

UCB collection and banking process

In recent years, umbilical cord blood, which contains a rich source of hemopoietic, mesenchymal stem cells as well as other types of progenitor cells, has been used successfully as an alternative source of stem cells to treat a variety of pediatric genetic, hematologic, immunologic, and oncologic disorders.

Advantages of the use of UCB include the fact that it is readily available, carries less risk of transmission of blood-borne infectious diseases, and is transplantable across immunological barriers as compared with stem cells from the peripheral blood or bone marrow of related or unrelated donors.

As mentioned above, UCB contains several types of adult stem cells that have the potential to differentiate not only into blood-type cells, but to other tissues, such as cardiac, neurologic, pancreatic and skin tissue. Extensive biomedical research is taking place to explore the incredible prospective use of UCB in regenerative medicine. Recently, and as consequences of these studies, many states have formulated recommendations regarding autologous cord blood banking.

Currently, UCB cord blood is considered discarded human material. However, it should only be collected by either public or private institutions fully accredited that follow rigorous banking standards. All cord blood units banked for potential use should be tested for infectious diseases and for hereditary hematological diseases, similar to those tested in a blood bank.

Cord blood should be collected in special bags and processed under a closed system to reduce the risk of bacterial contamination after collection. Units must be frozen within 48 h of collection, following standardized procedures. Storage conditions at -190 °C must prevent any possibility of cross-contamination due to accidental bag leakage.