



Fact Sheet 3

Umbilical Cord Blood Stem Cells

Umbilical cord blood is a rich source of stem cells that are a type of adult stem cell. With the consent of the parents, blood can be collected from the umbilical cord of a newborn baby shortly after birth. This does not hurt the baby or the mother in any way, and it is blood that would otherwise be discarded as biological waste along with the placenta (another rich source of stem cells) after the birth. Umbilical cord blood stem cells are haematopoietic stem cells similar to those found in the bone marrow, which can be used to generate red blood cells and cells of the immune system. Cord blood stem cells may even have the potential to generate other non-blood cell types but more research is required.

Cord blood stem cells are currently used to treat a range of blood disorders and immune system conditions such as leukaemia, anaemia and autoimmune diseases. They are used largely in the treatment of children but have also started being used in adults following chemotherapy treatment.

Umbilical cord blood banking in Australia

Blood from the umbilical cord is rich in stem cells and can be collected at birth and stored in a cord blood bank until it is required by a patient. Cord blood can be freely donated to the public cord blood bank where it is available to any individual who needs it and is the correct tissue match; or a private bank for the exclusive use of that donor for a fee.

Public cord blood banking

There is an extensive public cord blood banking system in place throughout Australia and the rest of the world. By donating your child's umbilical cord blood it can then be used for a potentially life saving transplant for a patient in need. A patient requiring a stem cell transplant would be treated with stem cells from the sample most closely matching their own tissue type. Along with this strong network, the process undertaken by the public banking system ensures rigorous screening procedures. There are now over 300,000 units registered worldwide for public use, increasing the chances that a suitable unit will be found when needed. There is no cost involved for the donation to a public cord blood bank.

There are three major public cord blood banks in Australia (including 11 collection centres), which are funded by both the Australian and various state governments. Their contact details are as follows:

Melbourne

BMDI Cord Blood Bank

www.mcri.edu.au/pages/cordbloodbank/

Sydney

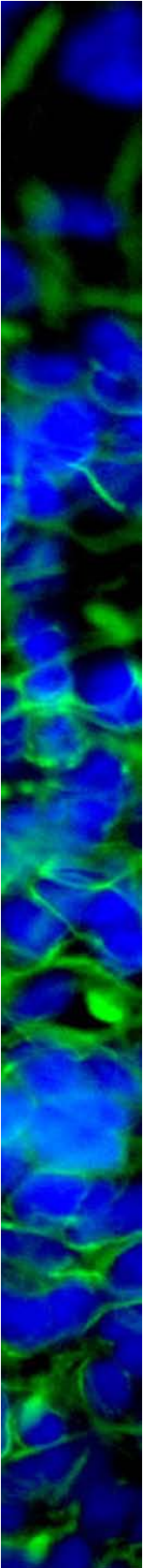
Sydney Cord Blood Bank Sydney Children's Hospital

www.sch.edu.au/departments/acbb

Brisbane

Queensland Cord Blood Bank

www.materfoundation.org.au/



Private cord blood banking

There is also the option to store cord blood in private cord blood banks. Private cord blood collection and storage services are generally available across Australia for an upfront cost and yearly fees.

Unlike public cord blood banking, the cord blood stored in private banks can only be released for the exclusive use of the donor. However it is worthwhile noting that if the donor developed a haematological malignancy, and required a transplant in the future, their own stored cord blood is generally not recommended as there is a risk of reintroducing the disease.

Information on private banks can be found by asking your doctor or through an online search.

Where can I get further information on cord blood banking?

The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) has a statement regarding private cord blood banking. They have different recommendations depending on your specific risk level for diseases that may require treatment involving cord blood in the future. This statement is available through the RANZCOG website at www.ranzcog.edu.au/publications/statements/C-obs18.pdf and can be discussed with your physician.

Saviour Siblings

Controversy has arisen over the practice of genetically selecting embryos created during infertility treatment, for the purpose of using the donor baby's cord blood to treat a matched ill sibling. In this procedure, genetic testing is performed to ensure that the embryo will provide cord blood devoid of the genetic defect afflicting the sibling, but which matches the sibling's genetic make up. The donor baby in this case is sometimes referred to as a 'savior sibling'.

The first 'saviour sibling' to be born in Australia was reported in March 2004. A Tasmanian couple used this technology to have a second child who was free of a genetic condition. Cord blood from this child was used to treat the affected sibling. As a result of this selection process carried out at an IVF clinic, the woman started her pregnancy knowing that her baby was free of genetic conditions and would be a potential tissue donor for her existing son.