CORD BLOOD BANKING

Part of: GS Prelims and GS-III- S&T

Recently there has been growing concern regarding the aggressively promoted concept of cord blood banking.

Key Points

- Over the past decade, stem cell banking has been aggressively marketed even as its use is still in experimental stages.
- The stem cell banking companies get access to data of to-be parents and start approaching their prospective customers much before the delivery and offer competitive packages.
- Companies convince parents to bank the cells for several years promising future therapeutic use.
- Enormous fees are charged from parents to preserve cells merely by emotional marketing.
- However, according to Indian Council of Medical Research (ICMR), there is no scientific basis for preservation of cord blood for future self use and this practice therefore raises ethical and social concerns.
- The ICMR does not recommend commercial stem cell banking.
- Private storage of the cord blood is advisable when there is an elder child in the family with a condition treatable with these cells and the mother is expecting the next baby.
- In other situations, parents should be educated about the limitations of banking at this point of time.

Cord Blood Banking

- Cord blood is the blood from the baby that is left in the umbilical cord and placenta after birth. Cord blood banking involves taking the umbilical cord blood, which is a rich source of stem cells, and preserving it for future use.
- It contains special cells called hematopoietic stem cells that can be used to treat some types of diseases.
- Hematopoietic stem cells can mature into different types of blood cells in the body.
- Globally, cord blood banking is recommended as a source of hematopoietic stem cell (derived from bone marrow, peripheral blood, or umbilical cord blood) transplantation for haematological cancers and disorders where its use is recommended.
- For all other conditions, the use of cord blood as a source of stem cells is not yet established.

Stem Cells

- Stem cells are special human cells that have the ability to develop into many different cell types, from muscle cells to brain cells.
- Stem cells are divided into two main forms- Embryonic stem cells and Adult Stem
Cells.

- **Embryonic stem cells** come from unused embryos resulting from an in vitro fertilization procedure and that are donated to science.

1. These embryonic stem cells are **pluripotent**, meaning that they can turn into more than one type of cell.
2. **Adult Stem Cells**: There are **two types** of adult stem cells.

One type comes from fully **developed tissues**, like the brain, skin, and bone marrow. There are only **small numbers** of stem cells in these tissues, and they are more likely to generate only certain types of cells. For example, a stem cell derived from the liver will only generate more liver cells.

The second type is induced **pluripotent stem cells**. These are adult stem cells that have been **manipulated in a laboratory** to take on the pluripotent characteristics of embryonic stem cells.

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**Indian Council of Medical Research**

- ICMR is the **apex body** in India for **formulation, coordination and promotion of biomedical research**.
- Its mandate is to conduct, coordinate and implement medical research for the benefit of the Society; translating medical innovations into products/processes and introducing them into the public health system.
- It is funded by the Government of India through the **Department of Health Research, Ministry of Health & Family Welfare**.