Mothers “Cord Blood” is the Answer to Your Child’s Future

Umbilical Cord Blood Awareness: Just as important as checking the box for organ donation

Tag Words: Stem cells; Cord Blood Banking; Awareness

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Summary

(TP) Despite the fact that the preservation of umbilical cord blood stem cells is put into effect, there has not been sufficient awareness of the cord blood banking procedure and its important role within the treatment of many serious illnesses. Our objective is to diminish this lack of knowledge and to promote the means of educating each parent about the uses, benefits, and various options behind cord blood banking. By trying to get some sort of legislation passed which enforces that each pregnant woman must consent to whether or not she wishes to preserve her cord blood, there will be more women venturing out to learn about the aspects of cord blood banking – in effect making the right conscious decision for her child or others prior to the time of delivery. Moreover if cord blood banks collaborated themselves with certain hospitals, then it will also initiate more awareness and make the preservation process, possibly that of public banking, easier and widely accepted among pregnant women.

Video Link: http://www.youtube.com/watch?v=nk1nI0ZFf5M&feature=youtu.be

Umbilical Cord Blood Awareness

Why should we care about “Cord Blood”? (TP)

After a mother gives birth to a child, the umbilical cord blood can be obtained that contains lifesaving stem cells. These stem cells have the potential to treat diseases we previously thought incurable. These cells possess unique qualities that give them the capability to combat harmful defects and revive beneficial conditions within the human body. Firstly, they can detect injured cells within an individual’s body and then start the healing process. Cord blood stem cells can be characterized as smart, powerful, unique cells. Moreover, cord blood stem cells are powerful enough to become involved in being able to cure many life-threatening illnesses and serious injuries, which had been deemed difficult to treat. Additionally, these cells are advantageous over bone marrow cells due to the fact that they are less exposed to environmental hazards, are much younger, and more versatile in the number of conditions and individuals they can treat. Being younger raises their chances of being accepted within the recipient’s body without higher risks of rejection. This, in turn, diminishes the problem of hunting for suitable donors – “the perfect match” - because cord blood can be used in individuals of varying ethnicities. Most importantly, the procedure for the collection of cord blood is described as simple, safe, and painless, showcasing a far smaller price to pay and doable process especially when keeping in mind its healing powers and promising quality in saving lives.

Stem Cells: A Breakthrough in the Field of Medicine (TP)

It has been nearly 30 years since scientists first discovered ways in which embryonic stem cells can be derived from mouse embryos, and only about 14 years ago have they been able to achieve this with human embryos and further cultivate these stem cells in laboratories in order to expand research within this realm of science. Since then, the scientific community has gained a great deal of knowledge pertaining to the underlying characteristics of stem cells, their role within the human system, and their potential involvement in resolving impossibly treatable conditions by regenerating specific organ/tissue damage within our bodies. The importance of stem cells lies within their remarkable ability to divide and develop into various cell types during an individual’s earlier growth phase in life. Additionally within alive beings, they can also function as a repair system by replenishing certain tissue types continuously as the body demands.

There are two basic characteristics of stem cells that separate them from the other cells in our body. The first is that these cells are unspecialized with the capability of reviving themselves after extended periods of inactivity by the process of cell division into functioning cells. Secondly, they can be induced to differentiate into a specific cell type when placed under certain experimental conditions or physiological pressures to repair or replace damaged predecessors. Consequently, these qualities have made researchers hopeful in reaching new heights for the sustainability of human-life through extensive development in stem cell research and cell therapy.

Up until 2006, scientists have deciphered and focused much of their experimental approaches in studying two kinds of stem cells – embryonic stem cells and non-embryonic “somatic” or “adult” stem cells. Embryonic stem cells are defined as undifferentiated cells that are found within a three-to-five-day-old embryo, which are known to develop into the three primary germ layers yet have the potential to divide without differentiating for prolonged periods if kept within a culture. On the other hand, adult stem cells are undifferentiated but are found within a tissue or organ among its differentiated cells, possessing the ability to renew itself into that tissue’s or organ’s cell type. Recently, researchers made out a new type of stem cell called induced pluripotent stem cell that could be reprogrammed genetically from a specialized adult stem cell into one with a stem cell-like state. Since then, stem cells have given a light of hope for opening doors to treating patients suffering from a wide range of illnesses such as diabetes and heart disease.


“Cord Blood Stem Cells Save Lives”

(TP) Our efforts are geared towards raising awareness of cord blood – also known as umbilical cord blood stem cells or hematopoietic – among expectant mothers and the general public. Cord blood is blood that usually remains in the placenta and umbilical cord of newborn, which is discarded after the birthing process. Extensive research conducted in the early 1980s had led experts towards the finding that cord blood contained and was a valuable resource for stem cells. Today, it has become the primary type of stem cell being used to treat many serious conditions that had been previously treated with bone marrow stem cells. As more research proclaimed
increasing benefits behind the usage of cord blood treatment, cord blood banks have now broadened to being established nationwide – urging parents-to-be towards the preservation of cord blood and its benefits to the advancement of stem cell research and future family illnesses.

(JF) Cord blood-derived embryonic-like stem cells (CBEs) have the ability to be banked and sorted with other samples, much like blood and transplanted tissues. Being such a versatile and useful resource to stem cells, CBEs could eliminate ethical issues related to embryonic stem cell research. Since 2005, The Institute of Medicine has recommended that women should be provided with supple information in order to formulate a balanced opinion on their child’s potential cord blood options. In 2007, President Bush issued an order directing research efforts to focus on alternatives to pluripotent stem cells found in embryos; umbilical cord blood stem cells are among the alternatives. As of 2010, approximately 53,000 cord stem cell donations have been given to the National Cord Blood Program. As of 2008, approximately 15,000 cord blood transplants have been performed worldwide and the numbers are only increasing.


**Cord Blood: Banking and Cost Summary (JK)**

Surprisingly enough when one knows what cord blood banking is the information is quite simple to find. Internet sites such as Parent’s Guide to Cord Blood Foundation give a wide array of companies along with prices and general information on how to contact the best banking company. Cord blood banking is broken down into two groups, family banking in which the family is the owner. These companies use cord blood to do therapy and related transplants. The second group consists of public banking where the cord blood is donated to society. The company can choose to discard, do unrelated research, or do related research with the cord blood a family has provided (APPENDIX A).

Family banking can cost $1,500 to about $2,000 for the first year and $125 to about $300 for every year until the child is 18 years of age. The donating family is the sole owner and will bare all costs. Sites such as Parent’s Guide to Cord Blood Foundation provide a list of family banking companies all over the world. The United States alone has about 31 companies (APPENDIX B). LIFEBANKUSA, Community Blood Services, NEOSTEM, and MAZE are a few listed in the New Jersey and New York areas.

There are no costs for families that wish to donate to a public cord blood bank. The bank becomes the owner of the cord blood and may receive $30K for any sales they have made regarding research and transplants. Companies such as LIFEBANKUSA, and Community Blood Services also do public donations. NY Blood Center only specifies in public donations as listed by the Parent’s Guide to Cord Blood Foundation.


**Detailed List for Banking**
Among the 31 companies for family banking four are available to families in the New Jersey and New York areas. LIFEBANKUSE is located in Cedar Knolls, NJ. This is the only company that allows parents to increase the amount of stems cells by using tissue and blood from the placenta along with the umbilical cord. In November this will be the only company in the USA allowing for free placental blood and tissue storage. A customer service agent can be contacted 27 hours a day and 7 days a week (1-877-543-3226) and parents may also enroll online.

Community Blood Services is another company located in New Jersey but works a little differently (800-SAVCORD). This company is a contract based laboratory and will not provide a collection kit or a transportation container because each company that is marketing any banking services must provide their own. Further pricing, kits, and transportation information is available from the specific companies that market banking services.

NEOSTEM is the third company listed in New Jersey as a family banking laboratory (1-888-STEMBANK). This company has performed over 32,000 cell therapy procedures on 6,000 patients and nearly 108 cord blood units have been released for transplants. First year of storage will cost $2,225 for family storage.

MAZE is a company located in New York which has a one- time collection, storage, and processing fee. For the next 20 years the family after the initial fee does not have to make any payments (877-MAZE-LAB (629-3522)). Family storage will cost about $2010 plus the cost for shipping guaranteed storage for the next 20 years. A representative can be contacted over the phone and is available 24 hours every day of the week.

Americord Registry is the only family banking company located within New York City. This is also known as the cheapest banking company over a 20 year period. Priced at $1998, the company stores cord blood free for 20 years and will charge $120 per year starting at year 21. The company also provides placenta banking for interested families.


Alpha Cord, based out of Atlanta, Georgia is pleased to introduce the Utah Cord Blood Bank for only $775 with payments as low as $99 for 9 months. Alpha Cord is a national bank with several offices throughout the country. This company, similar to others, sends their patients kits to being with them into labor. This agency begins collection after the umbilical cord has been cut and clamped. For the collection, your Healthcare Professional will insert the needle of the collection bag into the vein of the umbilical cord. Collection will take only 5-10 minutes to complete and will only extract approximately 1-2 cups of Cord Blood to be placed the pre-paid and pre-addressed shipping label on the transportation box. You will call a toll free number listed by the company and a courier will come to your room to pick-up the kit. The cost of transportation is included in their service. These cells will be cryogenically preserved at -190 degrees within a restricted laboratory, only accessible by authorized personnel.
CorCell of Las Vegas, Nevada allows you to pay only a $495 Enrollment and Cord Blood Processing Fee and $150 Medical Courier Fee when signing up, then pay only $19 per month over the life of the contract. CorCell offers a very simple means of collecting your child’s cord blood cells and takes pride in its user-friendliness. Their cord blood collection procedure involves a pre-ordered kit by the patient to be brought into labor. This kit will then be used by the obstetrician or midwife to collect the cord blood. The simple procedure involves wiping area clean, inserting a needle into the cord vein, and collecting cord blood into a closed-system bag. This closed-system bag provides the least chance of contamination. Furthermore, if the umbilical collection procedure is user-friendly, it increases the opportunity for better yield for the patient.

Cord Blood Registry based out of San Bruno, California allows the patient to skip the credit check and interest by paying the first-year fee in one single installment of $2,195. This company boasts its 400,000+ cord blood and cord tissue samples stored and immense experience in processing and storing newborn stem cells than any other bank in the world. As self-proclaimed pioneers within the industry, CBR was the first company to collect cord tissue for families in the United States. Their exclusive CellAdvantage® collection and processing system allows them to recover about 20% more cells than other common processing methods. CBR offers the preservation of cord blood as well as cord tissue at an increased rate, providing more medical options in the future. Along with relationships with renowned research universities such as Duke and Florida, CBR created the Center for Regenerative Medicine to fuel innovation in newborn stem cell medicine through research grants, clinical trials, and information sharing. Both cord blood and cord tissue are being researched for additional ways they may be able to help treat conditions that have no cure today.

Cryo-Cell International from Oldsmar, Florida offers one of the world’s largest and most established family cord blood banks with over 240,000 clients worldwide. This company works by allowing the patient to enroll at their leisure. Cryo-Cell will send the patient a kit by the due date of their child, notifying the obstetrician or midwife of the patients plans to preserve their child’s cord blood. The kit will be brought with the patient to delivery and authorized personnel will handle the remainder of the preservation process. This company offers a unique program to collect menstrual blood as well. Studies have shown that during a woman’s menstrual cycle, valuable stem cells are lost in the process. This company is one of few that offer this luxury option.

Family Cord of Los Angeles, California has complex pricing for various services. Family cord specializes in the same gravity bag collection kit as many of the other companies. The patient enrolls with the preservation laboratory and receives a kit prepared for their physician. The pluripotent cells will then be extracted and picked up by a courier. Once the sample reaches the laboratory, the baby's cord blood and/or cord tissue will be tested immediately, processed, and then stored. FamilyCord will contact you by phone after the unit is stored to inform you of the status of your baby's stem cells. Additionally, a preliminary report will be sent to you within
days of processing, and a complete report with a certificate of storage.

1. https://www.familycord.com/enroll-online

(JF) The Massachusetts Human Stem Cell Bank of Shrewsbury, Massachusetts provides the biomedical research community with expertly maintained and characterized human cell lines to facilitate studies into the properties and potential therapeutic applications of pluripotent stem cells. This bank is currently accepting human pluripotent stem cells for banking and in turn used for research opportunities. This company is a public bank in which patients can donate their cord blood and tissue for the purpose of learning more about the potential of these valuable cells.


(JF) PacifiCord based out of Irvine, California requires the potential customer to contact the company before any action is taken. Research conducted at this lab keeps PacifiCord at the forefront of the latest technologies and practices, it enables them to be part of earning a better understanding and discovering new ways cord blood can be used to treat and cure diseases. This company is the sister-company to HealthBanks Biotech, which works closely with researchers at medical institutions such as UCLA and Johns Hopkins, who are currently leaders conducting research on the application of stem cells in medical treatments.


(JF) ViaCord of Cambridge, Massachusetts is a company specialized in preserving cord blood and tissue. After your baby is born, and before the placenta is delivered, your obstetrician or midwife cleans a four- to eight- inch area of umbilical cord with antiseptic solution and inserts the blood bag needle into the umbilical vein. The blood flows into the bag by gravity until it stops, after which the collection is complete. The sample is then sealed and transported to ViaCord laboratories where your child’s stem cells will be harvested and cryogenically preserved. It is the parent’s option to preserve the tissue along with the cord blood at an increased rate per year.


**Cord Blood Banking Company Chart** (JF and JK)

<table>
<thead>
<tr>
<th>Stem Cell Company</th>
<th>Collection and Processing Fee</th>
<th>Annual Storage Fee</th>
<th>Important Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alpha Cord</td>
<td>$890-1,510 Blood only</td>
<td>$115 Blood only</td>
<td>This company ensures stem cells will be cryogenically preserved at -190 degrees within a restricted laboratory, only accessible by authorized personnel.</td>
</tr>
<tr>
<td>Atlanta, Georgia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. CorCell</td>
<td>$2,075 Blood only</td>
<td>Included</td>
<td>CorCell offers a very simple means of collecting your child’s cord blood cells and takes pride in its user-friendliness.</td>
</tr>
<tr>
<td>Las Vegas, Nevada</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **3. Cord Blood Registry**  
San Bruno, California | $2,195  
Blood only  
$2,665  
Blood and Tissue | $198  
Blood only  
$250  
Blood and Tissue | This company was the first to collect cord tissue for families in the United States. Their exclusive collection and processing system allows them to recover 20% more cells than other processing methods. |
| 4. Cryo-Cell Int.  
Oldsmar, Florida | $1,799  
Blood only  
$2,349  
Blood and Tissue | $125  
Blood only  
$225  
Blood and Tissue | 240,000 clients worldwide, this company offers a unique program to collect stem cells from menstrual blood as well. |
| **5. Family Cord**  
Los Angeles, California | $1,670  
Blood only  
$2,320  
Blood and Tissue | $125  
Blood only  
$270  
Blood and Tissue | FamilyCord will contact you by phone after the unit is stored to inform you of the status of your baby's stem cells with a complete report and certificate of storage. |
| **6. LifebankUSA**  
Cedar Knolls, New Jersey | $2,175  
Blood and Tissue | $225  
Blood and Tissue | “Multiple Ways to Bank: LifebankUSA® offers low monthly payment plans—as low as $52.17 per month. Expectant parents can also join the LifebankUSA Gift Registry to receive contributions toward stem cell banking from their friends and families.”  
http://parentsguidecordblood.org/bank/28 |
| **7. Massachusetts Human Stem Cell Bank**  
Shrewsbury, Massachusetts | Free | Free | This company is a public bank in which patients can donate their cord blood and tissue for the purpose of learning more about the potential of these valuable cells. |
| **8. PacifiCord**  
Irvine, California | Application required | Application required | This company is the sister-company to HealthBanks Biotech, which works closely with researchers at medical institutions such as UCLA and Johns Hopkins. |
| 9. ViaCord  
Cambridge, Massachusetts | $1,995  
Blood only  
$2,990  
Blood and Tissue | $125  
Blood only  
$275  
Blood and Tissue | Parent’s option to preserve the tissue as well as cord blood for additional price. |
|---|---|---|---|
| 10. Community Blood Services  
Unit C Allendale, New Jersey |  | This company is a contract based laboratory and will not provide a collection kit or a transportation container because each company that is marketing any banking services must provide their own. Pricing will also be taken care of by the contract based company |
| 11. Neostem  
Suite B Allendale, New Jersey | $2225 for family banking | “NeoStem, Inc. offers Adult Stem Cell Collection and Storage for future use at 11 specialized NeoStem collection centers throughout the United States.”  
http://parentsguidecordblood.org/bank/42 |
| 12. MAZE  
Purchase, New York | $2010 plus shipping cost for 20 years | This is the only company that allows a guarantee storage of 21 years. It also allows for a second option in which you pay $100 for the kit, $1200 for processing, $0 – 400 for shipping, and $95 – annual storage fee. |
| 13. Americord Registry  
New York, New York | $1998 | $120 | Cheapest company to offer storage for 21 years |

**Process before Cord Blood Collection (JK)**

Once parents have made the decision to donate the cord blood for public use or store it for private use in the future, they must select a company that best fits their needs. Parents may contact these companies via phone or enroll online to have a collection kit available to them at the time of delivery. The collection kits are sterile enough so that it can be taken into an operating room in case the mother is in need of a C-section. Once the placenta and umbilical cord blood has been stored into the kit, the family can call their specific company to arrange a medical courier pick up. The kits are kept in a temperature controlled environment until delivered to a laboratory.
Process of Collecting Cord Blood: A Safe and Fast Route to Saving Lives (TP)

As mentioned earlier, the method of collecting cord blood is quite simple and painless. The mother-to-be is expected to notify the hospital or attending staff/doctor upon admittance and required to bring the kit that is usually provided to her from her registered bank with her. The procedure itself takes nearly five minutes, occurring immediately after the birth of the child. Once the umbilical cord is cut, the leftover cord blood is collected and shipped over to its intended laboratory for preservation or as donation for research purposes. This is regarded as a completely safe procedure, and if one does not choose to save the cord blood, and then it gets discarded anyway serving no other purpose.

Process of Preservation: Secure Your Future (TP)

Upon collection, the cord blood is shipped over to the cord blood bank of the patient’s choice where it is processed for storage/conservation. The cord blood, upon immediate arrival, is processed in order to isolate the stem cells from the blood. These stem cells are then frozen and kept in liquid nitrogen in order to ensure long-term preservation and survival of the cells. Although the lifespan of each cord blood cells not absolutely known, cord blood can be stored and efficiently used for at least up to ten years (Appendix C).

Private Banking: Positive Attributes (TP)

The most important factor that plays into storing one’s child’s cord blood is that cord blood is currently being used to treat a number of devastating diseases like sickle cell anemia and leukemia. The benefit behind having one’s own cord blood available is that it presents itself with low chances of being rejected within one’s own body upon transplant. More or less the procedure behind its storage is deemed simple and riskless for both the mother and the child. It can be viewed as a life-saving investment for the whole family since cord blood can be used in place of a donor, the donor’s parents, or the siblings. The biggest advantage for choosing the option of doing private banking, as recommended by the American Medical Association and the American Academy of Pediatrics, is that if one already has an affected family member or a known disease that runs within the family, then keeping cord blood for transplant will be of most use and life-saving.

Private Banking: Negative Aspects (TP)

Cord blood banking is an expensive procedure/service that also includes additional yearly costs for storage purposes. Keeping the expense in mind, parents-to-be have questioned the likelihood of ever having to use this cord blood in the future for personal use. In fact, the chance of somebody needing their own cord blood is low.
Many of the conditions that cord blood is perceived as life saving are often either rare or genetic disorders. Since many of the illnesses are rare, it is postulated that most of the families will never have to experience them within their lifetime. On the contrary, if the donor develops a genetic disorder, then his/her cord blood cells cannot be used in treatment because of the fact that those cells will also be carrying the same defective genes. In such cases, usually a sibling’s blood or another donor’s is more beneficial for treatment.

Public Donation: Pros (JK)

Cord blood banking, as mentioned before, can be banked for the public where it is used for research and people in need or it can be done for private use for an individual family. MAZE, located in New York advises parents that this choice should not be taken lightly and has broken down the pros and cons of public banking. Parents that choose to donate their child’s cord blood for public use can do so free of charge. The cord blood stem cells are available for medical research and the doctor collecting the blood may charge a small fee, not covered by insurance. The blood can also be used later by families in need and may cost about $15,000; a cost which may not be covered by their insurance policy.

Public Donation: Cons (JK)

Even though public banks make their cord blood available to families, it may still be difficult to find a match. The donating family does not have a say in what the cord blood is used for and who may receive the blood if needed. If the family that donated cord blood ever comes in need of it, there is no guarantee that the blood will be available to them at that time.

Cord Blood Legislation (TP)

The legalities behind raising awareness for cord blood banking and its associated disciplinary measures are under the authority of individual states. Within recent years, state legislators across the country have introduced legal protocols within their states towards the educational awareness and options behind cord blood banking. Currently, there are nearly 20 states within the United States that have enacted legislation pertaining to cord blood as recommended by the Institutes of Medicine (IOM), which states that expecting parents be given an informed choice for this procedure and also given a fair deal of educational information about the benefits and usage prior to delivery. The 20 states that have enacted legislation are Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Virginia, North Carolina, Tennessee, Georgia, Michigan, Wisconsin, Illinois, Arkansas, Louisiana, Oklahoma, Texas, Washington, California, and Arizona. In Pennsylvania, a law was passed in 2008 for healthcare providers to present the expecting parent with details so they are able to make an informed choice for their family. Each of the states have their own view regarding cord blood banking thus have enacted their own exemplary measures for awareness towards cord blood banking in terms of their stance of the
Ethical Issues Regarding Stem Cells (JK)

There are many ethical issues that revolve around Umbilical Cord Blood Banking and a few important ones have been listed by author Petrini. The first issue is of the individual banks, which cause a lack of solidarity among society. A union in society may be the only thing that brings it forward and allows for our survival as a whole, hence the importance of solidarity as expressed by the article. Further these individual banks seem to be using the faces of children as product enhancers, in which they try and sell cord blood banking to new parents. Each bank also sets their own prices and these may not be accessible for all, making Cord Blood Banking only an option for the wealthy. Together, these issues no longer benefit everyone, contradicting the claimed goal of all banking companies.

A Plausible Solution to Stem Cell Ethical Issues (JK)

It seems that the ethical issues regarding stem cells may be taken care of if all fees and costs of banking were covered by insurance companies. Insurance companies would be able to set a specific price, allowing people with varying or low incomes to consider banking for their children. This will also allow for a little more solidarity, yet accepting a particular insurance is completely the banking companies’ choice.

Putting It All Into Action

A Check Box: Will You Bank Your Cord Blood?

(TP) The legalization of umbilical cord blood banking has allowed it to reach new heights within the realm of medicine. However, the predominant issue that remains is the lack of sufficient information provided to expecting parents on the various options of cord blood banking and its benefits in medical treatment. Our objective through this service project is to build awareness of this topic among the community and to ensure that each expecting parent is equipped with the appropriate information behind the preservation of umbilical cord blood so that a wise conscious decision is made prior to delivery. We are trying to get a legislative process started to make the decision for cord blood banking mandatory in which each pregnant mother must sign off a consent form that states whether she wishes to preserve her cord blood for private or public use or discard it after delivery. By enforcing this mandatory step within the pregnancy period, it is ensured that every expectant parent is given the right to know what is available to them and then develop their own stance on the utilization of their cord blood. Our solution to this issue is quite analogous to that of organ donation. An organ donation check box had been added to the DMV form within each state that every individual must fill out in order to receive his/her license or registration. Keeping that procedure in mind, a similar law can be passed for umbilical cord blood donation or preservation.

(JF) Following similar guidelines as to how the Department of Motor Vehicles (DMV) became
involved in organ donations, there must be a public interest for anything to be accomplished. In the instance of the DMV, organs available for transplant have been scarce and infrequently donated for many years. There became a dire need for organs and circa 1970, it was implemented in legislature of 1975 that there would be information given and heavily promoted related to organ donations at the DMV. The DMV would then forward information to the Association of Organ Procurement Organizations (AOPO) in which consent would be documented and implemented in the event of a fatal accident. The AOPO coordinates all activities related to organ and tissue donation in a specific area. This organization facilitates the transfer of tissues and organs marked for donation, as well as provide services for preservation, and the arrangement of tissue or organ transportation to its preferred location for storage. This development took place state by state and eventually it has become a common practice in all 50 states to promote and inform each customer of organ donation possibilities.


(TP) Thus, by following similar measures taken in the organ donation campaign, cord blood education and involvement can also be promoted if such a consent form (check box) is put into effect. While the incorporation of the organ donation option in the DMV form increased the spread of its importance to a greater mass of people, awareness towards the cord blood banking technology will also showcase improvement – along with the possibility that individuals will at least lean toward public donation so that some family in need can be benefited. As a consequence, the donor pool will expand and lifesaving actions can be taken to treat a wider range of illnesses and individuals. Therefore, in our preliminary effort towards accomplishing this goal, we wrote a letter to the American Medical Association (AMA) and a similar letter to LifeBankUSA (cordblood.org) that states our objective and proposal, hoping that they may take a stance on this issue and proceed towards bringing about some changes. The content sent is as follows:

Sent to the American Medical Association on 7/27/12:

American Medical Association
515 N. State Street
Chicago, Il 60654

The purpose for this letter is to propose the notion of making the decision to preserve or donate cord blood a mandatory step for each parent at some point before delivery. We are currently students enrolled at Rutgers University, studying biological sciences with the hopes of furthering our education in medicine. As part of our senior service project in which we must undertake one of the scientific issues that our community faces, we chose to focus our attention towards the procedure of umbilical cord blood banking and its role in medicine. Over the course of our research, we discovered that, while cord blood banking has become legal and used to treat many serious conditions by doctors nationwide, its awareness in terms of benefits and procedure among expecting parents is quite minimal. Nonetheless, throughout the birthing process, there have been no set requirements of educating parents-to-be about the pros and cons of private and public cord blood banking in order to ensure that they make a wise decision before the time of delivery. We understand that not all families will benefit from this new technology yet there are
some who may gain quite a lot if they had been better informed or consulted with on the uses of cord blood banking. If private banking is not considered necessary for a family, then public donation of that cord blood can go a long way to helping families in need and saving lives.

We are aware of AMA’s opinion on umbilical cord blood banking issued in 2008, which recommends physicians to inform pregnant women about the options of cord blood banking in conjunction with monitoring ongoing research to see whom this may apply to as well as the standard of obtaining an informed consent if the patient wishes to carry out the procedure prior to delivery. However, this is merely a recommendation for physicians to follow and not a required declaration that the physician must follow in order to inform each pregnant patient. This preserves the rights of those who choose to preserve their cord blood, but what about those who have no knowledge of its existence and uses? Similar to how an option for organ donation must be filled out on the DMV form prior to obtaining one’s license or registration, we are proposing the AMA to embark upon establishing a similar process regarding cord blood banking. At some point within the pregnancy period before delivery, every mother should be asked to fill out a consent form for whether she chooses to carry out private banking, public banking, or neither. Alongside that, a valid brochure (attached is one that we planned to distribute at local hospitals to build awareness – Appendix D) can be created and distributed with it or within offices to raise knowledge of this topic among the community, which can allow expecting parents to make a conscious decision for their child’s future as well as those of others.

Every mother should have the right to know and make a decision for the betterment of her child’s future. We hope that our proposal is carefully taken into consideration and the AMA proceeds to make further legislative efforts in terms of cord blood banking process. Thank you for your time.

Sincerely,
Tejal Patel & Jayswinder Kaur with Professor Julie M. Fagan, Ph.D
Rutgers University
fagan@rci.rutgers.edu, (848) 932-8354

To LifeBankUSA (cordblood.org) on 7/29/12:

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cord blood banking. If private banking is not considered necessary for a family, then public donation of that cord blood can go a long way to helping families in need and saving lives.

Similar to how an option for organ donation must be filled out on the DMV form prior to obtaining one’s license or registration, we are proposing you to initiate establishing a similar process regarding cord blood banking. For instance, at some point within the pregnancy period before delivery, every mother can be asked to fill out a consent form for whether she chooses to carry out private banking, public banking, or neither. Alongside that, a valid brochure can be created and distributed with it or within offices to raise knowledge of this topic among the community, which can allow expecting parents to make a conscious decision for their child’s future as well as those of others.

Every mother should have the right to know and make a decision for the betterment of her child future. Being an accredited organization, you have a higher chance of starting a campaign for national cord blood awareness and bringing about changes. We hope that our proposal is carefully taken into consideration and LifeBankUSA assists in starting further legislative efforts in terms of cord blood banking process. Thank you for your time.

Sincerely,
Tejal Patel & Jayswinder Kaur with Prof. Julie M. Fagan, Ph.D.
Rutgers University
fagan@rci.rutgers.edu, (848)932-8354

Hospital and Cord Blood Bank Collaboration (JK)

We thought it would also be a good idea to investigate whether any cord blood companies had partnered with hospitals in our area. We made phone calls to local hospitals such as Raritan Bay, Trinitas, and Saint Peter’s and we were told by Labor and Delivery personnel that none of these hospitals were affiliated with a cord blood laboratory. Further, we chose to write a letter to LifeBankUSA, Neostem, and Community Blood Services proposing our idea on the benefits of having a hospital linked to a cord blood collection company. Each hospital should choose to endorse the bank that they feel best benefits their patients and themselves. Hospitals should focus on cost, and the types of services a bank offers such as placental blood storage along with cord blood banking. It is also plausible to link one hospital with more than one bank, this way patients can do a little research and choose which bank they best prefer.

The letter can be found below, as we are still awaiting responses.

Cord Blood Banking Company (7/24/2012):
As part of a summer course at Rutgers University, my partner and I were required to research a topic that influenced us. While doing research on umbilical cord blood banking we found that many expecting parents do not know what cord blood banking is and how it can be beneficial in curing future illnesses their child may have. My partner and I have taken it upon ourselves to write to the American Medical Association in hopes to create a pamphlet with the names and contact information of all the major banking companies, as well as some general information on stem cells and the process of banking. We aspire to make the pamphlet available nationally in all
Labor and Delivery Departments in hospitals along with Gynecologists’ offices.

As each day turns to weeks and then eventually months, my partner and I are becoming more involved in our research and the overall idea of cord blood banking. We both know that public and family banking companies exist separately and we were wondering if any of these companies were affiliated with hospitals in our area. Unfortunately, when we made calls to hospitals such as Saint Peters, Raritan Bay, and Trinitas we were informed by Labor and Delivery personnel that none of these hospitals were directly tied to a cord blood banking laboratory. Today, I am writing to you in hopes of presenting the idea of your company being directly affiliated to a hospital such as the above mentioned. We wish to work on a smaller scale and one day make the idea of hospital and bank partnerships a national project in the United States. We feel that this would help increase the number of parents participating in cord banking even if it means donating their child’s blood for research to help other families. By companies directly partnering with hospitals we feel that new parents will feel more comfortable. As we know, Americans are procrastinators and with the anticipation of a baby comes many other responsibilities and at the time banking cord blood may not be a priority to many young and new parents. With this hospital and bank partnership parents can make a sudden decision and still be comfortable with the fact that it is not too late to bank their child’s cord blood or donate it to research.

We thank you for your time and hope you will consider our proposal.

Sincerely,
Jayswinder Kaur and Tejal Patel with Julie M. Fagan, Ph.D.
Biological Sciences
Rutgers University SEBS 2013
fagan@rci.rutgers.edu, (848) 932-8354

References


Appendices

Appendix A

Appendix B

**Cord Blood Registry**

San Bruno, CA, United States

CBR was the world's first family cord blood bank, started in 1992. CBR today is the world's largest cord blood bank, either private or public, with an inventory over 400,000. CBR is the only large cord blood bank that continues to be privately owned by the original founders.

**ViaCord**
Cambridge, MA, United States
ViaCord, established in 1993, is one of the original family cord blood banks. Since October 2007 ViaCord has been part of PerkinElmer, a $1.5 billion global company focused on the health and safety of people and the environment.

CORD:USE

Orlando, FL, United States
CORD:USE is directed by leading doctors in cord blood transplantation. They offer both public donation and family storage. Public donations collected by CORD:USE are sent to the Carolinas Cord Blood Bank, a FACT-accredited program under the direction of Dr. Joanne Kurtzberg. CORD:USE has their own laboratory in Florida for family storage.

Cryo-Cell

Oldsmar, FL, United States
Cryo-Cell International, Inc. (CCEL), one of the world’s largest and most established private family cord blood stem cell banks, was founded in 1989 and began to store cord blood in 1992. Cryo-Cell is engaged in cellular processing and cryogenic storage, with a core focus on the collection and preservation of umbilical cord (U-Cord®) blood stem cells for family use. Headquartered in Oldsmar, Florida, Cryo-Cell is FDA registered, cGMP- and cGTP-compliant, AABB accredited, and ISO certified private cord blood bank.

LifebankUSA

Cedar Knolls, NJ, United States
LifebankUSA (a Celgene company) is the only company that offers the option to increase the number of stem cells banked by collecting blood and tissue from the placenta in addition to the umbilical cord. Starting Nov. 2011, LifebankUSA is offering FREE storage of tissue from the placenta.

CorCell

Las Vegas, NV, United States
CorCell is a subsidiary of Cord Blood America Inc., a public holding company with stakes in cord blood banks around the world.

FamilyCord

Los Angeles, CA, United States
FamilyCord is a subsidiary of California Cryobank, one of the nation's leading sperm banks and a provider of cryogenic services for 30 years.
Purchase, NY, United States
M.A.Z.E. Cord Blood Laboratories was established in 2005 as a division of M.A.Z.E. Laboratories. M.A.Z.E. is AABB accredited and FDA approved, and provides state-of-the-art cord blood banking. M.A.Z.E. is committed to providing top quality cord blood banking at an affordable cost; we have a one-time collection, processing and storage fee with no payments whatsoever for 20 years.

Celebration Stem Cell Centre
Gilbert, AZ, United States
The Celebration Stem Cell Centre (CSCC) began operations in Gilbert, a suburb of Phoenix AZ, in December, 2010. The bank provides both family storage and public donation of cord blood. CSCC is affiliated with Translational Research Institute (TRI) that will support projects using cord blood donations for stem cell therapy research.

Genesis Bank
Indianapolis, IN, United States
The Genesis Bank is a spinoff of the biotech company General BioTechnology LLC, an Indianapolis company founded in 1997 which specializes in cryogenic research and services. Genesis Bank provides cord blood and cord tissue processing and on-site storage. We offer several discounts based on the services you select. Ask about our long term storage discounts!

LifeLine Cryogenics
Stamford, CT, United States
LifeLine is a broad spectrum cryogenics company in business since 1991, offering storage of sperm, eggs, ovarian tissue, embryos, and cord blood.

AlphaCord
Atlanta, GA, United States
AlphaCord acts as a broker for cord blood banks that offers parents a choice between multiple labs. Cord blood banks in the AlphaCord network guarantee discount prices to clients banking through AlphaCord. Member banks are located across the US. Some of the banks in the network are public banks that do not offer family storage except through AlphaCord.

Americord Registry
New York City, NY, United States
Americord Registry is the only family cord blood bank headquartered in New York City. When considering fees over 20 years, Americord is the least expensive cord blood bank that is accredited by the AABB. Americord is pioneering new cell harvest techniques, called CordAdvantage, that will increase the number of stem cells available from each birth.

Community Blood Services
Allendale, NJ, United States
The Elie Katz Umbilical Cord Blood Program at Community Blood Services provides family cord blood banking in a laboratory that is a member of the NMDP public banking network. They serve as a contract laboratory for a number of companies that market family cord blood banking.

Xytex

Augusta, GA, United States
As a member of the Xytex Cryo International, Ltd. Family of services, Xytex Cord Blood Bank is backed by more than 35 years of experience in cryogenic (freezing) preservation and tissue banking. Since 1975, thousands of families from around the world have put their trust in Xytex. Xytex, a name you can trust “For Life”.

AssureImmune

Boca Raton, FL, United States
AssureImmune markets the storage of "adult" stem cells, either from the peripheral blood of adults or from the cord blood of newborns.

Cord Blood Solutions

Suwanee, GA, United States
Cord Blood Solutions LLC was founded by Dr. Alan Einstein, an Internal Medicine/Critical Care physician in Atlanta. They use the lab of the NMDP bank Community Blood Services.

Family Link

Louisville, KY, United States
Family Link is a program of Norton Healthcare, a not-for-profit organization which operates dozens of hospitals throughout Kentucky and Southern Indiana. The cord blood banking program only accepts clients within a 4 hour driving distance of metro Louisville. Their lab is based at Kosair Children's Hospital in Louisville, Kentucky.

GeneCell

Miami, FL, United States
GeneCell International is a US subsidiary of the first cord blood bank established in Venezuela, and brings the same high quality services to their USA lab in Miami.

Lifeforce Cryobanks

Altamonte Springs, FL, United States
Cord for LifeSM is the 2011 re-branding of Lifeforce Cryobanks (LC), a fully accredited NMDP-member public cord blood bank that brings the same level of expertise and oversight to their family banking service. LC has been banking cord blood since 1995.
LifeSource Cryobank

Covington, LA, United States
LifeSource Cryobank LLC offers stem cell banking in partnership with a cutting edge cardiology practice that is using stem cells for cardiac repair.

MiracleCord

Chicago, IL, United States
Headquartered in Chicago, MiracleCord is dedicated to providing private cord blood and cord tissue banking services at the most affordable price possible, while never compromising the high level of service provided. MiracleCord offers an experienced lab, secure courier service, optimized cord tissue banking, and a Quality Guarantee.

NeoStem

Allendale, NJ, United States
NeoStem Family Storage LLC is a cord blood banking subsidiary of NeoStem Inc., a publicly traded company (NYSE-Amex: NBS) that began as a leading provider of stem cell banking for adults. In Jan. 2011 NeoStem acquired Progenitor Cell Therapy LLC, an established cord blood bank that previously offered its services through hospitals under the name DomaniCell.

New England CBB

Newton, MA, United States
New England Cord Blood Bank (NECBB), established in 1995, is a privately held family business that offers processing and storage of stem cells from your baby’s umbilical cord blood and tissue for use in the treatment of over 80 different diseases. We process, test, verify, and cryopreserve collected stem cells at our state of the art facility just outside of Boston. We offer competitive rates and interest free payment plans.

New Hope CBB

Aventura, FL, United States
New Hope Cord Blood Bank LLC serves Spanish-speaking people, both in the USA and throughout Central and South America. New Hope uses the lab of the NMDP bank Community Blood Services.

NuvaCord Network

Dallas, TX, United States
NuvaCord is a hospital-based cord blood broker: Parents who are delivering at a participating hospital have the choice between cord blood donation or family storage via banks that participate with NuvaCord. At present the only participating bank is Community Blood Services.
PacifiCord is a member of the HealthBanks Biotech family of companies, along with 5 additional cord blood companies and 3 research & development facilities worldwide. Based in Taiwan, HealthBanks has over 22 years of experience in pharmaceuticals, stem cell therapy, and research.

Southern Cord

Huntsville, AL, United States
Southern Cord launched services in Jan 2010 and they focus on clients in the southeast USA. Their staff are available 24/7 and their lab is in Indianapolis.

StemCyte

Covina, CA, United States
StemCyte is a global cord blood therapeutics company. They started as a public cord blood bank collecting donations for the US national cord blood inventory managed by NMDP. The StemCyte family division offers private cord blood banking at the same laboratory with the same expert staff.

Stork Medical

Columbus, GA, United States

Stork medical emphasizes that they have spectacular customer service, price guarantees, and a commitment to charitable works. They have a generous program of Military Cord Blood Banking. Stork uses the lab of the NMDP bank Community Blood Services.

Utah Cord Bank

Sandy, UT, United States

The Utah Cord Bank is focused on serving local clients: They stress that their laboratory is in Utah, that courier service is provided to insure rapid delivery of cord blood, and they will meet or beat the price of other banks operating in Utah.

Appendix C

How do we collect cord blood stem cells?

1. Cord blood will be drawn from the clamped cord into a special collection bag by the doctor or the midwife.

2. Baby is born with the umbilical cord attached, the cord will be clamped & cut so that baby can be cleaned and taken care of.

3. We will perform all the necessary examination and analysis on the blood. Once completed, red blood cells that are not needed for preservation is separated.

4. Once the collection bag is ready for pick-up, the father of the baby will need to call our hotline. The collection bag will be sent to CSL lab safely by our logistic specialist.

5. We will store the cord blood stem cells in either bag.

6. The cord blood stem cells will be kept in liquid nitrogen storage tank (-195°C) inside our secured facility.

credited to: http://blog.inceptsaves.com/blog/2011/04/28/what-is-a-cord-blood-donation/
Appendix D

Process of Preservation:

- Contact your OB/GYN or a specific bank for more information. They will supply a collection kit.
- At the time of delivery, notify the attending to make sure you have the required material at hand.
- The procedure is fast and simple. The content is shipped in a temperature controlled container to a lab.
- If needed, you can further communicate with your specific bank.

Umbilical Cord Blood Banking

What is cord blood banking?

Cord blood is the blood that usually remains in the placenta and umbilical cord of newborns, which is discarded after the birthing process. With the technology available, expectant mothers are now able to preserve their child’s blood by private or public banking. Today, from extensive research, doctors have made them the primary type of stem cell being used to treat many serious conditions like cancers, blood disorders, immune disorders, and metabolic disorders.

Companies and Contacts:

LifebankUSA
Address: 1615 Willow Road, Cedar Knolls, NJ 07927
Phone Numbers: (877) 829-5127, http://www.lifebankusa.com

Community Blood Service
Address: 1 Pearl Court, Unit C, Allendale, NJ 07401
Phone Numbers: (973) 263-CORD (263-2673), http://www.communitybloodservice.org

Newborns
Address: 1 Pearl Court, Suite 8, Allendale, NJ 07401
Phone Numbers: (973) 263-CORD (263-2673), http://www.newborncordblood.com

American Registry
Address: 104 Madison Ave, Suite 100, New York, NY 10016
Phone Numbers: (866) 992-5321, http://www.americanregistry.org

MAZE
Address: 1273 Westchester Avenue, Suite 401, Purchase, NY 10577
Phone Numbers: (914) 928-LAB (5228), http://www.mazeintl.com

Cord Blood Registry
Address: 1001 Spruce Street, 12th Floor, Suite 1220, Philadelphia, PA 19107
Phone Numbers: (800) 531-BLOOD (2563), http://www.cordblood.com

VisaCard
Address: 122 First Street, Cambridge, MA 02142
Phone Numbers: (800) 801-4263, http://www.visacard.com

CryoCell
Address: 1120 Winter Street, Suite 2014, Cambridge, MA 02142
Phone Numbers: (800) 922-CELL (2355), http://www.cryocell.com

Cost

- Private banking can cost $2,500 to about $3,000 for the first year and $250 to about $500 for every year until the child is 18 years of age.
- Public banking is free of charge.
Letters to the Editor

Letter to Pregnancy & Newborn Magazine (7/22/12):

I am currently enrolled within a course at Rutgers University for which I had to take on a service project that pertains to one of the current scientific issues our society faces. Over the course of my research, I came across an enormous amount of information on umbilical cord blood stem cells and their developing importance within the realm of medicine in treating many serious illnesses and conditions. Cord blood is the blood that remains behind in the placenta and the umbilical cord of a newborn and gets discarded at the time of delivery until recently. Scientists have discovered that this blood contained a valuable amount of stem cells with unique characteristics, which differ from the previously renowned bone marrow stem cells used in treatment. Without facing the ethical issues of harming premature human life, researchers advanced forward in the study of beneficial uses of cord blood and reached a breakthrough in the field of medicine through the preservation of umbilical cord blood. Now, the endorsement of private and public cord blood banking is helping to expand the study and assist many families and individuals combat life threatening diseases such as cancers, blood disorders, and neural conditions.

Despite the legal acceptance of cord blood banking and the ongoing establishment of cord blood banks nationwide, the issue that still remains is the enormous lack of awareness of this cord blood banking technology within expecting mothers and general community. To date, no national or mandatory standards have been set to mandate educating every parents-to-be thoroughly about cord blood preservation during the whole pregnancy process in order to make a wise decision at the time of delivery. Nonetheless, not many people – especially parents – have come across the primary information pertaining to this topic through media sources such as television ads or newsletters on a regular basis.

Pregnancy & Newborn Magazine is a renowned magazine and most observed source for beneficial information among pregnant women. The presence of basic information, small section, or editorials on the breakthrough of cord blood banking within each edition would raise a great deal of awareness and communicate the message efficiently to a greater mass. Cord blood banking is our route to the preservation of invaluable lives and it only needs some public recognition to ignite its unique capability of curing life-altering illnesses. With more awareness, we can save more lives.

Thank you for your time and I hope my suggestion is considered.

Sincerely,
Tejal Patel - Rutgers University SEBS 2013

Letter to FamilyCircle (07/21/2012)

Editor,
This summer I was required to take a course at Rutgers University concerning Ethics. My partner and I chose to do research on Umbilical Cord Blood, and along the way we realized how
important it is to both donate and bank cord blood for research and your own child’s wellbeing for the future. Surprisingly enough, there is a vast amount of information regarding the subject as long as the individual knows where to look.

Cord Blood Banking can be done in two ways, there are public banks for families that wish to donate for research, and private banks for those that can afford it and wish to bank for family use only. There are many dependable online sites that parents to be can use to find banking companies in their states, along with information about prices, collection kits, and other processes. I am not planning on having children anytime soon, but I know that one day when I plan a family I will definitely consider banking my child’s cord blood.

While sorting through the mail, few weeks into my class, I found your August 2012 edition and was curious to see if any cord blood information was available. It is a little upsetting to see that many new parents are never given any information on how beneficial it could be for their family to consider banking their child’s cord blood for future mishaps. FamlyCircle is all about healthy family living, and I think that the families you gear towards should have a constant reminder of how important and beneficial family or public banking could be. After all, everyone should have a healthy start.

Jayswinder Kaur