

Cancer Advances: Peripheral Blood Transplants from Donors May Be More Harmful Than Bone Marrow Transplants in Children and Adolescents with Leukemia

Posted online on November 1, 2004 on www.jco.org [1] [Read the original study](#) [2] A new study in the *Journal of Clinical Oncology* (JCO) has found for the first time that transplantation of circulating blood that contains immature blood cells from sibling donors may be more harmful than transplantation of bone marrow in children with leukemia. It is estimated that nearly 30% of transplants from sibling donors in pediatric patients now use peripheral blood stem cells. Leukemia is cancer of the bone marrow. Bone marrow transplants involve the collection from the donor of "hematopoietic" stem cells - immature cells found in the bone marrow that mature into red blood cells, white blood cells, and platelets. Doctors have traditionally treated children with leukemia using bone marrow donated from a sibling when available, or from an unrelated volunteer donor. Another approach is peripheral blood stem cell (PBSC) transplantation. In PBSC transplantation, these stem cells are collected from the donor's blood, rather than directly from their bone marrow. In both types of transplantation, the patient's diseased bone marrow is destroyed with high doses of chemotherapy or radiation. Then bone marrow or peripheral blood stem cells are given to the patient, which replaces the destroyed marrow. It is important to note that the current study addresses transplants from donors only, not "autologous" PBSC transplants, in which stem cells are taken from the patient's own blood. This approach has been proven safe in children and adults, and is widely used. In adults, PBSC transplantation from donors has become increasingly common in recent years, allowing donors to avoid the difficulties of bone marrow collection, such as surgery and anesthesia. Since peripheral blood transplantation has been shown to be as safe and effective as bone marrow transplantation in adults, some doctors recommend use of peripheral blood transplants in pediatric patients. **What Does the Study Show?** In the current study, researchers analyzed 143 PBSC and 630 bone marrow transplants in children with acute leukemia eight to 20 years old. Researchers found that patients who underwent PBSC transplantation were more likely to die of transplant-related causes, than those who underwent bone marrow transplantation. The risk of the disease returning after transplantation did not differ between the two groups. **What Does This Mean for Patients?** Further studies are needed before peripheral blood transplants from a sibling or unrelated donor in children with leukemia are widely adopted—especially given that bone marrow transplantation is considered safe and effective in this population. Given the need for further study, children should not undergo PBSC transplants from donors outside of a clinical trial. In the meantime, parents of children with leukemia should ask their physicians whether their child is a candidate for bone marrow transplant, and discuss the range of treatment options, their success rates, and any potential short-term or long-term side effects.

Links:[1] <http://www.jco.org/>[2] <http://www.jco.org/cgi/content/full/22/24/4872?ijkey=a1OjkXj8n0H.6&keytype=ref&siteid=jco>