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Banking on cord blood

Transplants saving young lives from diseases that were once thought to be unbeatable

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Sickle cell anemia, leukemia and Hurler's syndrome - all conditions considered relatively unbeatable - are being cured with cord blood transplants.

Anthony Witherspoon II, who was born with sickle cell anemia, suffered a stroke at age 5 as a result of the inherited blood disorder that robs most sufferers of a normal life. Those with it experience debilitating pain crises, periodic blood transfusions and a host of potentially fatal complications. Five years later, Anthony underwent an umbilical cord blood transplant to rid his body of sickle cell anemia. Umbilical cord blood, along with bone marrow, from 1-year-old brother Amani was implanted into Anthony's body. The transplant was a success.

Now 13, the McComb eighth-grader is cured of the disease.

"Umbilical cord blood is something that's normally thrown away after a baby is born," said Tammy Witherspoon, Anthony's mother. "But it's life-saving. It saved our son's life."

Cord blood transplants are a relatively new phenomenon; the first was performed 20 years ago.

Dr. Gail Megason, professor of pediatrics and director of the Division of Pediatric Hematology Oncology at the University of Mississippi Medical Center, received extensive training in the procedure before joining the UMC staff in 1994. She brought that expertise and capability to perform cord blood transplants with her.

Since 1998, two cord blood transplants on sickle cell patients, three on patients with a genetic storage disorder called Hurler's syndrome and 11 on patients with leukemia have been performed at UMC. Umbilical cord blood is not the only source of the powerfully replenishing blood-forming stem cells used in transplants. They are also found in bone marrow and peripheral - or circulating - blood, according to the National Marrow Donor Program. The success of bone marrow transplants varies for each patient and depends of many things such as the disease being treated, stage of the disease, patient's age and general health and how well the donor's tissue type matches the patient, NMDP reports.

"Cord blood is extremely valuable," said Megason. "It's immunologically naive because they haven't circulated except within a little baby. It's not been exposed to all antigens as the other two sources. It's much easier to transplant."

Those leery of embryonic cloning need not worry.

"These are not embryonic stem cells," Megason explained. "They don't come from the fetus. There's no potential for cloning."

A common complication of transplants is graft-versus-host-disease, which occurs when the immune donor cells (the graft) attack the patient (the host), according to the NMDP Web site. The disease can be mild or life-threatening.

Patients who undergo cord blood transplants are less likely to have that complication than those who receive bone marrow transplants. Also, when the donor is a close match, the chances of that complication are decreased. Transplant patients are given drugs before the procedure to help prevent the onset of the disease.

Parents can elect to have their infant's cord blood collected for private or public use. Private banks typically charge between \$1,500 and \$2,000 in initial fees, and an additional annual fee that ranges from \$100 to \$150. The frozen cord blood is stored indefinitely should the family ever need it.

"Some cord blood is in the banks for 10-15 years," Megason said. "For a long time we would say we wouldn't use it beyond that. It's frozen in liquid nitrogen. But we don't know for sure how long it is usable."

Megason compares private cord blood banking to earthquake insurance. The likelihood that you'll ever need it is remote, she explained. But should a family member with a life-threatening illness need a matching donor, you'll count your blessings you made the investment. The greater need, she said, is for parents to donate their newborn's cord blood to public banks.

The NMDP formed the Center for Cord Blood with the goal of creating a public robust supply of cord blood to help the most patients possible, said director Kathy Welte.

"We encourage people to make an informed decision about what they want to do with their babies' cord blood," Welte said. "If there is an opportunity to donate for public use in their area, we encourage them to think about that."

Public cord blood donations work much like public blood donations. There is no cost, and the stored units are available to the general public. Since there are no cord blood banks in Mississippi, those wishing to donate must contact a national facility, like Cryobanks International, located in Altamonte Springs, Fla.

Since 2007, about 20 people from Mississippi have registered with Cryobanks - some for private banking, others for public use, said CEO Bob Gravely.

"We are the only national service that offers public donation anywhere in the U.S. at this moment," Gravely said. "We also do an imminent need program for families who have a child with a blood-related disorder and are expecting another child. The cord blood remains unique to that family for a period of time."

Families with such a pre-existing need will be able to take advantage of a similar program - a partnership between the Health Resources and Services Administration and the NMDP, starting Sept. 1.

"The family can have the new sibling's cord blood stored for future use at no charge," Welte said. Those interested can call 1-800-marrow2 for information.

A Greenville couple is truly thankful for their daughter being the recipient of publicly donated cord blood. Jenn and Jamie Lipscomb's daughter, Olivia, was diagnosed at 19 months with Hurler's syndrome - a genetic blood disease characterized by a missing enzyme that causes symptoms including mental retardation and severe physical problems. Olivia needed a transplant from a matching donor that would allow her body to start generating healthy blood cells.

Months earlier, Jenn, a biology teacher, had randomly selected the disease as a class research topic. As a student presented findings about Hurler's, the symptoms sounded eerily similar. And terrifying. Children with the disease usually die before the age of 10.

"I thought it sounded like Olivia's symptoms," Jenn said. "Olivia's body was shaped funny, with one part bigger than the other. It seemed like she was locked inside of her body. I knew something was wrong six to eight months before the diagnosis, but I couldn't put my finger on it.

"I can't imagine if we had had no knowledge about it, how shocked we would have been. God was

preparing us for it."

Within weeks of the diagnosis, Olivia received the cord blood transplant at UMC. That was two years ago, and Olivia, now 4, continues to thrive. Many of her earlier symptoms have been reversed.

"Every time doctors test her, she has 100 percent of the donor cells," said Jenn. "As long as she continues to make this enzyme, it's stopping the progression of the disease. The cord blood transplant basically gave her brand new cells to start over."
