

Is the Youngest Donor Always the Best Choice to Optimize Outcomes for Matched Unrelated Allogeneic Transplant?

WHAT?



An observational research study aimed to assess the impact of donor characteristics on overall survival (OS) and event-free survival (EFS) for patients who receive an 8/8 human leukocyte antigen (HLA)-matched unrelated donor (MUD) transplant to treat cancerous and non-cancerous diseases.

The researchers used an advanced machine learning technique to better understand how 8/8 matched unrelated donors should be prioritized based on additional donor characteristics such as age, sex, prior pregnancy, cytomegalovirus (CMV) status or extended HLA matching (HLA-DQB1 and DPB1).

WHY?



- An earlier study defined the best donor as the youngest donor available on the search. That study only looked at OS at 1 year after blood or marrow transplant (BMT).
- This study looked at OS and EFS for up to 3 years after BMT. EFS included survival without relapse (the disease coming back), graft failure or rejection, or moderate or severe chronic graft-versus-host disease (GVHD).
- Understanding the factors that impact OS and EFS could expand donor choice beyond the youngest donor and increase the likelihood a patient would have an available optimal donor.

WHO?



- The study included more than 11,800 first 8/8 MUD transplants performed in the U.S. and reported to CIBMTR® (CIBMTR is a research collaboration between the Medical College of Wisconsin® and NMDP).
- A subset of 699 patients had detailed donor search data available in the NMDP Search Archive.

WHEN?



- The researchers analyzed data submitted to the CIBMTR® Research Database and data from the NMDPSM Search Archive from 2016–2019.

RESULTS



- Only donor age and donor sex had clinically important impacts on outcomes.
- Donor age was more important for OS than EFS. An 18-year-old donor is associated with a clinically meaningful increase in OS (greater than 1%) at 3 years when compared to those 34 years old and older. However, when compared to donors aged 19 to 30, an 18-year-old donor had limited impact on overall survival (less than 1% improvement at 3 years).
- Donor sex had a limited impact on OS. However, donor sex was important for EFS. Male donors were preferred when the age difference between a male and female donor was minimal.
- An optimization strategy that balanced OS and EFS confirmed there is potential for nuanced donor selection that prioritizes OS, but also considers EFS when OS differences are marginal.

Read the study abstract published in Blood and presented as a poster at the 65th ASH Annual Meeting & Exposition in December 2023: <https://doi.org/10.1182/blood-2023-181884>

IMPACT



- These results demonstrate that there is a minimal impact to patient outcomes when choosing among donors between the ages of 18 and 30. This range of optimal MUD donor ages allows for more flexibility in donor selection.
- By expanding the donor choice beyond the youngest donors, patients have a higher likelihood of having an available optimal donor.

FROM THE EXPERTS



“Prior observational studies performed by CIBMTR as well as other global registries have found a consistent association between younger donor age and improved patient survival. Younger donors are better, but the question remains how young the donor should be to have a good outcome. This study analyzed much newer patient outcomes data and a large number of donor/recipient pairs, and used an innovative machine learning technique.

We found that age still matters, but just not as much as in previous studies. We found no substantial impact on survival using donors within the 18- to 30-year-old age group, with outcomes worsening with donors 34 years old and above. These results should allow for greater flexibility in choosing among donors and could also help address issues related to donor availability. It demonstrates the value of continuously updating our studies and using novel methods to analyze the data.”

Steven Devine, MD
Chief Medical Officer, NMDP
Senior Scientific Director, CIBMTR



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