

childreport

Q What is cord blood banking?
A facility that allows you to store your baby's cord blood for at least 21 years.

Q Why do I need to bank it?
Cord blood has been found to be a rich source of stem cells, that have the potential of treating various kinds of diseases like cancer.

Q What is cord blood?
It is the blood left over in the umbilical cord and placenta after your baby is born.

Q What is cord blood?
doubts about whether it will really work—God forbid you should ever need it. And more importantly how much is fact and how much is hype? We've got experts to answer your most pertinent questions about cord blood banking.

BANKING LIFE?

Many expectant parents are signing up with cord blood banks in the hope of securing their child's future health. But what's it all about? We've got the scoop.

BY KATHAKOLI DASGUPTA PHOTOGRAPHS BY ALEX CAO

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Q What are stem cells?

Stem cells are master cells. Unlike other cells in the body that have a specific life and function (liver cells, for example, perform the particular function of the liver, and not the heart or the skin), stem cells are versatile. They can be developed to produce copies of themselves as well as many other types of cells," explains Dr. Sujata Mohanty, Assistant Professor, Stem Cell Facility, All India Institute of Medical Sciences, Delhi. "Stem cells also self-regenerate (unlike other cells that die). They divide continuously to form more and more stem cells." This makes stem cells a potentially unlimited source of cells for bone, muscle, cartilage, liver or blood regeneration. This means that damaged and diseased organs may be rebuilt with stem cells. But this is still being researched.

Q Can stem cells from cord blood be used to regenerate any organ?

For the time being, no. Most stem cells found in cord blood are committed cells. "This means that these most readily replicate into blood cells (not liver, heart or other cells)," explains Dr. Vandana Chaddha, Child Advisor. "So, stem cells from cord blood can be developed to create more red blood cells, white blood cells and platelets." But research is on. "And the future holds promise of extracting the non-committed stem cells from cord blood and developing them into other cell types," says Dr. Mohanty.

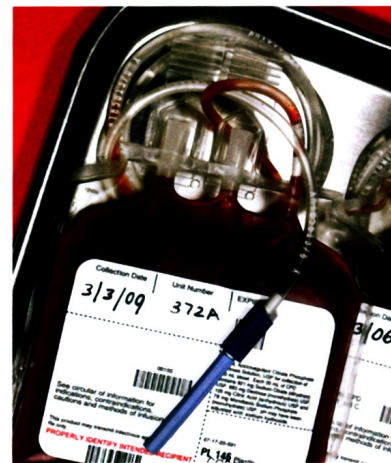
Q Is cord blood the only source of stem cells?

There are several sources. Embryonic stem cells (taken from 5-day-old embryos) and foetal stem cells (taken from aborted foetal tissue) have the potential to morph into a greater variety of cells. But ethical issues surround the use of these.

"Our bone marrow and peripheral blood (that circulates through our body) also contain stem cells," says Dr. Rakesh Ojha, Senior Consultant, Haematology and Medical Oncology, Fortis, NOIDA. "Stem cells from the bone marrow have been (and are still being) used to treat many blood-related disorders." But peripheral blood isn't a rich source.

Q How is cord blood a better alternative to bone marrow?

Doctors are increasingly turning to cord blood stem cells as it has several



Stem cells are master cells: They are versatile and multiply continuously.

significant advantages over bone marrow stem cells.

Richer Source: Cord blood may have up to 10 times more stem cells than an equally sized portion of bone marrow. **Graft Vs Host Disease (GVHD):** "GVHD is a serious, life-threatening immune response to blood transplants," explains Mayur Abhaya, President and Executive Director, LifeCell International, Chennai. It occurs when the recipient's

body (immune system) rejects the new cells. "Since cord blood is more primitive, and therefore, more 'forgiving', the cells that make up the recipient's new immune system are less likely to attack his body," says Abhaya.

HLA Matching: Before a transplant is actually done, the donor and the recipient's HLA (Human Leukocyte Antigens) is matched. "A perfect match is a 6/6, in which case the transplant is possible," says Dr. Ojha. "In case of bone marrow transplants, we look at a 6/6 match." But since cord blood stem cells are younger, the chance of the immune system rejecting them is less, and so, a lower match is okay. "Even a 4/6 match can be used," says Dr. Chaitanya Vilas Nerikar, CEO, Cryobanks International India, Gurgaon. "This makes it possible to treat a broader range of recipients."

Regenerative Source: "Since cord blood stem cells are younger, they are able to regenerate more and faster than bone marrow stem cells," says Abhaya.

Availability: "It's very difficult to find bone marrow donors and even if one does, the HLA matching is difficult," says Dr. Chaddha. "So the lag time is more." Cord blood, however, is a readily available source (especially in the case of private banking). "Besides knowing the HLA, it is already tested for diseases, and one knows the quantity of banked stem cells too, so one is better prepared," says Dr. Nerikar.

Q Is it of use to my other kids, my spouse and me?

"Your baby's cord blood stem cells have a 25 per cent probability of being a perfect HLA match for a sibling, should he need a stem cell transplant," says Dr. Nerikar. "And a 50 to 60 per cent probability of a 5/6 to 4/6 match." In very rare cases (when no other donor is available) it may be used for parents. "This is because a

child inherits one HLA each from either of his parents, so the child and mom's and the child and dad's match is always 3/6," says Dr. Chaddha. "And 3/6 isn't a good enough match for a transplant."

Q Which diseases can stem cells drawn from the cord blood cure?

"Research has found that cord blood stem cells can be used to treat over 75 life-threatening ailments," says Abhaya. These include acute leukaemias, chronic leukaemias, inherited immune system disorders, plasma cell disorders, and other blood-related disorders.

Researchers are still working on treating spinal cord injury, stroke, heart disease, diabetes, osteo and rheumatoid arthritis, Parkinson's and Alzheimer's disease, aplastic anaemia, lung cancer, multiple sclerosis, other blood diseases and genetic or hereditary conditions.

There have been about 20 cases in India, where stem cells have been transplanted, to treat several blood-related diseases.

Q Can it cure acquired blood infections like AIDS?

Not yet. Research is on and doctors are carrying out trials on AIDS patients. But it may be at least a decade away.

Q How are cord blood stem cells used to treat leukaemia?

First, cord blood stem cells with a matching HLA profile are sought out. "Chemotherapy is used to kill the malignant cells of the patient. This kills the good cells too," says Dr. Mohanty. "Then, matched stem cells are introduced into the blood stream of the patient." It might take 7 to 30 days for the cells to regenerate in the patient's body. This is the most crucial period and the patient needs most medical support during this time to prevent infections.

Q Who should I contact to bank cord blood?

There are three cord blood banks in India: LifeCell International, Cryobanks International India and ReliCord (see Resource). Call them or register online. They'd be most willing to give you a demo to answer your queries about cord blood banking.

Q Do cord blood banks work like regular blood banks?

Not really. LifeCell International and ReliCord are private cord blood banks. You pay a sum of money to store your baby's cord blood for your family's use.

Cryobanks International India is the only one with a public banking option as well. Here you can store your child's cord blood for free. "However, in a public bank, you and your family don't have a claim on your baby's cord blood," says Dr. Nerikar. "But if your family needs it

and your child's cord blood is still lying in the bank, unused, you can pay a certain amount and use it."

Q What if there's no cord blood bank in my town?

You can still make use of the facility—just make that call or register online.

Q How early in my pregnancy do I have to register?

The right time to decide is after the 15th week, after you have undergone the triple tests (blood tests that screen your baby for genetic disorders like Down Syndrome, Trisomy 18 and neural tube defects). "Try to get yourself registered by 34 weeks, so you have ample time to complete the form-filling formalities," says Dr. Nerikar. But even if you decide in the final moments, the bank will help."

Q What happens post registration?

After the formalities are completed, you'll receive a cord blood collection kit. You need to carry it with you to the hospital at the time of your delivery. "You have to follow the instructions provided on the kit, like deep-freezing the gel packs provided and keeping the kit in a cool, dry, ventilated place," says Abhaya. When you reach the hospital, make sure the gel packs are refrozen. Do inform your gynaecologist.

Real Lives

These are a few among the thousands who have chosen to bank their child's cord blood.

"The audio-visual slide show by the bank representative convinced my entire family about the value of cord blood. We saw it as health insurance for our family."

—Aditi Mahotra, Delhi

"An article on cord blood caught my attention and we enquired about it. Finding out about its potential, we didn't think it was a big amount to invest. I'm glad that we took the decision."

—Aarti Dhali, Delhi

"We read lots of stories of how cord blood helped save lives abroad. We'd do anything to secure our child's future. So after a bit of research on cord blood banks we chose to do it."

—Rupika Gupta, Delhi

"We did a lot of research and took a demo. We are happy we went for it. I hope we don't need to use it ever, but it gives us a sense of relief that there is something to fall back on."

—Lakshmi Sriram, Chennai

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Q Are there any specific tests I need to undergo?

No, just the routine tests that you take during your pregnancy.

Q Do I need to inform the bank when I go into labour?

Yes. You must inform the bank as soon as you go into labour or leave for the hospital. "Take along the kit and all related documents," says Abhaya.

Q How is cord blood collected and how much? Can my gynae do it?

Immediately after delivery, the umbilical cord is cut and clamped from both sides. "Cord blood is drawn from it using a sterile needle from the kit and collected in a bag," says Dr. Nerikar. "We tell the gynae to collect enough to fill the bag, about 65ml. In case it's less, we tell the parents it cannot be banked."

The mom's blood sample is also taken during this time and tested for infectious diseases like HIV and Hepatitis B.

It's a simple process that all gynaes can perform. "If need be an expert from the bank can assist," says Abhaya.

Q Is it painful? Are there any risks involved?

It's a painless process that doesn't harm you or your baby. In a complicated case, saving the mother and baby is the priority—not collecting cord blood. "If your gynae is unable to collect it, your money will be refunded, minus a nominal registration sum," says Dr. Nerikar.

Q What happens after it's collected?

After the cord blood is collected, it must be preserved as directed on the kit till it's dispatched to the lab. It should reach the lab within 36 hours.

"At the lab, grouping and HLA typing is done. Stem cell count is taken to check its viability," says Dr. Nerikar. "It's then processed using certain chemicals and a post count is taken." Finally, it's stored in special bags, housed in a protective

cassette and placed in liquid nitrogen storage containers for cryogenic (frozen) preservation at -196°C.

Q Is it a fool-proof method of ensuring my child and our family's medical health?

It isn't. For starters, if your HLA does not match, stem cells from cord blood cannot be used in a transplant, even for family members. Secondly, the cells themselves may carry genetic disorders or cancerous mutations, in which case it may be useless for treatment. Also, research has shown that matched stem cells from an unrelated donor has cancer-fighting properties. Besides, there may not be enough stem cells for a transplant, especially for teens and adults—they weigh more, and need more stem cells.

Simply put, cord blood banking may not be the health insurance you are looking for, but it's certainly an assurance. If money is not a problem, and it gives you peace of mind, it's something you may want to think about. **G**

PAYMENT PLANS Many easy options make it convenient for you to bank the cord blood.

Name of Bank	Name of Plan	Instalments
LIFECCELL INTERNATIONAL	Standard	Rs 44,600*; then 3,500 per year for 20 years
	Super Simple	Rs 3,500* for 24 months
	Elite	Rs 79,000*
	Convenient Elite	Rs 13,250* for 6 months
	Super Convenient Elite	Rs 6,750* for 12 months
CRYOBANKS INTERNATIONAL INDIA	One Time Storage	Rs 75,000*
	Easy Storage	Rs 40,000*; 8,500 per year for 5 years
	Simple Storage	Rs 40,000*; then 3,500 per year for 20 years
	1 Year Plan	Rs 6,900 for 12 months
	2 Year Plan	Rs 3,400 for 24 months
RELICORD	One Time Payment	Rs 74,900*
	EMI 1	Rs 15,000*; then Rs 16,000 for 4 months
	EMI 2	Rs 16,000*, then Rs 8,200 for 8 months

* Amount payable at registration

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