

REAL-WORLD COMPARATIVE SURVIVAL AND HOSPITALIZATION OUTCOMES AFTER CAR-T RELAPSE IN RELAPSED/REFRACTORY MULTIPLE MYELOMA: BISPECIFIC ANTIBODIES VERSUS CONVENTIONAL CHEMOTHERAPY

Sumbal Aziz, MD¹, [Woo Joo Lee, MD¹](#), Amna Bint I Munir, MD², Madhu Bhargavi Chandra, MD³, Mustafa Samejo, MD¹, Ruqqia Mustaqeem, MD⁴, Faiz Anwer, MD⁵

Taussig Cancer Institute, Cleveland Clinic, Cleveland, OH

AdventHealth Sebring, FL¹, North Alabama Medical Center, AL², Wellstar Spalding Medical Center, GA³, Mainline Health, PA⁴, Cleveland Clinic, Taussig Cancer Center, OH⁵

INTRODUCTION

BCMA-directed CAR-T therapy has significantly improved outcomes in relapsed/refractory multiple myeloma (RRMM), but most patients ultimately relapse, and optimal post–CAR-T treatment remains undefined.

Bispecific antibodies (BsAbs) targeting BCMA or GPRC5D and conventional chemotherapy (cCT) are the two most common salvage approaches after CAR-T relapse².

Retrospective series report overall response rates of 30–60% for BsAbs and 13–69% for cCT, but direct comparative real-world effectiveness data remain limited^{1, 3}.

AIM

To compare overall survival (OS) and hospitalization rates among patients with RRMM treated with BsAbs versus cCT following relapse or progression after BCMA-directed CAR-T therapy.

METHOD

- Retrospective cohort study using de-identified EHR data from the TriNetX network (2010–2025).
- Adults (≥18 yrs) with multiple myeloma who received BCMA-directed CAR-T therapy followed by either BsAbs (teclistamab, elranatamab, linvoseltamab, talquetamab) or cCT (selinexor-based regimens, alkylators, proteasome inhibitors, IMiDs, anti-CD38 mAbs).
- Index date: initiation of post–CAR-T therapy. 1:1 propensity score matching on age, sex, race, ethnicity, prior lines of therapy, and high-risk cytogenetics → 150 patients per cohort.
- Primary outcome: 1-year OS (Kaplan-Meier, Cox proportional hazards). Secondary outcome: incidence of hospitalization within 1 year of treatment initiation.

CONCLUSIONS

In this real-world analysis of patients with RRMM treated after CAR-T relapse, BsAbs were associated with significantly improved 1-year OS compared with cCT (38.2% vs 32.6%; HR 0.35, 95% CI 0.20–0.50; log-rank p < 0.0001), an approximate 65% relative reduction in mortality risk.

Hospitalization was numerically lower with BsAbs but did not reach statistical significance (72.0% vs 80.7%; p = 0.08).

These findings support BsAbs as a preferred salvage strategy in the post–CAR-T setting and underscore the need for prospective comparative studies to validate these real-world results.

RESULTS

Among 150 propensity-matched patients per cohort, bispecific antibodies (BsAb) were associated with significantly better 1-year overall survival than conventional chemotherapy (cCT) after CAR-T relapse in RRMM: 38.2% vs 32.6% (HR 0.35, 95% CI 0.20–0.50; log-rank p<0.0001), corresponding to an approximate 65% relative reduction in mortality risk. Hospitalization within 1 year was numerically lower with BsAb (72.0% vs 80.7%), but this difference did not reach statistical significance (–8.7 percentage points, 95% CI –18.6 to 1.2; p=0.08).

Outcome	BsAb (n=150)	cCT (n=150)	Statistic	p-value
1-year overall survival	38.2%	32.6%	HR 0.35 (95% CI 0.20–0.50)	<0.0001
Hospitalization within 1 year	72.0%	80.7%	–8.7 pp (95% CI –18.6 to 1.2)	0.08

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CONTACT INFORMATION

Sumbal Aziz, MD — dr.sumbalaziz786@gmail.com

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