists, Texas Infusion and Imaging Center, and Texas Center for Interventional Surgery. Texas Oncology's robust community-based clinical trials and research program has contributed to the development of more than 100 FDA-approved cancer therapies. Learn more at [www.TexasOncology.com](http://www.TexasOncology.com).

*Sources: American Cancer Society, American Society of Clinical Oncology, Be the Match, Leukemia and Lymphoma Society, National Center for Biotechnology Information, Parent's Guide to Cord Blood Foundation, and U.S. Health Resources and Services Administration*



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Updated: 5/24/2023

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