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Donating Umbilical Cord Blood [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 06/2016

Donated umbilical cord blood is a possible treatment for people with certain life-threatening diseases and cancers. This includes leukemia and immune and genetic disorders. It is often an effective alternative to [bone marrow transplantation](#) [3] for people when an adult donor with well-matched tissue is not available.

Bone marrow is a spongy, fatty tissue inside larger bones. A bone marrow transplantation replaces diseased marrow with healthy bone marrow from the patient or from a volunteer donor. But patients must wait for the donor to have the bone marrow harvested or blood stem cells collected. So this process can take some time. However, previously stored cord blood is easily available for patients who need a life-saving transplant. And research suggests that cord blood transplant may have less significant side effects.

The importance of umbilical cord blood

While in the mother's womb, a fetus receives nourishment and oxygen from the mother's blood. These essential substances pass to the fetus through the placenta and umbilical cord, which connect the mother and fetus. The blood found within the umbilical cord is the baby's, not the mother's.

Typically, the umbilical cord, placenta, and any blood still in the cord are thrown away. But researchers have discovered that umbilical cord blood is rich in hematopoietic stem cells. Hematopoietic stem cells are the immature blood-forming cells also found in blood and bone marrow. They can differentiate or change into:

- Red blood cells that carry oxygen to all parts of the body
- White blood cells that help the body fight infections and diseases
- Platelets that help blood clot and prevent bleeding

Who can donate umbilical cord blood

The nonprofit [National Marrow Donor Program](#) [4] (NMDP) has a nationwide bone marrow and cord blood registry. It recommends the following guidelines for cord blood donation. For specific eligibility requirements, contact the cord blood bank you choose to use.

Women must be:

- At least 18 years old (16 years old in some states)
- Healthy and able to perform normal activities

The cord blood bank will evaluate all other medical conditions and medications you are taking. Mothers who are expecting twins may not be able to donate. There are typically not enough stem cells recovered from the umbilical cord that are useful in transplantation.

How to become an umbilical cord blood donor

Donating cord blood requires some advance preparation. Before the 34th week of pregnancy, you should contact the cord blood bank your hospital works with. The NMDP lists [hospitals that participate with cord banks in its network](#) [5]. Or you can contact a cord blood bank in your area to ask about donating. AABB (formerly known as American Academy of Blood Banks) provides a [list of accredited cord blood banks](#) [6].

A cord blood bank will require you to provide consent before you donate and store cord blood. In addition, you will need to complete a health history questionnaire. You will also need to give a small sample of blood to test for infectious diseases.

Donations among minority populations

For a transplant to be successful, the donor's cord blood must match the recipient's. This means there is a better chance of finding a matched donor within the same racial and ethnic group. But people from minority populations are underrepresented in donor registries which lessens their chance of finding a matched donor. These racial and ethnic groups include Hispanic, American

Indian, Alaska Native, Asian, Native Hawaiian, black, and multi-race backgrounds. There is an urgent need for people from these minorities to donate cord blood.

Public versus private use

You can choose to donate cord blood to a public cord blood bank or store it for your private use. Private storage of umbilical cord blood reserves your baby's cord blood for use within your own family. Public storage makes cord blood available for any person in need.

The [American Academy of Pediatrics \(AAP\)](#) [7] recommends publicly storing umbilical cord blood unless a child's older sibling has a health condition that could benefit from transplantation. The chance that a child will need his or her own cord blood in the future is extremely low. Also, a child's own cord blood is not an option to treat genetic disorders he or she had at birth. This is because the cord blood may carry the same genes linked to the disorder. Talk with your doctor about your reasons for wanting to store or donate your baby's umbilical cord blood.

Donating cord blood to a public cord blood bank is free. Initial fees for private storage of cord blood may range from \$500 to \$2,000. In addition, annual storage fees can cost about \$100 per year.

Collection of umbilical cord blood

Donating umbilical cord blood is a painless procedure that is safe for the mother and the baby:

- After the baby's birth, the umbilical cord is clamped and cut.
- Approximately 3 to 5 fluid ounces of blood is drained from the umbilical cord and placenta.
- The blood is placed into a collection bag or vial, called a unit.
- If the blood doesn't contain enough blood-forming cells for a transplant, the cord blood unit will not be stored. Instead, it will be used in medical research if you have consented for this use.

The entire process of umbilical cord blood collection takes approximately 5 minutes. However, cord blood will not be collected if a delivery becomes complicated. In these situations, the focus remains on the health and safety of the mother and baby.

Umbilical cord blood testing and storage

Shortly after collecting cord blood, it is taken to a laboratory for processing, testing, and storing.

The lab tests for infectious diseases and conducts human leukocyte antigen (HLA) typing. HLAs are proteins on the surfaces of all cells in the body, especially white blood cells. The special combination of HLA proteins makes each person's tissue unique.

This "tissue type" of the cord blood unit is listed on the donor registry. Doctors can access this information when they are looking for an HLA match for a patient who needs a transplant. All personal information is confidential. Cord blood banks will contact you about test results that are important for your and your baby's health.

After the screening tests, the blood bank stores the cord blood unit, labeled with HLA type, in a freezer. Cord blood can be stored for a long time. Even after 10 years of proper storage, enough cells remain for transplant. Research on storing cord blood beyond 10 years is ongoing.

More Information

[What Is a Stem Cell Transplant \(Bone Marrow Transplant\)?](#) [3]

[Side Effects of a Stem Cell Transplant \(Bone Marrow Transplant\)](#) [8]

[Donating Bone Marrow](#) [9]

Additional Resources

[Blood & Marrow Transplant Information Network](#) [10]

New York Blood Center: [National Cord Blood Program](#) [11]

U.S. Department of Health and Human Services: [Bone Marrow and Cord Blood Donation and Transplantation](#) [12]

Links

- [1] <http://www.cancer.net/navigating-cancer-care/diagnosing-cancer/tests-and-procedures/donating-umbilical-cord-blood>
- [2] <http://www.cancer.net/about-us>
- [3] <http://www.cancer.net/node/24717>
- [4] <http://bethematch.org/>
- [5] <https://bethematch.org/support-the-cause/donate-cord-blood/how-to-donate-cord-blood/participating-hospitals/>
- [6] <http://www.aabb.org/sa/facilities/celltherapy/Pages/CordBloodAccrFac.aspx>
- [7] <http://www.aap.org/>
- [8] <http://www.cancer.net/node/24674>
- [9] <http://www.cancer.net/node/22947>
- [10] <http://www.bmtinfonet.org/>
- [11] <http://www.nationalcordbloodprogram.org/>
- [12] <http://bloodcell.transplant.hrsa.gov/>

