

Researchers find two units of umbilical cord blood reduce risk of leukemia recurrence

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A new study from the Masonic Cancer Center, University of Minnesota shows that patients who have acute leukemia and are transplanted with two units of umbilical cord blood (UCB) have significantly reduced risk of the disease returning. This finding has the potential to change the current medical practice of using one unit of UCB for treatment of patients who are at high risk for recurrence of leukemia and other cancers of the blood and bone marrow.

Michael Verneris, M.D., and John Wagner, M.D., who specialize in research and treatment of children with cancer, led the research team on this breakthrough study. The results are published in the current issue of the scientific medical journal *Blood*. This study was funded with grants from the National Cancer Institute and the Children's Cancer Research Fund.

Verneris and his colleagues studied 177 patients treated at the University of Minnesota Medical Center, Fairview and the University of Minnesota Amplatz Children's Hospital between 1994 and 2008. The average age of the patients in this study was 16 years. Eighty-eight patients had [acute lymphoblastic leukemia](#) (ALL) and 89 had [acute myeloid leukemia](#) (AML).

"Our analysis showed that patients in first or second remission from the leukemia had a significantly lower likelihood of leukemia recurrence if they were transplanted with two UCB units than if they were transplanted with one (19 percent vs. 34 percent)," says Verneris.

"We believe our finding provides evidence that using two units of UCB for transplantation may be more effective in preventing leukemia relapse and gives hope to patients with hematological malignancies so that they may live cancer-free," he says.

Blood and marrow [stem cell transplantation](#) has been a mainstay treatment for patients with high risk leukemia and other hematological malignancies for the past 30 years. In the last decade, the blood in the placenta and umbilical cord has been collected and banked for public use. Now, UCB is routinely used throughout the world as an alternative to bone marrow transplantation.

However, because of the limited number of cells in UCB, this stem cell source has been reserved for young children and small adults. The practice of using two UCB units (from two different individuals) was pioneered at the University of Minnesota approximately 10 years ago. By using two UCB units, nearly all patients can now use this stem cell source for transplantation.

Previous research studies have also shown that about 25 to 30 percent of patients suffer leukemia relapse after transplant. The relapse or disease recurrence rates are similar regardless of whether the [stem cells](#) used for transplantation are from bone marrow, peripheral blood, or umbilical cord blood.

Verneris and his colleagues compared the outcomes of patients who were transplanted with one versus two UCB units. Forty-seven percent of the patients received one unit of UCB; the remaining patients received two units. The choice to receive one versus two units was based on the number of stem cells contained in the UCB. Since the number of stem cells needed for a successful transplant varies with the patient's weight, older patients and those who weigh more need more stem cells than infants and young children.

"Given that adult patients were more likely to receive two UCB units and that they tend to have more aggressive leukemia, we think that the lower relapse rates with two UCB units is remarkable," says Verneris. He notes that while promising, these results will have to lead to a national study comparing one versus two cord blood units in children with leukemia.

"Prior to the research done by my predecessors, the co-infusion of two UCB units had not previously been performed," says Verneris. "We now know that without this double transplantation procedure, the majority of the patients treated would have had no other reasonable treatment option for their leukemia. The fact that they had less [leukemia](#) relapse was a wonderful surprise."

Source: University of Minnesota ([news](#) : [web](#))

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