University Hospitals Cleveland Medical Center

ashp Accredited

Implementation of Outpatient Bispecific T-Cell Engager Therapy

Sebastian Jaques Garcia, PharmD; Nicholas Bitz, PharmD, MBA, MSPGx; Samuel Porter, PharmD, BCOP

Introduction

- Bispecific T-cell engagers (BTCEs) have rapidly expanded treatment options for relapsed/refractory multiple myeloma and lymphomas. Cytokine-mediated toxicities such as cytokine release syndrome (CRS) and immune effector cell-associated neurotoxicity syndrome (ICANS) are most common during step-up dosing (SUD), and administration of these agents traditionally required inpatient admission and monitoring.
- A recent Mayo Clinic publication using a structured outpatient BTCE model demonstrated manageable toxicities (CRS 31.6%, ICANS 3.5%, most grade 1).
- University Hospitals Cleveland Medical Center (UHCMC) recently transitioned SUD for teclistamab, talquetamab, epcoritamab, mosunetuzumab, and elranatamab to the outpatient setting using standardized workflows for pre-treatment visit, medication administration, follow-up visit, and outpatient CRS/ICANS management.
- This medication use evaluation will characterize the safety of outpatient BTCE SUD with the aim to expand outpatient SUD to additional infusion sites.

Methods

Design

- Single-center, retrospective chart review.
- Adult patients with biopsy confirmed diagnosis of multiple myeloma (MM) or lymphoma (Follicular [FL], Diffuse Large B-Cell [DLBCL], and Waldenstrom Macroglobulinemia [WM]).
- Received at least one SUD of BTCE therapy outpatient, including teclisamab, talquetamab, epcoritamab, mosunetuzumab, or elranatamab between March 1st, 2025 – November 16th, 2025.

Outcomes

Primary Outcome

- Assess the incidence, grade, timing and management of CRS and ICANS from SUD initiation through the first full dose.

Secondary Outcomes

- Characterize health care utilization during SUD, including hospital admissions, length of stay, and supportive care.

References

1. Sandahl TB, Soefje SA, Fonseca R, et al. Real-World Safety and Health Care Resource Utilization of Teclistamab Under an Outpatient Model for Step-Up Dosing Administration. JCO Oncol Pract. 2025;21(5):702-709. doi:10.1200/OP-24-00489

Disclosures: The authors of this study have nothing to disclose.

Results (N=17)

Table 1. Patient Demographics

Age, years, mean ± SD	72 ± 13.3
Male, n (%)	11 (64.7)
Race, n (%)	
White	11 (64.7)
Black or African American	6 (35.3)
BMI, mean ± SD	27.3 ± 6.7
ECOG, median ± SD	1 ± 0.5
Cancer Diagnosis, n (%)	
Multiple Myeloma	12 (70.6)
DLBCL	2 (11.8)
Follicular Lymphoma	2 (11.8)
Waldenstrom Macroglobulinemia	1 (5.9)
Prior Therapies, n (%)	
CAR-T	6 (35.3)
BTCE	2 (11.8)
Outpatient Completion by BTCE Step-Up Dose, n (%)	
SUD 1	16 (94.1)
SUD 2	15 (88.2)
First Full Dose	13 (76.5)

Figure 1. BTCE Received

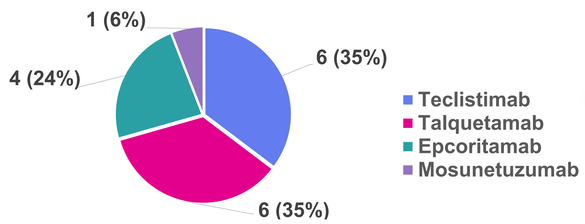


Figure 2. Incidence of CRS and ICANS events by BTCE SUD

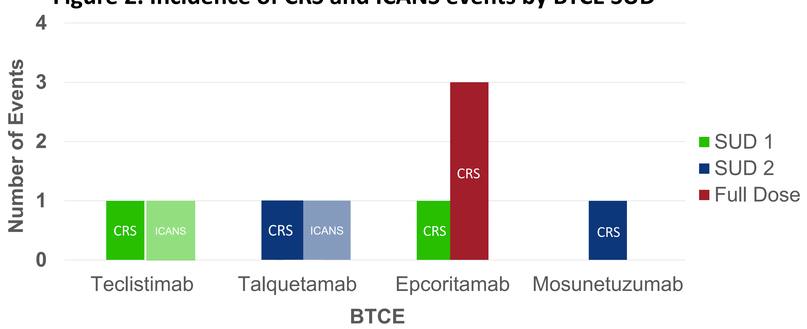


Table 2. Primary Safety Outcome, n (%)

CRS during SUD (highest grade)	6 (35.3)
Grade 1	3 (17.6)
Grade 2	3 (17.6)
Grade ≥ 3	0
Number of CRS events per patient	
1 CRS event	5
2 CRS events	1
≥ 3 CRS events	0
ICANS during SUD (highest grade)	2 (11.8)
Grade 1	2 (11.8)
Grade ≥ 2	0
Number of ICANS events per patient	
1 ICANS event	2
≥ 2 ICANS events	0

Table 3. Resource Utilization and Management of CRS/ICANS, n (%)

Pretreatment given on the same day as SUD		
Acetaminophen 650 mg	17 (100)	
Dexamethasone 16 mg	17 (100)	
Diphenhydramine 50 mg	17 (100)	
Management of CRS/ICANS	CRS (n=6)	ICANS (n=2)
Acetaminophen	5 (83.3)	1 (50)
Dexamethasone	4 (66.7)	1 (50)
Tocilizumab	2 (33.3)	0 (0)
IV Fluids	5 (83.3)	1 (50)
IV Antibiotics	5 (83.3)	1 (50)
CRS/ICANS Management Setting		
Inpatient Floor	5	
Outpatient/Acute care clinic	1	
Emergency Department	0	
ICU	0	
Length of stay, days, mean ± SD	2.8 ± 1.9	

Conclusions

- Outpatient BTCE SUD at UHCMC was safe, with most patients completing SUD 1, SUD 2, and first full dose without requiring inpatient care.
- CRS and ICANS rates were consistent with published outpatient teclistamab data, with all events being low-grade and manageable. No grade ≥3 CRS or ICANS events occurred, and no patients required ICU-level care.
- These findings support the continued expansion of outpatient BTCE SUD to additional infusion sites with similar monitoring protocols.