



CORD BLOOD BANKING

1. WHAT IS CORD BLOOD?

Cord blood is the blood that remains in the baby's umbilical cord after delivery. Cord blood contains stem cells which are considered to be the body's master cells because of their ability to regenerate into cells that can develop and form other tissue, organs and systems.

2. WHAT ARE STEM CELLS?

Stem cells serve as the body's repair kit, having the ability to differentiate into many types of cells. Stem cells from cord blood have been proven to be able to change into heart cells, muscle cells and brain cells

(<http://www.dukemednews.duke.edu/news>)

3. WHAT ARE THE SOURCES OF STEM CELLS?

There are 3 sources of stem cells available for transplantation medicine. Adult stem cells which are obtained from **bone marrow** through an invasive procedure, **peripheral blood**, and **umbilical cord blood** stem cells, which is collected in a non invasive and safe manner.

4. HOW ARE STEM CELLS BEING USED?

Currently cord blood stem cells are primarily being used in transplant medicine to restore a patient's blood making and immune systems. Typically chemotherapy and radiation are used to destroy the diseased cell, then the stem cells from the cord blood are transfused into the patient. As the stem cells engraft, the body begins to regenerate new blood cells and restore the immune system.

5. WHAT DISEASES ARE BEING TREATED BY STEM CELLS?

Medical treatment using stem cells are consistently being researched and developed. Currently there are about 50 diseases that stem cells are being utilized for.



DISEASES TREATED BY STEM CELLS INCLUDE:

- Acute myelogenous leukemia
- Acute lymphoblastic leukemia
- Chronic myelogenous leukemia
- Chronic lymphocytic leukemia
- Juvenile myelomonocytic leukemia
- Hodgkin's lymphoma
- Non-Hodgkin's lymphoma
- Multiple myeloma and other plasma cell disorders.
- Severe aplastic anemia and other marrow failure states:
 - Severe aplastic anemia
 - Fanconi anemia

- Paroxysmal nocturnal hemoglobinuria (PNH)
- Pure red cell aplasia
- Amegakaryocytosis / congenital thrombocytopenia
- SCID and other inherited immune system disorders:
 - Severe combined immunodeficiency (SCID, all sub-types)
 - Wiskott-Aldrich syndrome
- Hemoglobinopathies, including:
 - Beta thalassemia major
 - Sickle cell disease
- Hurler's syndrome and other inherited metabolic disorders:
 - Hurler's syndrome (MPS-IH)
 - Adrenoleukodystrophy
 - Metachromatic leukodystrophy
- Myelodysplastic and myeloproliferative disorders:
 - Refractory anemia (all types)
 - Chronic myelomonocytic leukemia
 - Agnogenic myeloid metaplasia (myelofibrosis)
- Familial erythrophagocytic lymphohistiocytosis and other histiocytic disorders.

Not all diseases have been specifically treated with cord blood stem cells. (Source :National Marrow Donor Program June 2005)

For a complete list of the diseases treatable by stem cells please see the National Marrow Donor Program website www.marrow.org.

Connecticut's Only Cord Blood Bank • www.lifelinecryogenics.com

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6. WHAT ARE THE BENEFITS OF CORD BLOOD STEM CELLS AS COMPARED TO BONE MARROW OR PERIPHERAL STEM CELLS?

- Cord blood Stem Cells do not require a perfect match, even though a perfect HLA match is preferred. Studies show that cord blood stem cells better tolerate mismatch than bone marrow and peripheral stem cells.
- Cord blood is readily available if collected and banked.
- Cord blood is associated with a lower incidence of Graft versus Host Disease (GVHD). GVHD is a common complication after transplant. Patients who used cord blood also had a less severe case of GVHD. (Je Wagner, J Rosenthal, R Sweetman, XO Shu, et al., "Successful Transplantation of HLA matched and HLA mismatched Umbilical Cord Blood" American Society of Hematology 1996:Volume 88)

7. WHAT FUTURE APPLICATIONS MAY BE AVAILABLE FOR CORD BLOOD STEM CELL TRANSPLANT?

Cord blood stem cells have the ability to differentiate into various types of cells besides the blood cells. Emerging and experimental therapies include:

- Heart Disease
- Diabetes
- Muscular Dystrophy
- Lupus
- Stroke
- Parkinson's Disease

8. IS THE COLLECTION OF CORD BLOOD SAFE?

Safety and reliability are vital in cord blood banking. Lifeline Cryogenics cord blood collection kits use FDA approved cord blood bags equipped with two needles, which allows for up to 4 insertions into the cord, to maximize volume collection.

9. HOW LONG CAN CORD BLOOD BE STORED?

"There is no evidence at present that [cord blood stem cells] cells stored at -196 degrees Celsius in an undisturbed manner lose either in vitro-determined viability or biological activity. Therefore, at the current time, no expiration date need be assigned to cord blood stored continuously under liquid nitrogen." *Guidelines for Collection, Processing and Storage of Cord Blood Stem Cells; New York State Department of Health.*

10. WHY DO FAMILIES CHOOSE TO STORE THEIR NEWBORN'S CORD BLOOD?

Cord blood provides a type of medical insurance for families. Many families choose to bank their newborn's cord blood in order to take full advantage of future treatments available from stem cells. Your newborn's stem cells are perfectly matched genetically to you child and a possible match to a genetically related family member. Using genetically matched cells have resulted in more than double the survival rates compared to stem cell from unrelated donors.

(Source: Gluckman, et al. Outcome of Cord Blood Transplantation from related and unrelated donors. New England Journal of Medicine. 1997-337)

11. WHY IS CHOOSING A CORD BLOOD BANK THAT IS CLOSE TO MY HOME OR HOSPITAL IMPORTANT?

There are many advantages to choosing a regional cord blood bank such as Lifeline Cryogenics. Cord Blood should be received and processed within 24 hours. After this time period the cells begin to lose their viability. In addition, cord blood must be stored at room temperature prior to processing. Air transportation can result in fluctuation in cargo temperatures and can drop below the recommended temperature of 70 degrees.



For additional information on cord blood, the following sites are recommended.

www.lifelinecryogenics.com
www.stemcells.nih.gov
www.parentsguidecordblood.org

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