Frequently Asked Questions

With the option to save stem cells at birth, expectant parents have many questions about this new technology. Physicians who attended a roundtable sponsored by Cord Blood Registry agreed one of the most effective ways to reach families with this information is to provide a fact sheet that answers the most frequently asked questions surrounding umbilical cord banking.

What are stem cells?
The cells collected from umbilical cord blood, called "stem cells", are the building blocks of the body's blood and immune system and the "master cells" that lead to the production of various types of cells. The three primary sources of stem cells are bone marrow, peripheral blood (circulating blood throughout the body), and umbilical cord blood.

What makes umbilical cord blood stem cells different from other stem cells?
Umbilical cord blood stem cells have certain unique biological qualities compared with other stem cells. Cord blood stem cells are 8-10 times more productive and "immunologically immature" or younger than bone marrow stem cells. In addition, cord blood stem cells have a higher chance of "matching" between family members, and when frozen at birth, do not experience the same cell aging and virus exposure as adult stem cells.

What diseases can be treated with stem cell transplantation?
To date, stem cell transplants have been used to treat more than 70 conditions, including various cancers, blood disorders, and genetic diseases, such as leukemia, Hodgkin's disease, and aplastic anemia. Stem cell transplantation is now being studied as a way of repairing damage to the brain and spinal cord and to treat heart disease and diabetes.

Who can use cord blood?
Cord blood stem cells may be useful for the baby (the donor), siblings, parents, or cousins if there is an adequate human leukocyte antigen (HLA) match. Studies have shown a doubling of the survival rate with cord blood stem cell transplants from a relative compared with stem cells from unrelated donors. Despite perfect genetic matching, certain diseases cannot be treated with a patient's own stem cells (called an autologous transplantation). In these cases, doctors would use a sibling as a donor. Stem cells from a sibling's cord blood are up to twice as likely to be useful for transplant compared with stem cells from the same sibling's bone marrow.
If the donor child develops a disease, wouldn't his or her cord blood contain that disease?
Although a theoretical concern, many autologous stem cell transplants are performed each year for diseases such as leukemia, lymphoma, myeloma, and solid tumors. A study published in the Journal of Clinical Oncology indicates that a child's stem cells can successfully be used for treatment of disease that occurs within 12 months of birth.

What are the odds that a family will need to use banked cord blood stem cells?
Although it is impossible to calculate the odds for a particular family, one study estimates a 1 in 2,700 chance that a child will need to use his or her own cells by age 21; the odds that a family member will need to use those cells is 1 in 1,400. However, these estimates do not include adult use (after age 21) or potential uses of cord blood stem cells, such as in the treatment of autoimmune diseases that are currently in development.

How long can cord blood stem cells be stored?
Stem cells are the heartiest type of cells and should remain viable indefinitely when properly stored. Stem cells frozen for more than 15 years have been used successfully in transplants. The New York State Health Department Guidelines for cord blood banking states: "There is no evidence at present that cells stored at -196 degrees in an undisturbed manner lose either in vitro determined viability or biologic activity. Therefore, at the current time, no expiration date need be assigned to cord blood stored continuously under liquid nitrogen."

Can someone who needs a stem cell transplant get a donated sample from a public bank?
Sometimes, yes, but there are no guarantees that a match will be found. Stem cells from a relative (preferably a sibling) are generally the best treatment option. A study has shown the 1-year survival rate for patients treated with a sibling's cord blood stem cells is about 63%. The survival rate with cord blood stem cells from unrelated donors is 29%. Related cord blood stem cells also reduce the risk of graft-vs.-host disease (GvHD), a leading cause of death in stem cell transplants.

Can cord blood donated to a public bank be retrieved if and when needed?
Possibly, but there is a low likelihood that a publicly donated sample will be available for future need. Some studies have shown that more than 50% of potential cord blood donors are ineligible for donation, and about 71% of donations may be rejected based on family or maternal medical history, collection volume, and contamination of the maternal blood sample. Samples that are accepted, however, can be used for research or by other families.