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Cord Blood Transplants Provide an Opportunity for a Cure from Blood Cancer

By Julie Grisham, Thursday, August 30, 2018



Juliet Barker is Director of MSK's Cord Blood Transplant Program.

Summary

For people who don't have a matched bone marrow or stem cell donor, a cord blood transplant may offer the best chance for being cured of blood cancer.

Allogeneic stem cell or bone marrow transplants can be lifesavers for people with a blood cancer such as **leukemia** or **lymphoma**. After chemotherapy is used to destroy the cancer, blood-forming stem cells from a donor are infused to repair and restore the bone marrow.

Unfortunately, only about one-quarter of the people who need an allogeneic transplant have a sibling who is a genetic match and able to donate stem cells. The other three-quarters need to find another donor for their transplant.

People can receive bone marrow or stem cells donated by an adult who is not related to them. But many who need a transplant are not able to find a matched donor from any of the volunteer donor registries. These people can benefit from a different procedure called a **cord blood transplant**, which uses stem cells from the umbilical cord blood of a healthy newborn. Stem cell donations from adult volunteers and cord blood collections are found through **Be the Match** or another donor registry.

We recently spoke with **Juliet Barker**, Director of Memorial Sloan Kettering's Cord Blood Transplant Program. Here, she describes MSK's expertise with cord blood transplantation.

What is cord blood, and why is it a good option for some people who need a stem cell transplant?

Cord blood is collected from the umbilical cord and placenta of healthy newborns and is a rich source of blood-forming stem cells. Parents have the option of donating it at birth. The cells are stored frozen in public cord blood banks.

A major advantage of cord blood is that the immune system of a newborn baby is not yet fully developed. This means that the match that's required between the cord blood stem cells and the person receiving them is less strict.

However, even though the cord blood immune system is very malleable, it can still develop into a healthy immune system. Also, cord blood cells are very good at fighting cancer. This ability is called the graft-versus-leukemia effect. It can help prevent a person's cancer from returning after their transplant.

What does it mean for donor cells to be matched, and why is it often hard for people to find a match?

The test that's used to identify appropriate donors is called HLA matching. HLA stands for human leukocyte antigen. HLAs are proteins that are present on most cells in your body. Your immune system uses HLAs to recognize which cells belong in your body. When using an adult donor, it's important that the donor and the person undergoing the transplant have HLAs that match so the donor immune system doesn't attack the patient's normal tissues, a complication called graft-versus-host disease.

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A person's HLA type is inherited from their parents, which is why siblings offer the best chance of finding a match. People's HLA type can be determined with a simple blood test or cheek swab.

People of southern European, Asian, African, Hispanic, and Middle Eastern backgrounds tend to have more diverse HLA types. These types are less commonly found in adult volunteer donor registries. It can also be difficult for someone with a mixed background — for example, part Asian and part Hispanic — to find a donor who is a match. For them, cord blood transplants offer a good opportunity for a cure.

What kind of expertise does MSK have in performing cord blood transplants?

MSK has one of the most active and successful cord blood transplant programs in the world. We have performed more than 350 cord blood transplants in adults and children — more than half of them being of non-European ancestry.

However, these transplants are complex. They offer great benefits, provided the hospital where the transplant is done has the expertise to manage the potential complications. MSK has experts who can tackle transplant complications as a matter of routine.

How did you become an expert in cord blood transplants?

I did my medical training in Australia, where I'm from. In 1996, I came to the United States to the University of Minnesota to train under famous transplant specialists, including John Wagner. Dr. Wagner is a pioneer in cord blood transplantation.

In Minnesota, I was trained in doing stem cell transplants in adults. I was chosen to develop the adult cord blood transplant program there. I was in the right place at the right time. In 2001, our team [reported in the *New England Journal of Medicine*](#) on the then-new technology of combining two different cord blood collections from two different babies, a procedure known as double-unit transplantation. This approach has been very successful and has since been adopted as the standard way of doing cord blood transplants in adults around the world.

Cord Blood Transplants

Cord blood transplants are an option for people who need a stem cell or bone marrow transplant but do not have a matched donor.

[Learn more](#)

Why did you decide to come to MSK?

In 2005, I had the opportunity to come to MSK and create the Cord Blood Transplant Program here. Thanks to the leadership of [Richard O'Reilly](#) beginning in the 1970s, MSK has many decades of experience in developing and improving stem cell transplants. MSK's strong research focus also lends itself very well to the development and adoption of new innovations.

In addition, New York City is much more ethnically diverse than Minnesota. This has meant that there is a much greater number of people who will not find a matched donor. There are so many patients here who can benefit from cord blood transplants. This is one of the reasons why our program has been so successful. And now we are developing a number of new clinical trials to even further improve the results of these transplants.

What do we know about outcomes for people who undergo this type of transplant?

Recently, MSK analyzed the outcomes of double-unit cord blood transplants in adults with cancers of the blood and bone marrow. The investigation showed that our results are some of the best in the world. They are as good as transplants with cells from adult donors. This data will be presented at the annual conference of the American Society of Hematology later this year.

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