

Transplant survival could be improved by altering present criteria for matching donors, recipients

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Selecting better matched recipients and donors than is currently required for umbilical-cord blood transplantation could substantially reduce transplant-related deaths. The findings, published Online First in the *Lancet Oncology* should change standard practice for cord-blood donor selection and emphasize the need for greater investment in public cord blood banks because of the importance of HLA matching on survival.

To prevent rejection, HLA typing is used to ensure the [antigens](#) on the surface of donated cells are compatible with the recipient. Currently, adult donors are selected from registries based on matching at four genes that govern tissue type -- HLA A, B, C, and DRB1. But, until now, it was believed that cord blood was more tolerant of differences between patient and donor, and the present criteria for selecting an unrelated umbilical-cord blood unit does not usually include matching at HLA C.

Currently, transplant-related deaths after umbilical-cord blood transplantation are higher than after unrelated adult donor graft transplants and several strategies to lower this are being investigated.

To examine the benefit of closer HLA matching, Mary Eapen, from the Medical College of Wisconsin, Milwaukee, USA, and colleagues from the USA collaborated with Eurocord, Hospital Saint Louis, Paris, France, and colleagues from Europe. Together they retrospectively assessed the effect of donor-recipient HLA matching on outcomes of

803 people (mostly children under 16 years old) with [leukaemia](#) or myelodysplastic syndrome who had undergone umbilical-cord blood transplantation in the USA and Europe between 1996 and 2008.

The researchers found that additional matching for HLA-C significantly lowered transplant-related deaths after umbilical [cord blood transplants](#). Effects of matching for HLA-C were greatest when no HLA antigen differed between the donor and recipient and in the presence of a single HLA antigen difference between the donor and recipient.

Transplant-related deaths were higher with two, three, or four HLA antigen mismatches at any of the four genes compared to none or a single mismatch.

The authors say: "Our findings suggest that altering present selection strategies for umbilical-cord blood units might ameliorate some of the excess transplant-related mortality associated with umbilical-cord blood transplantation."

They conclude: "Despite the substantial investment from governments to develop public cord blood banks, our findings support the need for even greater investment. The additional burden of HLA-C typing and the need to build an even larger inventory of cord blood units that will allow for matching at HLA C will add to the existing financial burden of the public-cord blood banks."

In an accompanying Comment, Alois Gratwohl from the University of Basel, Basel, Switzerland says: "These findings might be disappointing for some who thought minimal matching sufficient, but they have clear consequences. The degree of matching between [donor](#) and recipient, including HLA-C, needs to be integrated into the algorithm used to select for or against transplantation. The risk of disease should be balanced against the transplant risk, so that overall a better outcome with

regard to survival, quality of life, and cost, compared with a non-transplant strategy, is achieved."

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