



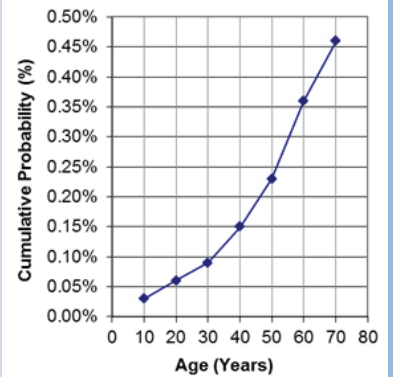
Odds of using Cord Blood

WINTER 2013

Traditional Stem Cell Transplants

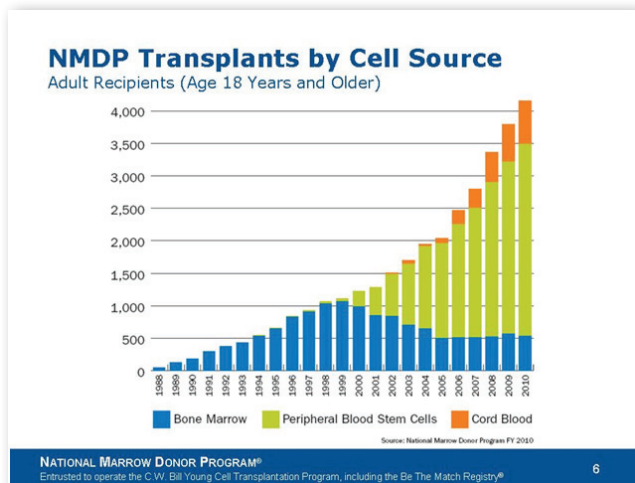
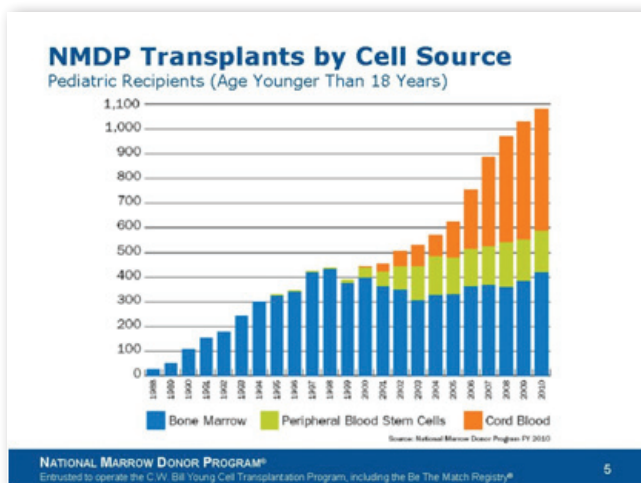
- Umbilical Cord Blood (UCB) is an accepted source of blood stem cells that is an equivalent to those found in the bone marrow.
- UCB stem cells have been used in stem cell transplants to treat hematological diseases and cancers since 1988. By the end of 2009 there had been approximately 20,000 cord blood transplants worldwide¹.
- The cumulative probability that a person will have some type of stem cell transplant by age of 70, is approximately 1 in 200².
- The results indicate that the probability of a stem cell transplant increases over one's lifetime. However, during the first 10 years of life, it is only 3 in 10,000.
- In 2011, The FDA have provided Cord Blood Licensure for minimally manipulated, unrelated allogeneic placental/umbilical cord blood, for specified indications.

Graph 1



LIFETIME PROBABILITY OF A STEM CELL TRANSPLANT

DIAGNOSIS	TRANSPLANT TYPE	STAGE OF USE	ODDS BY AGE 10
Blood disease or hereditary disorder	Stem cell transplant from donor	Standard therapy	1 in 5,000
Solid tumor	Transplant of your own stem cells	Standard therapy	1 in 10,000



Year after year, cord blood use as a transplant source is increasing.

Emerging Cell Therapies

New applications of cord blood stem cells are currently in clinical trials. There are dozens of cell therapies (Jan. 2012) in advanced clinical trials that are using stem cells from bone marrow (ref: ClinicalTrials.gov). For many of these clinical trials, UCB stems cells may be a suitable substitute and offer many advantages over Bone Marrow.

For example: Cerebral Palsy has been treated with cord blood since 2005. Several hundred children world-wide have received UCB stem cells in clinical trials for Cerebral Palsy and similar acquired neurological disorders³. A clear indication of the possible benefits will become available once the clinical trials are completed.

Why do parents bank?

Once parents understand all of the benefits of “storing” their baby’s cord blood, there are two options: public donation or family banking. Many parents struggle with this decision, unsure whether or not family banking is worth the cost. The best decision is an educated one. Parents should understand that cord blood stem cells can be used TODAY for a long list of treatments and therapies. The key reason for family banking is because we believe that as stem cell therapy advances... it may also hold the PROMISE FOR TOMORROW.

Table 1
Emerging Therapies where children use their own Cord Blood Stem Cells

DIAGNOSIS	OCCURRENCE IN USA	CELL THERAPY	STAGE OF USE	CLINICAL TRIAL
Cerebral Palsy	2 per 1000 full term births	Child's own cord blood	Clinical trials: Phase 1 & 2	NCT01147653 NCT01072370 Pending in Australia
Neonatal Oxygen Deprivation	2 per 1000 full term births	Child's own cord blood	Clinical trials: Phase 1	NCT00593242 NCT01506258
Traumatic Brain Injury	435,000 per year ages 0-14, leading cause of death in children	Child's own cord blood	Clinical trial: Phase 1	NCT01251003
Type 1 Diabetes	1.7 per 1000 from ages birth to 19	Child's own cord blood	Clinical trials: Phase 1 & 2	NCT00989547 NCT00873925
Hearing Loss, Sensorineural	1 per 1000 at birth	Child's own cord blood	Clinical trial: Phase 1	NCT01343394
Hypoplastic Left Heart Syndrome	0.2 per 1000 at birth	Child's own cord blood	Clinical trial: Phase 1	NCT01445041

Graph 1, copyright J. J. Nietfeld, Marcelo C. Pasquini, Brent R. Logan, Frances Verter, Mary M. Horowitz.

Table 1 and Table 2, copyright Frances Verter, PhD 2012 – References provided on the left.

Table 2
Emerging Therapies using donated Cord Blood Stem Cells

DIAGNOSIS	OCCURRENCE IN USA	CELL THERAPY	STAGE OF USE	CLINICAL TRIAL
Cerebral Palsy	2 per 1000 full term births	Donor cord blood	Clinical trial: Phase 2	NCT01528436
Type 1 Diabetes	1.7 per 1000 ages birth to 19	Donor cord blood	Clinical trial: Phase 2	NCT01350219
Cartilage Repair	10-25% adolescents have knee injuries	Donor cord blood	Cartistem approved by Korean FDA	NCT01041001
Critical Limb Ischemia	2.5 per 1000 people, >80% of them diabetics	Donor cord blood	Clinical trial: Phase 1	NCT01019681

REFERENCES FOR BODY OF PAGE

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2. Nietfeld, JJ et al., Biol. Blood and Marrow Trans. 2008;14:316-322.
3. Verter, F & JJ Nietfeld, Cytotherapy 2010;12:Suppl.1, abstract#157.

REFERENCES FOR TABLE 1 & 2

CEREBRAL PALSY

Statistics 2 per 1000 full term births are incidence rate from Centers for Disease Control (CDC). Statistics 2% of pre-term births from van Haastert, IC et al., Pediatrics 2011;159(1):86-91. Sun, JJ et al. Transfusion Sept. 2010; 50(9):1980-1987 doi:10.1111/j.1537-2995.2010.02720.x. Papadopoulos, et al. Restorative Neurology and Neuroscience 2011; 29:17-22 doi:10.3233/RNN 20110572.

NEONATAL OXYGEN DEPRIVATION

Statistics 2 per 1000 are from Smith, J. et al. BJOG 2000;107(4):461-6 DOI:10.1111/j.1471-0528.2000.tb13262.x.

TRAUMATIC BRAIN INJURY

Statistics on occurrence from Brain Injury Assoc. of America. Cox Jr., CS et al. Neurosurgery 2011; 68(3):588-600 doi: 10.1227/NEU.0b013e318207734c.

TYPE 1 DIABETES

Statistics 1.7 per 1000 ages birth-19 is prevalence from Centers for Disease Control (CDC). Haller MJ, et al. Diabetes Care 2011;34(12):2567-9. PMID: PMC3220832. Yong Zhao, et al. BioMed Central Medicine 2012; 10:3 doi:10.1186/1741-7015-10-3.

HEARING LOSS (Clinical trial is for acquired sensorineural type)

Statistics on 1 per 1000 births with bilateral sensorineural hearing loss of at least 40 dB from Smith, RJH, Bale Jr, JF, & White, KR. Lancet 2005; 365:879-90 doi:10.1016/S0140-6736(05)71047-3. Animal study: Revoltella RP, et al. Cell Transplant 2008;17(6):665-678 PMID:18819255.

HYPOPLASTIC LEFT HEART SYNDROME

Statistics 0.16-0.36 per 1000 live births from Fyler DC. Pediatrics 1980;65(2Pt2):375-461 (not on-line)

CARTILAGE REPAIR

Statistics on occurrence from Louw et al. Brit. J Sports Med 2008;42(1):12-10 doi:10.1136/bjism.2007.035360. News report on Cartistem approval.

CRITICAL LIMB ISCHEMIA

Statistics on occurrence from Bitar, FG & Garcia, LA Vascular Disease Management 2010;7:E182-E184