



CORD BLOOD BANKING FAQ

Cord Blood & Stem Cells

Q: What is umbilical cord blood (UCB)?

A: Bone marrow, peripheral blood and UCB constitute the three primary sources of stem cells. Cord blood, which, until recently, was discarded along with the umbilical cord and placenta, is non-controversial and provides an extremely rich source of certain types of stem cells. The first research paper about human stem cells was released in 1998. **To date, more than 8,000 patients have been treated for a variety of diseases using cord blood.**

Q: What are stem cells?

A: Stem cells are the building blocks of life, and a foundation for a new age in medicine. In medical terms, they're "undifferentiated" cells that have the ability to renew themselves. Stem cells are essentially blank slates, which have the potential to become any of the tissues and organs found in bodies. For example, stem cells can be turned into specific *differentiated* cells types, like muscle cells for the heart, bone cells or nerve cells. Research is showing that stem cells may one day act as a super repair kit for the body – generating healthy tissues to grow replacement organs or even cure cancer.

Q: What are the advantages of using umbilical cord blood as stem cell source?

A: Umbilical cord blood, an abundant source of stem cells, is the blood in both the umbilical cord and the placenta. *Today, cord blood stem cells can be used to treat nearly 80 diseases, including several forms of cancer and blood-related diseases, immunity and metabolic disorders and diseases such as leukemia and lymphomas.* There are many advantages in using umbilical cord blood. Bone marrow transplantation has become a widespread therapy, but major drawbacks include the unavailability of matched bone marrow, a rather invasive process to the donor to harvest the bone marrow, and a more life-threatening transplant related complication called graft-versus-host disease (GVHD) may develop. **Cord blood is easy to collect, readily available when needed and avoids the potential complications associated with GVHD.** Because of these factors, transplantation of umbilical cord blood is rapidly becoming the stem cell source of choice.

Cord Blood Banking

Q: Why should parents collect and store their baby's cord blood?

A: There are nearly 80 diseases which have been successfully treated with cord blood stem cells. **Collecting and storing baby's cord blood enables parents to have ready access to these precious stem cells should the need arise to treat some of these diseases.** There may also be future applications in regenerative medicine to treat many injuries and diseases previously thought to be untreatable. What we don't know today is what the future holds in regards to new therapies. What we do know is that there is only one chance to collect a baby's cord blood stem cells.

Q: What is the likelihood of ever using a baby's cord blood?

A: Reports indicate the probability of requiring a stem cell transplant using either the baby's or a sibling's stem cells is 1 in 200 within their lifetime*. While cord blood is not the stem cell source for all of these transplants, thousands of cord blood transplants have been performed in the past few years and these numbers are already growing. Also, these numbers do not factor in potential future uses in regenerative medicine.

* Source: Parents Guide to Cord Blood

Q: Who should strongly consider cord blood banking services?

A: Expectant parents considering cord blood banking should consider the following five factors:

1. **Families with a higher predisposition to certain diseases**, i.e., blood disorders, immunodeficiency diseases, cancers, etc.
2. **Couples who suffer from infertility.** Since the chance of conceiving again is unknown, there is less of a chance a future sibling's cord blood stem cells could be used in the event a transplant is needed.
3. **Adopting an unborn child.** Because the contact with the child's birth parents will be lost, it's a good idea to store the cord blood of the adoptive child.
4. **Children with a mixed ethnic background.** They have a lower chance of finding a human leukocyte antigens (HLA) matched samples.
5. **Minor ethnic groups.** It may be very difficult to find a Human Leukocyte Antigens (HLA) matched sample among minor ethnic groups due to their low population.

Q: Since the possibility of finding a compatible cord blood sample is higher than that of bone marrow, should one donate cord blood to a public cord blood bank?

A: Donating cord blood for public use or storing it for a family's private use is a personal decision. There are certain requirements to donate publically, including health condition, whether a maternity hospital has a public cord blood donation program and the suitability of the sample after collection, among other factors. More information can be found at www.marlow.org.

Q: If the baby has an inherited genetic disorder, can his/her cord blood still be used in the future?

A: At the present time, cord blood stem cells can be used to treat leukemia, lymphoma and other blood disorders, but not inherited diseases. However, in the future, there might be a breakthrough with cord blood stem cells applications such as tissue engineering and regenerative medicine. Thus, storing the precious cord blood is still worthwhile.

PacifiCord Cord Blood Banking

Q: Why is it important to choose a cord blood bank close to one's home?

A: There are a couple of factors. Studies have shown it is important to process and store cord blood within 48 hours of collection. But sooner is better. **Being in close proximity, PacifiCord is better situated to accomplish this, processing the majority of samples within 24 hours of collection.** Additionally, PacifiCord hand-transport the cord blood versus using air transport, which can be disrupted or delayed due to weather and other uncontrollable events.

Q: What collection method does PacifiCord use?

A: The collection method is fairly standard. A large majority of medical professionals are trained and have performed numerous cord blood collections for both public and family cord blood banks.

Prior to delivery of the placenta (in rare cases after the placenta is delivered), a healthcare professional cleans an area of the umbilical cord using an antiseptic solution. A needle is then inserted into the umbilical vein for collection into a blood bag. After two to four minutes, the umbilical vein is emptied and the blood bag is clamped, sealed and labeled.

Q: How does PacifiCord process cord blood?

A: PacifiCord utilizes the AXP AutoXpress™ to process cord blood. The AXP device enables PacifiCord to provide its customers with unique benefits and advantages over manual processing methods which are used by most private family banks. For example, the AXP is an automated and functionally closed system. Each sample is processed *individually* and precisely in order to separate precious stem cells from other contents prior to storage. Additionally, the AXP enables PacifiCord to achieve the highest mononuclear cell (MNC) recoveries*, thereby ensuring that the sample is frozen and stored with as many stem cells as possible.

**Source: New York Blood Center.*

Q: What method of storage does PacifiCord use?

A: PacifiCord utilizes the BioArchive® for cryopreservation, tracking and retrieval of its cord blood units. The BioArchive is the industry's leading liquid nitrogen (LN2) cryopreservation and storage system designed specifically for the storage of only cord blood stem cells. The BioArchive is the preferred cryopreservation stem cell storage method as also utilized by over 36 countries, 109 institutions and over 60% of public cord blood banks worldwide. PacifiCord, along with many of the world's leading public banks, use the BioArchive because it offers distinct advantages over traditional systems used for cryopreservation and long-term storage. The cord blood stem cells are always secure and left undisturbed in liquid phase nitrogen until it is needed. This is only possible with the BioArchive because it robotically picks and places each sample individually, unlike other traditional systems, which have lids that are opened and closed each time a sample must be added or removed. Using the BioArchive, samples are never exposed to temperature fluctuations, which are known to cause damage to the stem cells, which relates to poor or slow engraftment and lower survival rates.*

**Source: New York Blood Center.*

Q: Who will pick up the cord blood after collection and how is transported to PacifiCord?

A: A unique benefit to choosing PacifiCord to process and store cord blood is the offering of the personal courier service. While being local has many benefits to both expectant parents and a newborn's cord blood, one of them is that PacifiCord is able to employ its own local service to pick up the cord blood unit and deliver it directly to the laboratory. PacifiCord also offers services to out of state clients, ensuring a storage time of 24 hours or less. *(Industry standard is 48 hours.)*

Q: Why does PacifiCord store cord blood in liquid nitrogen (LN2) versus using vapor?

A: Storage temperature is critical to the long-term survival and viability of stem cells. Although liquid phase nitrogen is more expensive than vapor nitrogen, all published studies on long-term storage were done using liquid phase nitrogen. There are no published studies on effects of long term storage using vapor. According to these studies, PacifiCord only uses liquid phase storage to guarantee the best results with the stem cells stored at the optimal temperature. It is why most of the world's leading public cord blood banks store in liquid, not vapor. The other key point is that the

sample will be left undisturbed which is only possible through the use of robotics – a key feature of PacifiCord’s storage system, the BioArchive®.

Q: What testing is performed by PacifiCord?

A: PacifiCord tests the maternal blood for specific infectious diseases. The cord blood is tested for sterility, as well as the number and viability of the cells collected. PacifiCord provides their clients with the most comprehensive cord blood unit report after the testing, processing and storage of their baby’s cord blood.

Q: How do clients know that their baby’s cord blood was stored successfully?

A: Once a baby’s cord blood has been processed, the client will receive a cell analysis report that details the total volume of blood collected, cell count and cell viability of the sample. Clients will also receive a unique number for the exact location of the sample in the BioArchive® liquid nitrogen-based storage system. Should a baby ever need it, PacifiCord is ready to provide it, wherever and whenever required.

Q: Where are the baby's cord blood stem cells stored and how do clients know they are stored safely?

A: Client’s stem cells will be stored inside PacifiCord’s highly secure facility in the BioArchive®, the world’s only system that was designed specifically for cord blood and used by over over 36 countries, 109 institutions and over 60% of public cord blood banks worldwide. Additionally, PacifiCord’s facility is monitored 24/7 and access to the laboratory is restricted.

Q: Are PacifiCord’s processing methods and results published?

A: The methods PacifiCord employs have been published by the New York Blood Center, the world’s largest and oldest public cord blood bank.

Q: Does PacifiCord perform research?

A: PacifiCord, in association with its parent company, Healthbanks Biotech Group, performs research on its own and in conjunction with accredited universities, hospitals and research organizations. For example, PacifiCord works with **UCLA** on differentiation of stem cells for neural cell induction for use in development of future therapies to treat disorders of the nervous system and brain including, Parkinson’s disease, ALS, strokes, and spinal cord injuries.

PacifiCord also works with **Johns Hopkins University** in a research project to develop a cervical cancer protein vaccine and **Cell Stem Biotech Inc., USA** in a research project to develop cell expansion technology of cord blood hematopoietic stem cells for use in clinical transplant.

Q: What federal or state guidelines or regulations does PacifiCord follow?

A: PacifiCord is accredited with the American Association of Blood Banks (AABB Accredited) licensed by the State of California Department of Health, New York State Department of Health, and is recognized by the College of American Pathologists for

participation in the 2009 Surveys and Anatomic Pathology Education Programs.

In conjunction with HealthBanks Biotech Company, International Accreditations include:

- The Hong Kong Laboratory Accreditation Scheme (HOKLAS)
- College of American Pathologists (CAP)
- American Society for Histocompatibility and Immunogenetics (ASHI)
- American Association of Blood Banks (AABB) Accreditation
- The Foundation for the Accreditation of Cellular Therapy (FACT)
- ISO 9001:2000
- ISO 15189
- ISO 17025
- ISO 9001

Q: Is PacifiCord stable?

A: PacifiCord, in association with five additional cord blood locations and three research and development subsidiaries worldwide, is a member of the Healthbanks Biotech family of companies, which is a privately owned, profitable company. PacifiCord, along with Healthbanks Biotech Group, is proud of its heritage of high quality, financial stability and stem cell research and development.

PacifiCord Enrollment and Pricing

Q: When should expectant parents enroll with PacifiCord?

A: Because half of all babies arrive before their due date, it's best to decide early. While PacifiCord strongly recommends making the decision during the second trimester, it's never too late during the pregnancy to enroll.

Q: How do parents enroll with PacifiCord to save their baby's cord blood?

A: PacifiCord offers several methods of enrollment for convenience. Enrollment options include:

1. In-person: At the PacifiCord facility in Irvine, Calif., by appointment or a location convenient for expectant parents, such as their home or office (available to Southern California residents only).
2. Phone: 1-888-379-2670
3. Online: www.PacifiCord.com

Upon enrollment, PacifiCord will ship the baby's cord blood collection kit immediately. Many OBGYN offices and birthing centers may also have PacifiCord's Collection Kit in stock.

Q: How much does PacifiCord's cord blood banking cost?

A: The first year's investment is \$2,300. This includes: PacifiCord inspected Collection Kit, which contains the necessary supplies for your healthcare professional to safely perform the cord blood collection. (FDA approved, sterile collection bags, FDA approved anticoagulant – Citrate Nitrate Dextrose (CPD). The cost also includes PacifiCord's complimentary and personal courier service, cord blood processing and the first year of storage. Each subsequent year of storage is \$150/year. Payment options, special monthly promotions, and financing are also available. *Please contact PacifiCord for more information.*

Q: Is there a fee if the blood is ever needed for transplant?

A: There is no charge to PacifiCord other than the cost to ship the cord blood unit where required.

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