Should I bank my cord blood?

Julie Klinger, MS, PA-C

Baylor College of Medicine

Texas Children's Hospital

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Learning Objectives

At the conclusion of this session, participants should be able to:

- Discuss which patients should bank their cords
- Recognize which conditions can be treated with cord blood transplants
- Guide patients in decision-making regarding cord blood banking

What is cord blood?

Blood remaining in the umbilical cord and placenta after childbirth. This blood contains hematopoietic stem cells which can be used to treat many life-threatening diseases.

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Cord Blood Banking

- Storage of cord blood for potential future use
- Can be done via private cord banks or public cord banks

	Public	Private
Intended Recipient	Any individual who has indication for transplant and suitable match	Reserved for family use only • Autologous use • Sibling use
Collection Facility	Only collected at certain hospitals	Can be collected at any hospital
Costs	Free to donate	Collection: ~$2,000 Annual fees: ~$125/year
Regulations	Highly regulated: Questionnaire and laboratory screening required	Standards vary by company • Accredited by AABB or FACT

Directed Donation

- Sibling cord blood banking for families with children with transplant-treatable disease
- Provided by some public and private banks
- Typically, free of charge

Delayed Cord Clamping

- Delayed cord clamping can decrease number of cells collected
- Cord blood collection should not compromise routine care including delayed cord clamping

Cord Blood Utilization

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Hematopoietic Stem Cell Transplant (HSCT)

- Transplantation of hematopoietic stem cells to treat damaged or diseased bone marrow
  - **Autologous stem cell transplant:** Use of one's own stem cells to replace bone marrow damaged by chemotherapy
  - **Allogeneic stem cell transplant:** Use of healthy donor hematopoietic stem cells to treat diseased bone marrow
- Stem cells can be obtained from bone marrow, peripheral blood or umbilical cord blood
- Donors are matched using HLA typing

Cord Blood Use in HSCT

- First used 1988
- >40,000 cord blood transplants have been performed worldwide
- Advantages:
  - Readily available
  - Lower degree of HLA matching required
  - Lower risk of graft versus host disease
- Disadvantages:
  - Small cell dose

Diseases Treated by Cord Blood

- Immunodeficiencies
  - Severe combined immunodeficiency (SCID)
- Hematologic malignancies
  - Acute lymphoblastic leukemia (ALL)
  - Acute myeloid leukemia (AML)
  - Lymphoma
- Hemoglobinopathies
  - Sickle cell anemia
  - Beta thalasemia
- Bone marrow failure
  - Fanconi anemia
  - Aplastic anemia
- Metabolic diseases
  - Hurler syndrome

Cord Blood Research

- Neurological disorders
  - Cerebral palsy
  - Hypoxic-ischemic encephalopathy
  - Autism
- Prematurity
  - Bronchopulmonary dysplasia
- Type 1 Diabetes
- Gene therapy

Counseling Patients

- Public vs private banking
- Difference between autologous and allogenic use of cord blood
  - Umbilical cord blood cannot be used to treat a genetic or malignant condition in the same individual
- ACOG, ASTCT, and AAP recommend against private banking for “biological insurance”
- Directed donation should be considered for families with a sibling with a transplantable condition

Resources

- https://bethematch.org/donatecord/
  - List of hospitals that accept cord blood donation
- https://parentsguidecordblood.org/en
  - List of private banks including information on pricing, accreditation
- https://parentsguidecordblood.org/en/node/18267
  - Directed donation
- https://www.cb-association.org/about-cord-blood

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