

LifebankUSA® Delivers A Proven Track Record

LifebankUSA® Cord Blood Units Released for Transplant

#	Date of Transplant	Age of Patient	Disease	Time Unit Stored	Application
1	8/27/2003	6 months	Acute Myelogenous Leukemia (AML)	2 years, 5 months	Standard Therapies
2	11/19/2004	4 years	Acute Myelogenous Leukemia (AML)	1 year, 1 month	
3	2/23/2005	10 years	Myelodysplastic Syndrome (MDS)	2 years	
4	5/26/2005	34 years	Non-Hodgkin's lymphoma	10 months	
5	7/12/2005	9 years	Acute Myelogenous Leukemia (AML)	1 year, 8 months	
6	7/25/2005	3 years	Chediak-Higashi syndrome	2 years, 3 months	
7	8/20/2005	35 years	Acute Myelogenous Leukemia (AML)	2 years, 1 month	
8	5/26/2006	2 years	Acute Myelogenous Leukemia (AML)	2 years, 7 months	
9	6/14/2006	8 years	Acute Myelogenous Leukemia (AML)	2 years, 10 months	
10	7/3/2006	5 years	Acute Myelogenous Leukemia (AML)	2 years, 11 months	
11	8/29/2006	35 years	Acute Myelogenous Leukemia (AML)	3 years, 3 months	
12	1/30/2007	3 years	Acute Myelogenous Leukemia (AML)	3 years, 7 months	
13	8/16/2007	2 years	Chediak-Higashi syndrome	3 years, 10 months	
14	8/21/2007	1 year	Severe combined immunodeficiency	3 years, 5 months	
15	2/5/2008	51 years	Non-Hodgkin's lymphoma	2 years, 2 months	
16	3/28/2008	5 years	Acute Lymphoblastic Leukemia (ALL)	2 years, 5 months	
17	4/7/2008	11 years	Acute Lymphoblastic Leukemia (ALL)	5 years	
18	6/18/2008	50 years	Chronic Lymphocytic Leukemia (CLL)	5 years, 8 months	
19	6/23/2008	2 years	Acute Myelogenous Leukemia (AML)	4 years, 9 months	
20	7/24/2008	3 years	Sickle Cell Anemia	4 years, 3 months	
21	12/30/2008	47 years	Acute Myelogenous Leukemia (AML)	5 years, 9 months	
22	1/14/2009	1 year	Sickle Cell Anemia	4 years, 8 months	
23	1/16/2009	24 years	Inherited Bone Marrow Failure Syndrome	4 years, 10 months	
24	7/6/2005	1 year	Hurler's syndrome	1 year, 7 months	Therapies in Clinical Trial*‡
25	8/1/2007	1 year	Langerhans cell histiocytosis	3 years, 2 months	
26	3/18/2008	2 years	Cerebral Palsy	2 years, 2 months	

These are diseases for which Hematopoietic (blood-forming) Stem Cell Transplants (HSTC) are a standard treatment. For some diseases they are the only therapy, and in other diseases they are only employed when front-line therapies have failed or the disease is very aggressive.

Therapies in Clinical Trial*‡



Banking placenta stem cells can significantly increase the number of stem cells available for transplant, compared to cord blood alone.

LifebankUSA, through its Placenta-Cord banking service, released stem cells from both the placenta and the cord blood for groundbreaking treatment (3/28/08 transplant above) that enabled the patient to be transplanted with **more than double** the number of CD34+ stem cells than had only the cord blood been available. Clinical studies have shown that transplanting more CD34+ stem cells can lead to improved treatment success and patient survival.¹⁻⁵

Placenta-Cord Transplant Details:

- **The ongoing clinical study:** The March 28, 2008 transplant is part of a multicenter clinical trial to evaluate the safety and efficacy of transplanting umbilical cord blood together with human placenta-derived stem cells in children with a range of malignant and non-malignant disorders.⁶ Early data suggest safety and potential benefits.
- **The transplant success story:** In 2007, a family banked its baby's placenta-derived stem cells and cord blood stem cells with LifebankUSA. On March 28, 2008, the baby's older brother underwent a transplant using both placenta-derived and cord blood units to treat acute lymphoblastic leukemia (ALL).
- **The Placenta-Cord Advantage:** "Engraftment occurred earlier than anticipated. The patient is doing extremely well and was discharged from the hospital 1 to 2 weeks earlier, compared to traditional cord blood transplants." – Lolie C. Yu, MD - Transplanting Physician Professor of Pediatrics; Division Chief, Pediatric Heme-Onc Program; and Director, BMT Program, Children's Hospital, New Orleans

‡These are diseases for which stem cell treatments have been shown to be potentially beneficial, but additional studies are required before they can be used as standard therapy. Transplant outcome is based on many factors and individual results may vary. As with cord blood, collections from the placenta are variable and sometimes not possible. Additionally, the chance that a child will use his/her own stored stem cells during his/her lifetime is estimated at 1 in 400 (J.J. Nietfeld and F. Verter). These odds may increase if there is a family history of certain blood disorders or cancers.

Diseases Being Treated With Stem Cells

Standard Therapies		
<p>Leukemias</p> <p>Acute Leukemia</p> <ul style="list-style-type: none"> Acute Lymphoblastic Leukemia (ALL) Acute Myelogenous Leukemia (AML) Acute Biphenotypic Leukemia Acute Undifferentiated Leukemia <p>Chronic Leukemia</p> <ul style="list-style-type: none"> Chronic Myelogenous Leukemia (CML) Chronic Lymphocytic Leukemia (CLL) Juvenile Chronic Myelogenous Leukemia (JCML) Juvenile Myelomonocytic Leukemia (JMML) <p>Myelodysplastic Syndromes</p> <ul style="list-style-type: none"> Refractory Anemia (RA) Refractory Anemia w/Ringed Sideroblasts (RARS) Refractory Anemia w/Excess Blasts (RAEB) Refractory Anemia w/Excess Blasts in Transformation (RAEB-T) Chronic Myelomonocytic Leukemia (CMML) <p>Lymphomas</p> <ul style="list-style-type: none"> Hodgkin's Lymphoma Non-Hodgkin's Lymphoma (Burkitt's Lymphoma) <p>Inherited Red Cell (Erythrocyte) Abnormalities</p> <ul style="list-style-type: none"> Beta Thalassemia Major (Cooley's Anemia) Blackfan-Diamond Anemia Pure Red Cell Aplasia Sickle Cell Disease 	<p>Other Disorders of Blood Cell Proliferation</p> <p>Anemias</p> <ul style="list-style-type: none"> Severe Aplastic Anemia Congenital Dyserythropoietic Anemia Fanconi Anemia Paroxysmal Nocturnal Hemoglobinuria (PNH) Pure Red Cell Aplasia <p>Inherited Platelet Abnormalities</p> <ul style="list-style-type: none"> Amegakaryocytosis/Congenital Thrombocytopenia Glanzmann Thrombasthenia <p>Myeloproliferative Disorders</p> <ul style="list-style-type: none"> Acute Myelofibrosis Agnogenic Myeloid Metaplasia (Myelofibrosis) Polycythemia Vera Essential Thrombocythemia <p>Inherited Immune System Disorders</p> <p>Severe Combined Immunodeficiency (SCID)</p> <ul style="list-style-type: none"> SCID w/Adenosine Deaminase Deficiency (ADA-SCID) SCID which is X-Linked SCID w/Absence of T & B Cells SCID w/Absence of T Cells, Normal B Cells Omenn Syndrome <p>Neutropenias</p> <ul style="list-style-type: none"> Kostmann Syndrome Myelokathexis 	<p>Other Inherited Immune System Disorders</p> <ul style="list-style-type: none"> Ataxia-Telangiectasia Bare Lymphocyte Syndrome Common Variable Immunodeficiency DiGeorge Syndrome Leukocyte Adhesion Deficiency Lymphoproliferative Disorders (LPD) Lymphoproliferative Disorder, X-Linked (also known as Epstein-Barr Virus Susceptibility) Wiskott-Aldrich Syndrome <p>Phagocyte Disorders</p> <ul style="list-style-type: none"> Chediak-Higashi Syndrome Chronic Granulomatous Disease Neutrophil Actin Deficiency Reticular Dysgenesis <p>Cancers in the Bone Marrow (plasma cell disorders)</p> <ul style="list-style-type: none"> Multiple Myeloma Plasma Cell Leukemia Waldenström Macroglobulinemia <p>Other Cancers (not originating in the blood system)</p> <ul style="list-style-type: none"> Neuroblastoma Retinoblastoma

Therapies in Clinical Trials*		
<p>Autoimmune Diseases</p> <ul style="list-style-type: none"> Diabetes, Type I Lupus <p>Transplants for Cancerous Tumors</p> <ul style="list-style-type: none"> Breast Cancer Ewing Sarcoma Renal Cell Carcinoma <p>Transplants for Inherited Disorders Affecting the Immune System & Other Organs</p> <ul style="list-style-type: none"> Cartilage-Hair Hypoplasia Gunther's Disease (Erythropoietic Porphyria) Hermansky-Pudlak Syndrome Pearson's Syndrome Shwachman-Diamond Syndrome Systemic Mastocytosis <p>Transplants for Inherited Metabolic Disorders</p> <p>Mucopolysaccharide (MPS) Storage Diseases</p> <ul style="list-style-type: none"> Mucopolysaccharidosis (MPS) Hurler's Syndrome (MPS-IH) Scheie Syndrome (MPS-IS) 	<ul style="list-style-type: none"> Hunter's Syndrome (MPS-II) Sanfilippo Syndrome (MPS-III) Morquio Syndrome (MPS-IV) Maroteaux-Lamy Syndrome (MPS-VI) Sly Syndrome, Beta-Glucuronidase Deficiency (MPS-VII) Mucopolipidosis II (I-Cell Disease) <p>Leukodystrophy Disorders</p> <ul style="list-style-type: none"> Adrenoleukodystrophy (ALD)/ Adrenomyeloneuropathy (AMN) Krabbe's Disease (Globoid Cell Leukodystrophy) Metachromatic Leukodystrophy <p>Lysosomal Storage Diseases</p> <ul style="list-style-type: none"> Gaucher Disease Niemann-Pick Disease Sandhoff Disease Tay-Sachs Disease Wolman Disease <p>Other Inherited Disorders</p> <ul style="list-style-type: none"> Lesch-Nyhan Syndrome Osteopetrosis 	<p>Transplants for Disorders of Cell Proliferation</p> <p>Histiocytic Disorders</p> <ul style="list-style-type: none"> Familial Erythrophagocytic Lymphohistiocytosis Hemophagocytosis Langerhans Cell Histiocytosis (LCH; formerly called Histiocytosis-X) <p>Transplants for Diseases of the Central Nervous System</p> <ul style="list-style-type: none"> Multiple Sclerosis (MS) Cerebral Palsy <p>Cellular Cardiomyoplasty</p> <p>(i.e., strengthening damaged heart muscle by infusing stem cells or promoting their growth)</p> <ul style="list-style-type: none"> Autologous stem cell transplantation Drug-enhanced stem cell proliferation

Experimental Treatments* - These are diseases for which stem cell treatments are being actively investigated.		
<p>Autoimmune Diseases</p> <ul style="list-style-type: none"> Arthritis, Juvenile Arthritis, Rheumatoid Crohn's Disease Evan's Syndrome Juvenile Dermatomyositis Scleroderma <p>Gene Therapy (i.e., transplanting genetically altered stem cells)</p> <ul style="list-style-type: none"> Fanconi Anemia Metabolic Disorders (e.g., Leukodystrophy Diseases, Storage Disorders) Parkinson's Disease 	<p>Nerve Cell Repair</p> <p>Diseases of the Central Nervous System</p> <ul style="list-style-type: none"> Amotrophic Lateral Sclerosis (ALS or Lou Gehrig's Disease) Alzheimer's Disease Huntington's Disease Parkinson's Disease <p>Traumatic Injury</p> <ul style="list-style-type: none"> Spinal Cord Injury Stroke Recovery 	<p>Organ Repair</p> <p>Kidney</p> <ul style="list-style-type: none"> Combined Transplant of Kidney Plus Hematopoietic Stem Cells Growth of Renal Cells from Hematopoietic Stem Cells <p>Liver</p> <ul style="list-style-type: none"> Growth of Liver Cells from Hematopoietic Stem Cells <p>Lungs</p> <ul style="list-style-type: none"> Growth of airway epithelia from stem cells in bone marrow

* Uses in "Therapies in Clinical Trials" and "Experimental Treatments" sections are under investigation and may never become standard therapy. These uses are not consistent with current labeling and are provided as an educational service in the spirit of presenting current scientific and medical information.

LifebankUSA is the world's first bank to enable families to collect and preserve stem cells derived from the placenta, as well as the umbilical cord (Placenta-Cord banking), which when transplanted can rebuild blood and the immune system, including red blood cells, white blood cells, and platelets.

Adapted from: Diseases treated by blood stem cells. A Parent's Guide to Cord Blood Banks Web site. <http://www.parentsguidecordblood.com/content/usa/medical/diseases.shtml?navid=22#1>. Updated February 7, 2008. Accessed September 8, 2008.

Additional resources: National Marrow Donor Program (marrow.org); Cancer.gov; ACOR.org; Oncolink.com; clinicaltrials.gov

References: 1. Gluckman E, Rocha V, Arcese W, et al. Factors associated with outcomes of unrelated cord blood transplant: guidelines for donor choice. *Exp Hematol.* 2004;32(4):397-407. 2. Wagner JE, Barker JN, DeFor TE, et al. Transplantation of unrelated donor umbilical cord blood in 102 patients with malignant and nonmalignant diseases: influence of CD34 cell dose and HLA disparity on treatment-related mortality and survival. *Blood.* 2002;100(5):1611-1618. 3. Styczynski J, Cheung Y-K, Garvin J, et al. Unrelated donor transplants: outcomes of unrelated cord blood transplantation in pediatric recipients. *Bone Marrow Transplant.* 2004;34:129-136. 4. Kamani N, Spellman S, Hurley CK, et al. State of the art review: HLA matching and outcome of unrelated donor umbilical cord blood transplants. *Biol Blood Marrow Transplant.* 2008;14:1-6. 5. Cairo MS, Wagner EL, Fraser J, Cohen G, et al. Characterization of banked umbilical cord blood hematopoietic progenitor cells and lymphocyte subsets and correlation with ethnicity, birth weight, sex, and type of delivery: a Cord Blood Transplantation (COBLT) Study report. *Transfusion.* 2005;45:856-866. 6. Data on file, LifebankUSA; 2008.

