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Cord-blood transplants in Wisconsin hospitals are now available to ill adults

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A year after she got her college degree, Renetta Waupoose learned she had leukemia, a blood cancer.

More bad news came a few months later. Waupoose needed a transplant of blood-forming stem cells, but her brother wasn't a match. Nor were any adults on the donor registry.

Finally, good news arrived. Doctors said Waupoose could become the first adult patient at UW Hospital to receive a transplant of umbilical-cord blood. It contains stem cells that grow into blood cells.

"I was scared," she said last week, after receiving the cells from the umbilical cords of two babies in October. But now, "I feel optimistic about what's going to happen to me."

Waupoose, 23, of Keshena, is helping to usher in a new era of cord-blood transplants. The procedures were previously given only to children because their smaller bodies require a cord from just one baby. Adult patients, who need two cords, didn't qualify.

A Native American, Waupoose also is an example of the ethnic minorities who most need the cord-blood procedures because they are less likely than whites to find adult donors who match them.

"This provides an opportunity for more minorities to have transplants," said Dr. Mark Juckett, of UW Hospital, who is treating Waupoose. "They haven't had many options."

Three kinds of transplants

Transplants of stem cells from donors are used to treat leukemia, lymphoma and other life-threatening conditions, Juckett said.

Patients receive radiation and chemotherapy to kill their diseased blood cells, a process that severely weakens their immune systems. The transplanted cells replace the diseased cells and other immune-system cells with healthy cells from the donor.

Three kinds of transplants are available. None involve embryonic stem cells, the controversial cells developed at UW-Madison.

Bone marrow transplants, first done in the 1960s, use the soft tissue that fills bone cavities, usually in the hip. In stem-cell transplants, which started in the 1980s, medications are given to the donor to cause stem cells from the marrow to travel into the blood, which is collected for the transplant.

Cord-blood transplants began in the 1990s, using donated umbilical

cords. The cords usually contain fewer stem cells than marrow or blood, but they carry an advantage: Their immune systems are naive, so they're less likely to cause rejection.

"You get pure cells, without the other trappings of life we acquire as we grow and get exposed to various things," said Carla Moore, a transplant coordinator at UW Hospital.

That means donors and recipients don't have to match as well. Patients who don't match adult donors can usually find suitable cord blood, Moore said.

That is especially important for minorities, Juckett said. There aren't enough minority donors to meet the need because ethnic minority groups generally have more genetic diversity than people with European ancestry, he said.

Adults now qualify

Adults weren't considered for cord-blood transplants until recently, Juckett said. The supply of donated cords is limited, and doctors thought the immunological warfare that two cords would wage inside a recipient's body would be too risky, he said.

But studies in adult patients showed cord-blood transplants, using two cords, were as effective or nearly so as bone marrow transplants. UW Hospital has joined other medical centers to further study the issue in a clinical trial; Waupoose was the first patient enrolled in Madison.

The Medical College of Wisconsin in Milwaukee plans to start offering the transplants soon.

While adult patients need two cords to allow the transplants to jump-start their new immune systems, only one cord eventually takes hold, Juckett said.

"One of the units wins and becomes the dominant source over time," he said.

Keeping cancer away

Waupoose hopes her double cord-blood transplant helps her win her battle against leukemia.

Nearly two years ago, a rash appeared on her arms and she became unusually tired. The diagnosis: acute myelogenous leukemia, the most common form of the disease in adults.

She had graduated the year before from the College of Menominee Nation with a business administration degree.

Waupoose received regular chemotherapy and went into remission. But the cancer returned, meaning she needed a transplant, Juckett said.

Workers from UW Hospital searched through the 90,000 units of cord blood on the U.S. registry and more than 200,000 units in other countries, said Moore, the transplant coordinator.

They found a U.S. unit from 2007 and one from another country from 1998 that matched Waupoose. The blood, frozen in bags, was shipped to UW Hospital.

Waupoose stayed at the hospital for six weeks. She had four days of radiation and two days of chemotherapy before receiving the transplant as an intravenous infusion. Then doctors had to monitor her closely, Juckett said.

She has had some typical rejection problems, requiring her to be on corticosteroids. The drugs have caused nausea, made her face puffy and weakened her muscles so much she has fallen down while walking.

The problems led doctors to readmit her to the hospital this week.

But her cancer is in remission again.

"I feel happy about that," she said.

How cord blood transplants work:

- Parents donate baby's umbilical cord to a public registry; blood from the cord is frozen and stored.
- Unrelated patient who needs a transplant is matched to cord blood from the registry.
- Patient gets chemotherapy and radiation, killing diseased cells and weakening the immune system.
- The patient gets the transplant. The cord blood, thawed, is infused through an intravenous line.
- Stem cells from the cord blood replenish the immune system with healthy cells.

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