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A RESEARCH COLLABORATION BETWEEN THE
MEDICAL COLLEGE OF WISCONSIN AND NMDP

Optimizing Outcomes for Matched Unrelated Allogeneic HCT by Improving Donor Selection Among Younger Donor Options

CIBMTR® (Center for International Blood and Marrow Transplant Research®) is a research collaboration between NMDP℠ and the Medical College of Wisconsin® (MCW).

Study Details:

This observational research conducted by the CIBMTR aimed to enhance allogeneic hematopoietic cell transplantation (HCT) outcomes by refining matched unrelated donor (MUD) selection criteria. Focusing on donor characteristics such as age and gender, the study utilized advanced machine learning (Non-parametric failure time – Bayesian additive regression trees, NFT-BART) to analyze their impact on patient outcomes.

Over 11,800 cases of first 8/8 MUD transplants reported from 2016–2019 were evaluated, with detailed donor search data available for 699 patients.

Results at a Glance:

- Donor age significantly influences both overall survival (OS) and event-free survival (EFS), with donors aged 18 showing substantial benefits compared to older donors over 34 years old.

- Minimal differences in outcomes were observed when selecting among donors aged 18 to 30, indicating flexibility in donor age selection.

- Male donors are slightly preferred for EFS when age differences are negligible, though gender's impact on OS is limited.

- Cytomegalovirus (CMV) status, donor parity, HLA-DQB1 matching and HLA-DPB1 T-cell epitope (TCE) permissive/non-permissive matching did not impact OS or EFS in this analysis.

- An optimization strategy that balances OS and EFS suggests a nuanced approach to donor selection can be beneficial, especially when differences in OS among potential donors are marginal.

Figure: Predicted OS Differences at 3 Years Post-HCT for an 18-Year-Old vs. an Older Donor
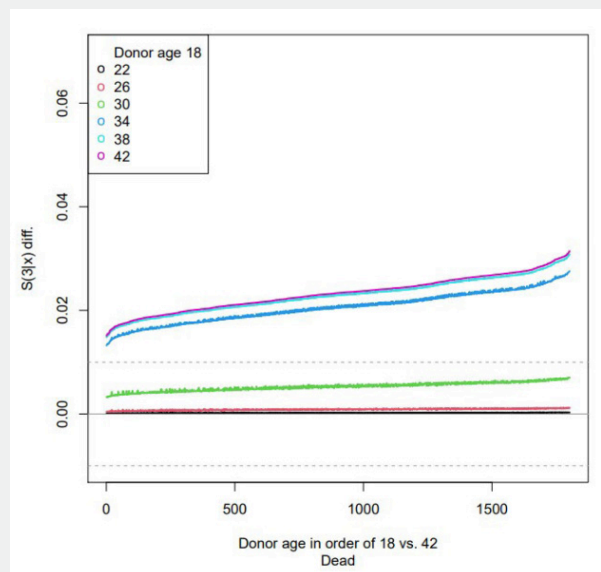
Clinical Impact:

The findings of this study underscore the significance of considering donor age in the selection process for allogeneic HCT but demonstrate there is flexibility in choosing an optimal matched donor between age 18 and 30. This approach not only broadens the optimal donor pool but also supports the potential for similar patient outcomes within this age bracket, thereby facilitating more informed and versatile donor selection practices. By highlighting the relatively minor impact of gender and the negligible improvements associated with selecting younger donors within the specified age range, the study offers valuable insights that could lead to updated guidelines and improved transplantation success rates, enhancing patient care and access to HCT.

Scan to review more recent clinical research

Read the American Society of Hematology (ASH) Annual Meeting and Exposition abstract published in *Blood* (DOI: 10.1182/blood-2023-181884).

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