# BRIDGING TO ALLOGENEIC HEMATOPOIETIC CELL TRANSPLANTATION FOLLOWING CD19-DIRECTED CAR-T THERAPY IN RELAPSED/ REFRACTORY LARGE B-CELL LYMPHOMA: A SYSTEMATIC REVIEW OF OUTCOMES AND PROGNOSTIC INDICATORS

**A. CHITKARA[1], FNU. ANAMIKA[2], N. VOJJALA[3], S. BAI[4], U. SONI[5] and R. Patel[6]**

1. Thomas Jefferson University, Philadelphia, PA, USA
2. Lenox Hill Hospital, New York, NY, USA
3. Trinity Health, Detroit, MI, USA
4. Henry Ford Hospital, Detroit, MI, USA
5. University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA
6. Washington University, St. Louis, MO, USA

## Introduction

• Anti-CD19 CAR-T cell therapies have reshaped the therapeutic paradigm for relapsed/ refractory large B-cell lymphoma (R/R LBCL). Yet, real-world durability remains limited, with up to 60% of patients progressing within one year.
• Allogeneic hematopoietic cell transplantation (allo-HCT) is increasingly considered as consolidative or salvage therapy, though its role post-CAR-T remains ill-defined.

## Aim

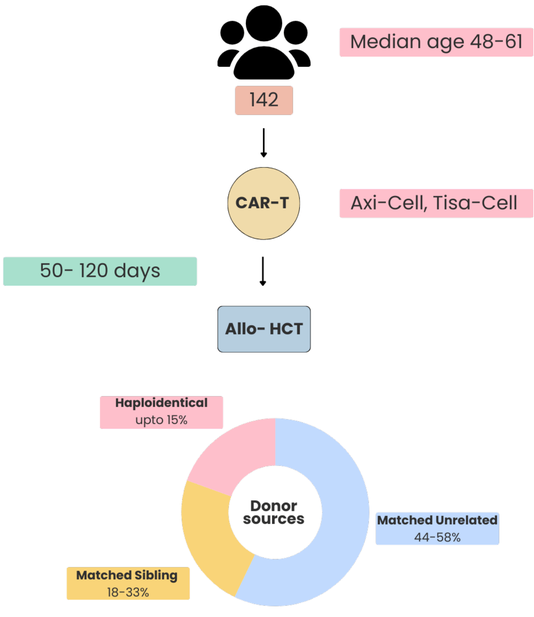
• To systematically evaluate published outcomes of allo-HCT following CAR-T therapy in R/R LBC.
• To identify clinical or biological predictors of benefit.

## Methods

• A systematic review was conducted according to PRISMA guidelines. PubMed, Embase, and ClinicalTrials.gov were searched for studies published from 2017 to 2025.
• **Inclusion Criteria**: Prospective or retrospective series reporting outcomes of adult R/R LBCL patients undergoing allo-HCT following CAR-T therapy.
• **Data Collected**: Overall survival (OS), progression-free survival (PFS), non-relapse mortality (NRM), and graft-versus-host disease (GVHD).

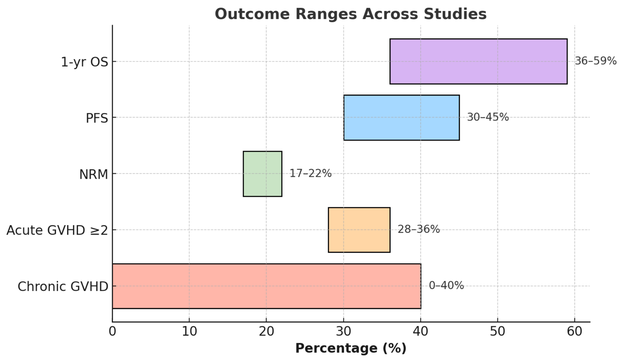
## Intervention

• Allo-HCT following CAR-T, using reduced-intensity or myeloablative conditioning.
• Donor sources included matched unrelated (44–58%), matched sibling (18–33%), and haploidentical (up to 15%) donors.
• GVHD prophylaxis regimens varied, with post-transplant cyclophosphamide and tacrolimus-based regimens most common.




## Results

• Seven studies comprising **142 patients** were included. **Median age** ranged from **48 to 61 years.**
• Most patients received **Axi-cel** or **Tisa-cel**
• The interval between CAR-T infusion and allo-HCT ranged from 50 to 120 days
• Approximately 60–75% of patients undergoing allo-HCT were in complete response (CR) following CAR-T therapy, while the remainder proceeded in partial response or with stable disease.
• Across studies, **1-year OS** ranged from **36% to 59%,** with **PFS** ranging from **30% to 45%.**
• **NRM** ranged from **17% to 22%.**
• **Acute GVHD grade ≥2** occurred in **28% to 36%,** and **chronic GVHD** in up to **40%.**
• **Durable remissions** were predominantly observed in patients bridged in CR with minimal disease burden and <2 intervening salvage lines post-CAR-T.




## Conclusion

• Allo-HCT remains a feasible and potentially curative option in select patients following CD19-directed CAR-T failure.
• Optimal candidates are those with early response and minimal disease pre-HCT.
• The heterogeneity of conditioning intensity, donor selection, and timing limits direct comparability.
• Prospective, biomarker-guided trials are warranted to define transplant eligibility and improve post-CAR-T sequencing in R/R LBCL.

## References

1. *Allogeneic Hematopoietic Cell Transplantation after Chimeric Antigen Receptor T Cell Therapy in Large B Cell Lymphoma. Transplantation and Cellular Therapy*
2. *Allogeneic transplant following CAR T-cell therapy for large B-cell lymphoma. Haematologica*
3. *Allogeneic Hematopoietic Stem Cell Transplant for Diffuse Large B-Cell Lymphoma: Evolving Role in the Era of CAR T-Cell Therapy. Current Oncology Reports*
4. *CAR T cells or allogeneic transplantation as standard of care for advanced large B-cell lymphoma: an intent-to-treat comparison. Blood Advances*
5. *Safety of allogeneic hematopoietic cell transplant in adults after CD19-targeted CAR T-cell therapy. Blood Advances*

**Corresponding Author: AKSHIT CHITKARA, MD. akshit.chitkara@jefferson.edu**