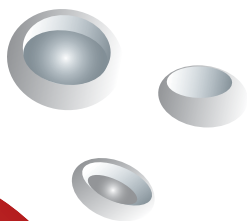


A Celebration. A Gift.

Your Guide to
Cord Blood Donation



A celebration of baby's birth... A gift of life to another!



A kind gesture in celebration of life!

This precious gift of life, the blood from the umbilical cord, used to be routinely discarded after the birth of a baby. Today, this gift can be collected after the baby's birth and donated to a public cord blood bank to help someone with a life-threatening disease. Medical science now recognizes that cord blood is a rich source of stem cells, which can be collected, processed and cryogenically preserved for future potential life-saving cord blood transplants.

Since the first unrelated umbilical cord blood transplant in 1993, over 10,000 cord blood transplants have been performed around the world. Many of these transplant patients received unrelated cord blood that was generously donated to a public cord blood bank.

Singapore Cord Blood Bank (SCBB) is a public cord blood bank that recognises our unique genetic composition, with a goal to build a national resource for Singaporeans of Chinese, Malay, Indian and Pan-Asian origins. This will provide Asians in the South East Asia (SEA) region and around the world with a better chance of finding an adequate blood stem cell match.

This booklet aims to provide information on cord blood donation.



Stem Cells

Stem cells are primitive cells found in various tissues of the body that can differentiate into the specific functional cells of certain tissues. They are the source of cells for tissue renewal and growth. Blood stem cells, or "haematopoietic" stem cells, are those that produce a steady stream of blood cells. These blood cells, such as the white cells, red cells and platelets, are used to keep the body healthy. Blood stem cells can be harvested from umbilical cord blood, bone marrow and peripheral blood.

Umbilical Cord Blood

Umbilical cord blood represents the blood that remains in the umbilical cord and placenta at the time of birth. The cord blood is a rich source of blood stem cells. These stem cells have been successfully used in the treatment of blood related cancers, immune and genetic diseases.

Umbilical Cord Blood Collection

After the baby has been delivered and the umbilical cord has been clamped and cut, blood is drawn from the umbilical cord. This collection can only take place at the time of delivery. There is no risk or pain to the mother or child during the collection process, since the blood is harvested from the cord once it has been cut.

The procedure takes just a few minutes in the Delivery Room, immediately after the baby has been delivered, and before the placenta and umbilical cord are discarded.

Storage and Cryopreservation of Cord Blood

Every collected cord blood unit will be evaluated for volume, total number of stem cells, cell viability and clots (if any) by the Laboratory Technicians at the SCBB. Every baby is unique so the placenta and umbilical cord also differs. Hence, the total number of cells collected from each umbilical cord at birth varies and is unpredictable.

When the cord blood unit meets the stringent volume and cell count storage criteria, the SCBB Laboratory Technicians will process the cord blood to isolate the white blood cells which contains precious stem cells. The isolated cells are then stored in cryostorage tanks at temperatures in the range of -180 degree Celsius, until it is searched and released for a life-saving transplant.

Usage of Stem Cells in Cord Blood Transplants

Stem cells are primarily used in transplant medicine to regenerate a patient's blood and immune system after the patient has been treated with chemotherapy and/or radiation to destroy the cancer cells.



While chemotherapy and radiation destroy the cancer cells in a patient, they also destroy the precious stem cells. Therefore, an infusion of stem cells or a stem cell transplant is performed after the chemotherapy and/or radiation treatment. The stem cells then migrate to the patient's bone marrow where they multiply and regenerate all of the cells necessary to create a new blood and immune system for the patient.

In Singapore, every year, about 60% of patients needing transplants are unable to find a suitable stem cell match from bone marrow donors and other public cord blood banks. Likewise, about 65 to 80 per cent of Asians and Pan-Asians worldwide are also unable to find a suitable match. With only a one in four chance match (25%) amongst siblings, without this life-saving resource, patients would otherwise succumb to their disease.

By making a cord blood donation, more people with a treatable condition would be able to find a matching cord blood unit, and receive a life-saving transplant. More individuals and families will have a future filled with hope.

On **any given day**, more than **6,000** men, women and children are searching for a **life-saving stem cell unit** around the **world**. These patients have leukaemia, lymphoma and other life-threatening diseases that can be treated by a bone marrow or cord blood **transplant**. For many of these patients, a transplant may be the **best and only hope of a cure**.

National Marrow Donor Program (NMDP)



Cord Blood Donation costs **nothing!** Receiving means **everything!**

In recent years, we have seen many successes with cord blood transplants in Singapore and around the world. These have provided a new lease of life to many patients who would otherwise have no hope. Bone marrow transplants have saved countless lives through the decades, but a perfect match is often needed. With cord blood transplants, we do not need a perfect match and many more patients would have been able to be saved.

Dr. William Hwang
Senior Consultant, Department of Haematology, SGH
Medical Director, SCBB
Assistant Professor, Duke-NUS Graduate Medical School

When you and your spouse decide on making a cord blood donation, please contact the SCBB after 32 weeks of gestation to facilitate the donation process.

The following are needed to ensure donated cord blood units meet the stringent quality standards for unrelated stem cell transplants.

- **Pre-screening Evaluation** – This is required to ensure the donor's eligibility & suitability before proceeding to the next stage of donation.
- **Informed Consent** – SCBB's Coordinators will arrange for a counselling session for the mother and father to understand their involvement in cord blood donation. The mother would need to complete the Volunteer Information, Informed Consent Form and the Medical History Form before admission to the hospital.
- **In Delivery Suite** – When the mother "goes into labour" in the Hospital's Delivery Suite, her blood samples will be collected and evaluated for infectious diseases. After the safe delivery of the baby, the umbilical cord would be clamped and cut, and the blood from the umbilical cord would then be collected before the delivery of the placenta.
- **In SCBB** – After the cord blood unit, maternal samples and related documents arrive at the SCBB, it will be inspected and evaluated by the Laboratory Technicians before it is processed and cryopreserved.

Every cord blood donation is important to us. However, to ensure only high safety and quality transplant units are stored, we would be unable to accept the cord blood donation if you, your spouse, or the baby's sibling has any of the conditions listed below.

1. Family history of inherited or acquired disorders or immunological disorders. E.g. G6PD deficiency.
2. Any personal history of cancer, blood disease (iron deficiency and thalassaemia minor is acceptable) or bleeding problem.
3. Parental Consanguinity – Blood related marriages up to first cousins.
4. Received a transfusion of blood products in the United Kingdom or injected bovine (ox or cow) insulin.
5. Ever received human pituitary-derived growth hormones (FS or a dura mater [brain covering] graft).
6. Diagnosed with Malaria in the last three years.
7. Previously rejected or refused as a blood donor.
8. Maternal transfusion of immunoglobulins, whole blood, or other blood products received within one (1) year of conception and delivery or use of blood clotting factors anytime before.
9. Past history of yellow jaundice or liver disease.
10. Recreational drug use with a needle, even once.
11. Any of the following in the last twelve (12) months: a tattoo, ear piercing, skin piercing, acupuncture, electrolysis, graft, injury from a needle, or contact with someone else's blood.
12. History of AIDs or positive test (even false positive) for HIV, HTLV, HPV, Syphilis, Hepatitis A, B or C in the baby's mother or father.
13. Treated for history of sexually transmitted diseases.
14. Sex with male who has had sex with another male, even once.
15. History of involvement in the sex trade (giving or receiving money or drugs for someone to have sex with you.)
16. Recipient of organ transplant of any kind.
17. Unable to answer the Medical History on behalf of the family and baby's father.
18. Multiple birth – more than a singleton pregnancy e.g. twins.
19. Under the age of 18.
20. Personal or family history of Creutzfeldt Jakob Disease (Mad Cow Disease).

A National Resource to secure our Future.

By donating umbilical cord blood to the SCBB following the birth of your baby, you could help save a life and create a national resource for our future!

"The public cord blood bank is for everyone. By donating to the SCBB, you not only contribute to a resource that could help yourself you also help those in need of a life-saving transplant. I encourage all expectant mothers to come forward to donate their cord blood."

A/Prof. Tan Ah Moy
Head & Senior Consultant
Department of Haematology – Oncology, Paediatrics
KK Women's & Children's Hospital

"SCBB is a national and international treasure due to our multi-ethnicity. We need to create this diversity of Asian cord blood units so that Singaporeans of Chinese, Malay, Indian and other Pan-Asian origins as well as Asians in the SEA region and internationally will have a better chance of finding a blood stem cell match."

Dr. Tan Poh Lin
Consultant
Division of Paediatric Oncology
National University Hospital

"We encourage all mothers to donate their cord blood as it has minimal risks or maybe no risk compared to bone marrow harvesting. The placenta and umbilical cord blood is discarded after birth, it would be very wasteful if the mother meets the donation criteria and discards the cord blood. Another life could potentially be saved using this collected cord blood unit."

Dr. Chan Mei Yoke
Senior Consultant
Department of Haematology – Oncology, Paediatrics
KK Women's & Children's Hospital



Frequently Asked Questions

Can half of the baby's cord blood be donated and half stored for my own use?

The number of stem cells is limited. The splitting of precious cord blood will result in the cord blood not being able to meet the international public cord blood banking requirements.

In the event that the donor/child or family members need the donated cord blood for transplant, can the cord blood unit be requested?

Donated cord blood is not reserved for the specific family's usage. However, if the family requires the cord blood unit and it is still available in the bank, we will work with your Transplant Physician on the release should it be found suitable. If the cord blood unit has already been released for transplantation, we will also work with your Transplant Physician on finding a suitable unit.

Data shows that it is most unlikely that donors should ever need their own cord blood unit as most Transplant Physicians may not feel that the patient's own cord blood unit is the best choice. This is because it may already carry the genetic abnormality that led to the blood or immune system failure or cancer in the first place.

Can the cord blood unit be transferred to a private bank after a donation to SCBB?

We are unable to transfer cord blood units between cord blood banks, as it could compromise the quality and safety of the cord blood unit during transfer and transportation.

Will any of my information be released?

SCBB has a strict confidentiality clause. All donors' information will only be released after proper authentication to the donors, either via telephone, email or in writing. Unless there has been authorisation by the donor in writing, all information will only be released to the donors. Names are not shared with any patient or transplant center. A number identifies the baby's cord blood, never by name.

How are cord blood units matched?

All cord blood units are tested for Human Leukocyte Antigen (HLA) when they meet

the banking criteria. The HLA results are stored in a central register so that when anyone needs a cord blood unit, they can search the register, compare it with that of the transplant patient, and see, if there is a match. It is too late to start testing for a match only when a patient needs it. That is why it is important to make sure that the HLA typing results are on a public cord bank register.

A well-matched donor is important to the success of a stem-cell transplant. Half of our HLA markers are inherited from the mother and half from the father, so each sibling with the same parents has a 25% chance of matching. It is unlikely that extended family members will match. According to the NMDP Registry, about 70% of patients who need a transplant do not have a suitable donor in their family.

I wish to donate my baby's cord blood but do not wish to have my blood taken?

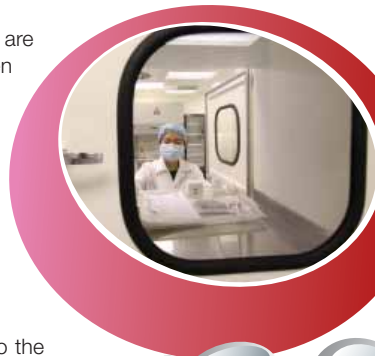
The mother's blood has to be evaluated and tested for infectious diseases during the delivery period. There are certain infectious diseases, e.g. Hepatitis that stay dormant in the blood and can become active at a later time. We have to ensure that all cord blood units collected are safe for transplant patients and free of any infectious diseases.

Can all collected cord blood units be stored?

Not all collected cord blood units can meet the stringent international public cord blood banking requirements required for a life-saving transplant. All collected cord blood units will be evaluated for volume, cell count, cell viability, and blood clots. When cord blood units do not meet the banking requirements, it will be assigned for research. In cases where the mother has indicated that she does not want the cord blood unit for research, it will be discarded.

How long can cord blood be stored?

Studies have shown good cord blood cell recovery after up to 15 years of storage. We are unsure of its viability beyond this period, but the scientific community will continue to monitor the situation and collect data to ascertain the maximum shelf-life of a stored cord blood unit.



An altruistic act to celebrate the gift of life!

About the Singapore Cord Blood Bank

The Singapore Cord Blood Bank (SCBB) is Singapore's only non-profit public cord blood bank. SCBB was officially opened in September 2005, and was set up in response to a demand for unrelated donor umbilical cord blood for transplantation therapy by Haematologists and Paediatricians in Singapore. It serves as a national resource to provide placental cord blood units of high safety and quality, through the practice of internationally accredited techniques of collection, processing, banking and disposition, in order to support cord blood transplantation and related research in Singapore and around the world.

The SCBB aims to have over 10,000 cord blood units (CBUs) in our Registry so that patients will have a better chance of finding a suitable unrelated cord blood donor match.

The SCBB funding comes from, Transplantation Fees for released cord blood units, grants, contributions from public, private and corporate fund raising events, foundations, as well as, individual donations. It is supported by Singapore's two public healthcare clusters – SingHealth and the National Healthcare

Group, two volunteer welfare organisations – Children's Cancer Foundation and Club Rainbow Singapore as well as philanthropic organisations, the Khoo and Shaw Foundations.

Your contribution is needed to build this valuable resource.

Tax deductible receipts from SingHealth Foundation – SCBB's official Fund Raising Agency – are available for donations in support of the **Singapore Cord Blood Bank**. For more information, visit www.scbb.com.sg

Participating Hospitals:



A baby's birth is another's hope for tomorrow.

Be part of this life-saving effort and create a lifeline for those in need of a life-saving stem cell transplant!

If you have any questions, please speak with your ObGyn (Delivering Physician), or feel free to contact our SCBB Coordinators. Our contact details are as follows:

SINGAPORE CORD BLOOD BANK

c/o KK Women's & Children's Hospital
100 Bukit Timah Road
Women's Tower Basement 1
Unit 0B60A
Singapore 229899

Tel: (65) 6394-5011
Fax: (65) 6394-5013
Email: info@scbb.com.sg
Website: www.scbb.com.sg

Operating Hours:

Monday – Friday 8.30am – 5.30pm
Saturday **By Appointment Only**

Participating Hospital Hotlines

East Shore Hospital (ESH)	8138-9773
Gleneagles Hospital (GEH)	8138-9774
KK Women's & Children's Hospital (KKH)	9106-4074 / 8138-9776
Mount Alvernia Hospital (MAH)	9106-4752
Mount Elizabeth Hospital (MEH)	9106-4726
National University Hospital (NUH)	9106-4726 / 8138-9771
Raffles Hospital (RH)	8138-9774
Singapore General Hospital (SGH)	9106-4734 / 9106-4076
Thomson Medical Centre (TMC)	9106-4752



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