Outcomes

IN UNRELATED HEMATOPOIETIC CELL TRANSPLANTATION:
Applying New Data for Referral and Decision-Making

KEY FINDINGS

1

Survival is improving.

Unrelated transplant outcomes have improved due to a number of factors including changes in clinical practice and a better understanding of human leukocyte antigen (HLA) typing and matching.

2

Timing matters.

Research shows that patients transplanted earlier in their disease stage have better outcomes than patients with advanced disease.

3

Patient eligibility is expanding.

As outcomes improve and clinical practice is refined, more patients become candidates for transplant.

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Improving Survival for Unrelated Transplantation

Approximately 17,000 allogeneic hematopoietic cell transplants (HCT) are performed worldwide each year using unrelated donors or cord blood units.[1,2] In 2011, the National Marrow Donor Program (NMDP) facilitated more than 5,500 transplants with unrelated donors and cord blood units, with a total of more than 50,000 transplants since 1987.[3]

One-year survival outcomes are improving for patients receiving an allogeneic transplant from an unrelated donor (Figure 1). Recently published studies have found unrelated donor transplant survival outcomes comparable to related donor transplant results in several patient populations.[4-8] In some instances, unrelated transplant outcomes have even exceeded those obtained in related transplant.[9-10]

Improved Survival with Unrelated Transplantation

REPORT YEAR	TRANSPLANT PERIOD	ONE-YEAR SURVIVAL
2011	2007 – 2009	60.3%
2010	2004 – 2008	57.9%
2009	2003 – 2007	56.3%
2008	2002 – 2006	54.0%
2007	2001 – 2005	51.5%
2006	2000 – 2004	48.5%
2003	1996 – 2001	42.2%

Figure 1. Unadjusted one-year survival of unrelated transplant recipients after first allogeneic transplantation at U.S. transplant centers has improved over recent years.[11]

Why Outcomes are Improving

Several factors have led to better outcomes including: refined clinical practice, enhanced patient-donor human leukocyte antigen (HLA) matching, and better understanding of optimal timing.

Refined Clinical Practice

- Transplant approaches tailored to the patient's disease and condition, such as reduced-intensity conditioning, have expanded patient eligibility for transplantation.[12-16]
- Notable improvements in the ability to manage the complications of HCT have led to a reduction in transplant-related mortality (TRM) as seen in Figure 2.[17-19]

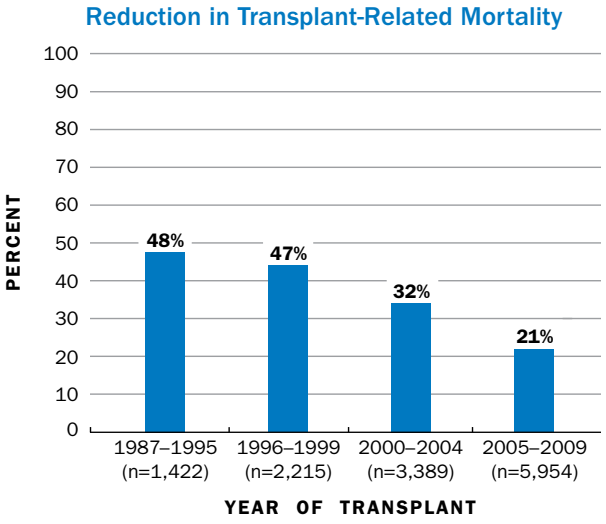

Figure 2. One-year TRM for NMDP-facilitated transplants after bone marrow or peripheral blood stem cell (PBSC) transplantation for adults with leukemia or lymphoma continues to decline over time ($p<0.001$).[20]

Enhanced Patient-Donor Matching

- DNA-based tissue typing has increase the accuracy and specificity of HLA typing, which allows more precise matching between patients and donors.
- Knowledge of matching criteria, including which HLA loci are most significant to outcomes, has improved survival.[21-23]
- Between 66-93% of patients have an available and willing HLA-matched donor at ≥ 7 of 8 loci through the NMDP's Be The Match Registry®, depending on race or ethnicity.[3]

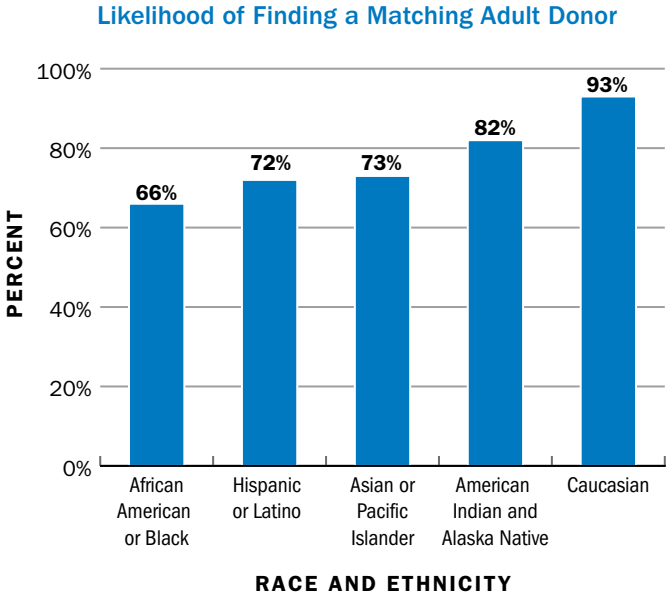

Figure 3. The likelihood of finding a suitable donor based on inherited tissue type has increased with registry growth and improved DNA-based tissue typing.[3]

Better Understanding of Optimal Timing

- While having an optimally matched donor or cord blood unit is important, a 2007 study indicates that ***patients transplanted earlier in their disease have better outcomes*** than patients with advanced disease, regardless of the degree of the match.[24]
- Because disease stage at the time of transplant can have a significant impact on the outcome, an ***early referral is perhaps the single most important step that can affect survival***.

Probability of Overall Survival by HLA Matching:

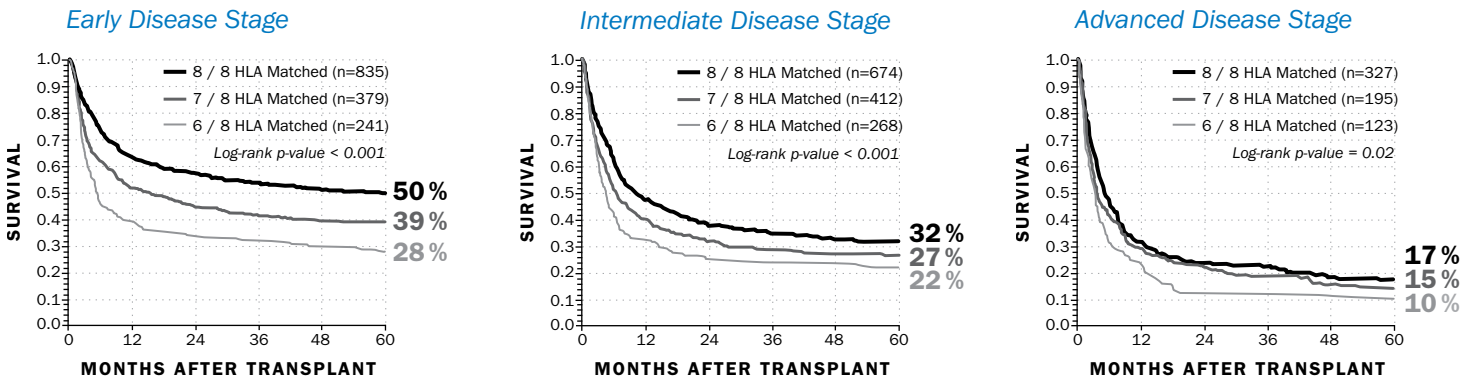

Figure 4. Overall survival of 3,857 U.S. transplant recipients from 1988–2003 with ALL, AML, CML, and MDS using NMDP-facilitated transplants.

CIBMTR
CENTER FOR INTERNATIONAL BLOOD & MARROW TRANSPLANT RESEARCH

This research was originally published in Blood. Lee SJ, et al. High-resolution donor-recipient HLA matching contributes to the success of unrelated donor marrow transplantation. Blood. 2007; Vol 110: 4576-4583. (c) the American Society of Hematology.

Trends in Unrelated Transplantation

Several trends have led to the significant growth observed in unrelated transplantation:

1. **Increase in transplant for AML and MDS.** Unrelated transplant is growing in nearly all diseases for which transplant is indicated; most dramatically in AML and MDS.[3]
2. **Older patients eligible.**[12-16] Transplants for patients over age 50 now account for 42% of all NMDP-facilitated transplants.[3]
3. **Growth in registry and cord blood access.** The Be The Match Registry now provides access to more than 10 million potential donors and nearly 165,000 cord blood units, plus more through cooperation with international registries.[3]

LEARN MORE: TRENDS

To learn more about trends in allogeneic transplantation, visit **marrow.org/md-trends**

Physicians' Resource Center

Overall Growth in NMDP-Facilitated Transplants (fiscal year 1987-2011)

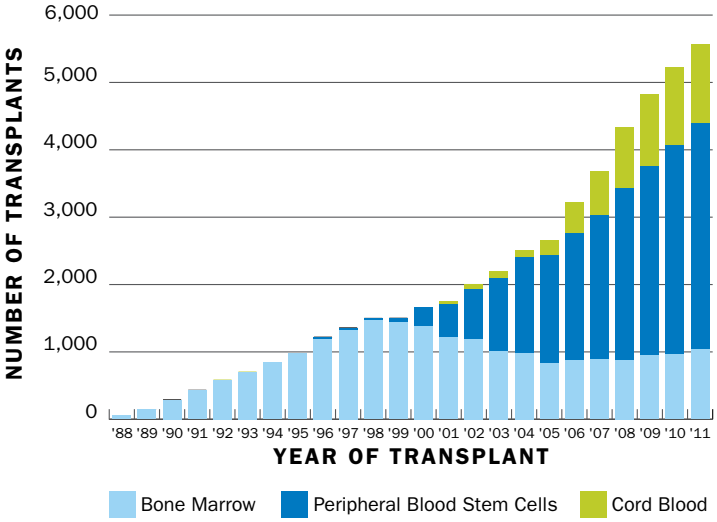

Figure 5. Overall number of NMDP-facilitated transplants has surpassed 50,000 and in 2011, NMDP facilitated twice as many transplants as it did six years ago.[20]

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CLINICAL ACTION POINTS

1. Requesting a transplant consultation as soon as possible when transplant is an option ensures that disease progress doesn't compromise outcomes.

2. Whether a related donor is available or an unrelated donor is needed, timing of transplant consultation should be the same. Early consultation, HLA typing of the patient and family, plus preliminary search of the donor registry (free) ensures plans are in place to move forward if or when transplantation is warranted.

3. Clinicians treating older patients should review current protocols and consider transplant as a treatment option.

LEARN MORE: ONLINE EDUCATION

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