



# Cord Blood and Tissue Stem Cell Storage Education Part 3

## Banking cord blood

Stem cells are powerful and they have the ability to create and regenerate the organs, blood, tissue and immune system that make up our bodies. They have the function of growth and healing throughout life.

Stem cells can be found in places like bone marrow and fat tissue, but the younger, more flexible stem cells in the

body come from a newborn’s umbilical cord blood and tissue.

As an important source of such potent stem cells, umbilical cord blood and tissue may be stored for potential future use.

## Reasons to save blood stem cells

**Blood stem cell transplants/bone marrow transplants have been used to cure and/or treat:**

|   |                             |                            |   |
|---|-----------------------------|----------------------------|---|
|  | <b>Bone marrow failures</b> | <b>Blood Cancers</b>       |  |
|  | <b>Blood Disorders</b>      | <b>Metabolic disorders</b> |  |
|  | <b>Auto-immune diseases</b> | <b>Immune Deficiencies</b> |  |

### 50 YEARS

Stem cell transplantation has been performed for more than 50 years and plays an important role in the treatment of bone marrow failures, blood cancers, blood disorders, metabolic diseases, immune deficiencies and autoimmune diseases.

### 1 MILLION

More than 1 million blood stem cell transplants have been performed worldwide

### 35,000

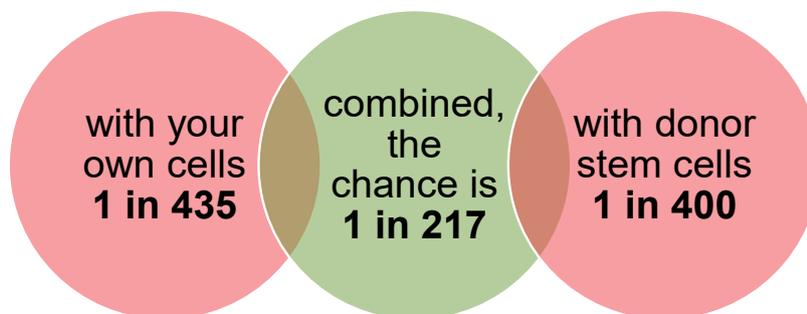
More than 35,000 (mainly allogeneic) cord blood transplants have been performed worldwide

Policy Statement. Cord Blood Banking for Potential Future Transplantation. PEDIATRICS Volume 119, Number 1, January 2007. National Cord Blood Program. Cord blood can save lives. <http://www.nationalcordbloodprogram.org/>. © 2015 National Cord Blood Program.

## What are the chances of needing a stem cell transplant?

Blood stem cell transplant data were obtained from the Centre for International Blood and Marrow Transplant Research (CIBMTR) for patients up to age 70 years (generally the maximum transplant age), who received an HCT for any indication in the USA in 2001–2003.

### The chances of needing a stem cell transplant in a lifetime of 70 years



J. J. Nietfeld, PhD1, Marcelo C. Pasquini, MD, MS2, Brent R. Logan, PhD2, Frances Verter, PhD3, and Mary M. Horowitz, MD, MS. LIFETIME PROBABILITIES OF HEMATOPOIETIC STEM CELL TRANSPLANTATION IN THE US. *Biol Blood Marrow Transplant.* 2008 March ; 14(3): 316–322. doi:10.1016/j.bbmt.2007.12.493.

## What are the advantages of banking cord blood?



### No ethical controversy

Cord blood is a rich, natural, controversy-free source of life-saving stem cells

### Cord blood transplants do not require a perfect match

Studies have shown that cord blood transplants can be performed in cases where the donor and the recipient are only partially matched. In contrast, bone marrow grafts require 10/10 matching in most cases. Because partially matched cord blood transplants can be performed, cord blood increases the patient's chance to find a suitable donor.

### Cord blood transplants are associated with lower incidence of GvHD

The immune cells in cord blood seem to be less likely than those in bone marrow from unrelated donors to attack the patient's own tissues (graft vs. host disease).

### Cord blood collection is easy and poses no medical risk to the mother or newborn baby



Cord blood collection is a safe, simple procedure that does not interfere with the care of the mother or newborn baby. Collection, therefore, poses no risk to mother or baby.

### Cord blood is collected in advance, tested and stored frozen, ready to use

Cord blood is stored in advance for anyone who might need it in the future. All routine testing is completed and the unit is stored frozen, ready to use. Unlike bone marrow, there is no need to take time to locate a possible volunteer and then determine whether he or she is still willing and able to donate.



### Cord Blood Transplants are associated with lower risk of viral contamination

Cord blood is also less likely to transmit certain common viruses, such as Epstein-Barr virus (EBV) and cytomegalovirus (CMV), potentially lethal infections for transplant recipients. CMV is carried as a latent virus by about 70% of the SA population, whereas less than 1 percent of infants are born with CMV.

### A newborn's stem cells are young and flexible which means they have better regenerative abilities

There are nearly 10 times as many blood producing cells in cord blood in comparison to bone marrow. Studies suggest that cord blood may also have a better ability to generate blood cells than bone marrow. This provides more opportunity for future medical advancements



*'I want this to be something everyone can get'*

### Dr. Colleen Delaney, Cord Blood Transplant Program Director, Fred Hutchinson Cancer Research Center

By harnessing the healing power of umbilical cord blood, this treatment is proving to be a landmark breakthrough for the 16,000 leukemia patients diagnosed each year who can't find a matching donor.

#### Cord Blood Transplants

<https://www.youtube.com/watch?v=2OkyYyj-o6w>

In this video, Dr Colleen Delaney describes what a cord blood transplant is--a transplant that uses umbilical cord blood as its source of blood forming stem cells. It's the same as a bone marrow transplant, it's just that the source of those stem cells come from an umbilical cord as opposed to coming from adult donor. According to Dr Delaney, the big advantage to cord blood transplants is that a cord blood donor can be found for some 99% of those patients who can't otherwise find a donor. Dr. Delaney also recounts a brief history of cord blood transplants, discusses the risks of cord blood transplants, and looks the latest research into cord blood that's making it better for patients who need a transplant.