

Leading bone marrow transplant expert recommends significant change to current practice

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One of the world's leading bone marrow transplant experts is recommending a significant change to current transplant practice for patients who need marrow or adult stem cells from an unrelated donor to treat hematologic malignancies. Fred Appelbaum, M.D., director of the Clinical Research Division at Fred Hutchinson Cancer Research Center, asserts that bone marrow – not circulating, peripheral blood, which is the current norm – should be the source for unrelated donor adult stem cells for most patients who require a transplant. The reason: because there is less incidence of chronic graft-versus-host disease (GVHD), which can be a debilitating side effect of transplantation.

Appelbaum called for the change in an Oct. 18 editorial in *The New England Journal of Medicine* in response to a new study, published in the same issue, which compared survival rates and side effects of treating patients with hematopoietic adult stem cells derived from [bone marrow](#) versus circulating peripheral blood. The study found a higher incidence of chronic GVHD – 53 percent when peripheral blood was the source of stem cells for [transplant](#) – versus 41 percent when bone marrow is the source.

"For the majority of unrelated transplants following a standard high-dose preparative regimen, bone marrow should be used since survival is equivalent with the two sources but the incidence of chronic [graft-versus-host disease](#), which can be a debilitating complication, is significantly less with marrow," Appelbaum wrote.

GVHD is a common side effect in people who receive cells from an unrelated donor. It occurs when the transplanted cells recognize the recipient's tissues as foreign and attack the tissues. This can cause a variety of problems,

including skin rashes, [liver problems](#) and diarrhea. Chronic GVHD can develop any time between three months and three years after the transplant and can range from mild to serious in intensity.

Appelbaum said that stem cells derived from peripheral blood should only be used for the minority of patients in whom the benefits outweigh the risks. These include patients in need of rapid engraftment, such as those with life-threatening infections, or patients at high risk for graft rejection, such as those who receive reduced-intensity conditioning that does not include intensive chemotherapy.

For the past 10 years peripheral blood has been the norm as a source of matched related and matched unrelated adult stem cells for transplant because, despite the higher risk of GVHD, they are easier to harvest from the donor, they can be stimulated to grow in large numbers prior to harvesting, and they engraft, or set up shop, quickly inside the recipient's body.

The potential impact if such a practice change were widely implemented is large. Currently, about 75 percent of unrelated donor transplants are done using stem cells that are collected from the peripheral blood of donors. About 70 percent of all patients who undergo a life-saving transplant to treat blood cancers such as leukemia require an unrelated donor. Collecting adult stem cells from bone marrow is a more invasive process than collecting them from the bloodstream.

According to Appelbaum, about 5,500 unrelated donor transplants were performed in the United States last year. More than 20 million potential unrelated donors are typed and listed in registries in the Americas, Europe and Asia.

The study that compared the two sources of [adult stem cells](#) was the first randomized trial of its kind to compare the two sources of cells. It was led by former Hutchinson Center transplant physician Claudio Anasetti, M.D., who is now at the H. Lee Moffitt Cancer Center in Tampa, Fla. It found no difference in two-year survival, faster engraftment and less graft failure, but a significant increase in chronic GVHD, when patients were transplanted with [stem cells](#) derived from peripheral blood.

"While this study should change practice, it will be interesting to see if it really does," Appelbaum wrote. "The benefits of peripheral blood are seen early, under the watchful eyes of the transplant physician, while the deleterious effects occur late, often after the patient has left the transplant center."

More information: Appelbaum's editorial, "Pursuing the Goal of a Donor for Everyone in Need," *New England Journal of Medicine*.

Provided by Fred Hutchinson Cancer Research Center

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