Outpatient Step-Up Dosing of Teclistamab or Talquetamab with Prophylactic Tocilizumab in Patients with Relapsed/Refractory Multiple Myeloma: Real-World Evidence From a Large US Cancer Center

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INTRODUCTION

- Teclistamab (Tec) and talquetamab (Tal) are first-in-class T-cell-engaging bispecific antibodies approved worldwide for relapsed/refractory multiple myeloma (RRMM).
- Prior Tec and current Tal United States Prescribing Information (USPI) recommend inpatient (IP) step-up dosing (SUD), including for the first treatment dose, to manage cytokine release syndrome (CRS) and immune effector cell-associated neurotoxicity syndrome (ICANS).
- Updated Tec USPI revised the recommendation for the first treatment dose, which may now be administered in other settings.
- To expand patient access, reduce healthcare resource utilization (HCRU), and improve patients' treatment experience, a large US academic center (Icahn School of Medicine at Mount Sinai) implemented Tec or Tal SUD in two treatment scenarios (**Figure 1**):
  - Hybrid with SUD1 in the IP setting and the remaining SUD doses in the OP setting, and treatment with tocilizumab for CRS (HY)
  - Fully OP SUD with prophylactic tocilizumab (OP-toci)

AIM

- This real-world study aimed to describe patient and clinical characteristics, adverse events, and HCRU among patients with RRMM receiving Tec or Tal SUD in HY or OP-toci settings.

METHODS

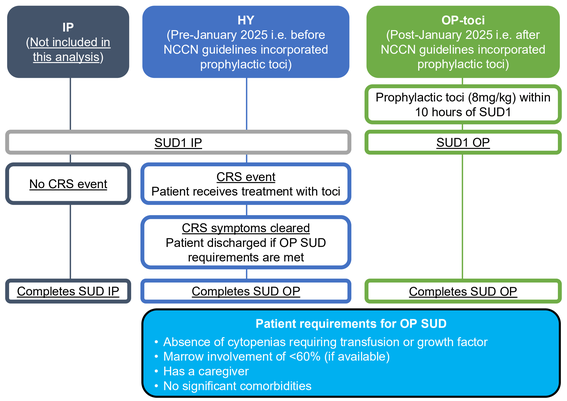
Study design and data source

- This retrospective chart review study included adults (≥18 years) with RRMM who initiated Tec after October 25, 2022 or Tal after August 9, 2023 at Icahn School of Medicine at Mount Sinai.
- Anonymized data were extracted from patient charts until March 10, 2026.

Data analysis

- Results were summarized descriptively by HY and OP-toci cohorts.
- Adverse events (14-day CRS and ICANS rates) and HCRU (14- and 30-day all-cause hospitalizations or readmissions) were reported during the follow-up period.

Figure 1. Patient eligibility and SUD setting for initiation of Tec or Tal



Only patients who received care at Icahn School of Medicine at Mount Sinai for the first 14 days from SUD initiation were included in this analysis. One patient with Grade 2 ICANS reported in the abstract was excluded due to discontinuation of care at Icahn School of Medicine at Mount Sinai prior to the 14-day period post-SUD initiation. CRS, cytokine release syndrome. HY, hybrid. ICANS, immune effector cell-associated neurotoxicity syndrome. IP, inpatient. OP, outpatient. SUD, step-up dosing. Toci, tocilizumab.

RESULTS

Patient and clinical characteristics

- This study included 54 patients with RRMM (**Table 1** and **Table 2**).

Table 1. Proportion of patients treated with Tec or Tal SUD in HY and OP-toci settings

	Total	Tec	Tal
HY	21	4	17
OP-toci	33	12	21

HY, hybrid. OP, outpatient. SUD, step-up dosing. Tal, talquetamab. Tec, teclistamab. Toci, tocilizumab.

Table 2. Patient characteristics and treatment history of patients treated with Tec or Tal SUD in HY and OP-toci settings

Characteristics, n (%)‡	HY (n=21)		OP-toci (n=33)	
	Tec (n=4)	Tal (n=17)	Tec (n=12)	Tal (n=21)
Age at index, years				
Median	76.5	67.0	76.5	73.0
≥18 and <65	0 (0.0)	6 (35.3)	1 (8.3)	7 (33.3)
≥65 and <75	0 (0.0)	7 (41.2)	5 (41.7)	10 (47.6)
≥75	4 (100.0)	4 (23.5)	6 (50.0)	4 (19.0)
Sex				
Female	2 (50.0)	4 (23.5)	4 (33.3)	4 (19.0)
Male	2 (50.0)	13 (76.5)	8 (66.7)	17 (81.0)
Race				
White	1 (25.0)	8 (47.1)	8 (66.7)	9 (42.9)
Black/African American	1 (25.0)	3 (17.6)	1 (8.3)	3 (14.3)
Asian	0 (0.0)	2 (11.8)	1 (8.3)	2 (9.5)
Other/unknown	2 (50.0)	4 (23.5)	2 (16.7)	7 (33.3)
Ethnicity				
Hispanic/ Latino	1 (25.0)	3 (17.6)	2 (16.7)	6 (28.6)
ECOG PS				
0-1	3 (75.0)	16 (94.1)	9 (75.0)	20 (95.2)
≥2	1 (25.0)	1 (5.9)	3 (25.0)	1 (4.8)
Prior lines of therapy, median (IQR)	4.5 (3.5, 5.5)	5.5 (4.5, 8.0)	5.5 (4.0, 7.0)	4.0 (4.0, 6.0)
High-risk cytogenetics*	1 (25.0)	4 (23.5)	3 (25.0)	4 (19.0)
Triple-class refractory†	4 (100.0)	17 (100.0)	11 (91.7)	21 (100.0)
Penta exposed**	3 (75.0)	14 (82.4)	8 (66.7)	16 (76.2)
EMD	0 (0.0)	4 (23.5)	2 (16.7)	9 (42.9)

ECOG PS, Eastern Cooperative Oncology Group performance status. EMD, extramedullary disease. HY, hybrid. IQR, interquartile range. OP, outpatient. SUD, step-up dosing. Tal, talquetamab. Tec, teclistamab. Toci, tocilizumab. ‡Unless otherwise stated. *High risk cytogenetics defined as (t(4; 14); t (14; 16); del17p). †Triple-class refractory: disease refractory to at least one each of an immunomodulatory agent, a proteasome inhibitor, and an anti-CD38 antibody. **Penta exposed: received treatment with at least two immunomodulatory agents [lenalidomide and pomalidomide]; two different proteasome inhibitors [e.g., bortezomib, ixazomib and/or carfilzomib]; and one of the CD38 monoclonal antibodies [e.g., daratumumab or isatuximab]). EMD is defined as isolated extraosseous plasmacytomas not associated with bone lesions. EMD is diagnosed with imaging study prior to starting bispecific.

- The median prior lines of therapy were 4.5 (Tec) and 5.5 (Tal) in the HY cohort, and 5.5 (Tec) and 4 (Tal) in the OP-toci cohort.
- Prior exposure to B-cell maturation antigen (BCMA)-directed therapy was 0% (Tec) and 29.4% (Tal) in the HY cohort, and 16.7% (Tec) and 33.3% (Tal) in the OP-toci cohort.
  - BCMA-directed therapies included belantamab mafodotin, chimeric antigen receptor T-cell (CAR-T), and bispecifics received in a clinical trial.

SUD completion

- All patients in the HY cohort successfully completed SUD, except one patient treated with Tec who discontinued due to progression and subsequent death.
- All patients in the OP-toci cohort successfully completed SUD.

Adverse events occurring during SUD

- Adverse events during SUD in patients treated with Tec or Tal are summarized in **Table 3**.

Table 3. Adverse events during SUD in patients treated with Tec or Tal in HY and OP-toci settings

Adverse events during SUD, n (%)	HY (n=21)		OP-toci (n=33)	
	Tec (n=4)†	Tal (n=17)	Tec (n=12)	Tal (n=21)
CRS within 14 days post-index	3 (75)*	17 (100)*	0 (0)	0 (0)
Highest grade CRS				
Grade 1	3 (75)*	17 (100)*	0 (0)	0 (0)
Recurrent CRS (≥2 events)	1 (25) (G1)	0 (0)	0 (0)	0 (0)
Discontinuation of Tec or Tal due to CRS	0 (0)	0 (0)	0 (0)	0 (0)
ICANS within 14 days post-index	2 (50)	0 (0)	2 (17)	1 (5)
Highest grade of ICANS				
Grade 1	2 (50)	0 (0)	2 (17)	1 (5)
Recurrent ICANS (≥2 events)	1 (25) (G1)	0 (0)	0 (0)	0 (0)
Discontinuation of Tec or Tal due to ICANS	0 (0)	0 (0)	0 (0)	0 (0)
Concurrent CRS and ICANS	1 (25)	0 (0)	0 (0)	0 (0)

*Per HY protocol, patients were hospitalized for first SUD, had CRS, and were treated with tocilizumab. †1 patient had elevated C-reactive protein, with no CRS, but was treated with toci and completed the remaining SUD in the OP setting. CRS and ICANS were defined and graded according to the American Society for Transplantation and Cellular Therapy definitions. Infections were not captured due to the limited follow-up time of the study. CRS, cytokine release syndrome. G, grade. ICANS, immune effector cell-associated neurotoxicity syndrome. HY, hybrid. OP, outpatient. SUD, step-up dosing. Tal, talquetamab. Tec, teclistamab. Toci, tocilizumab.

Treatment for adverse events occurring during SUD

- Among patients in the HY cohort, 14.3% received steroids and 81.0% received tocilizumab for the treatment of CRS, with all events resolved.
- All ICANS events were resolved with 10 mg pocket dexamethasone.

HCRU during SUD

- HCRU in patients who received Tec or Tal SUD is summarized in **Table 4**.

Table 4. HCRU in patients who received Tec or Tal SUD in HY and OP-toci settings

HCRU, n (%)	HY (n=21)		OP-toci (n=33)	
	Tec (n=4)	Tal (n=17)	Tec (n=12)	Tal (n=21)
Days 1-14 Inpatient Admissions				
Administration related	4 (100)*	17 (100)*	0 (0)	0 (0)
All-cause	0 (0)	0 (0)	0 (0)	2 (10)†
Days 15-30 Inpatient Admissions				
Infection	1 (25)	0 (0)	0 (0)	0 (0)

*By definition of the HY cohort, these patients were admitted IP to initiate SUD. †Dysgeusia-related failure to thrive, and renal failure. Infections were not captured due to the limited follow-up time of the study. HCRU, healthcare resource utilization. HY, hybrid. IP, inpatient. OP, outpatient. SUD, step-up dosing. Tal, talquetamab. Tec, teclistamab. Toci, tocilizumab.

CONCLUSIONS

There were no CRS events and no CRS or ICANS-related hospitalizations among patients treated with Tec or Tal SUD with prophylactic tocilizumab in the OP setting.

A HY model enables rapid discharge of patients who have successfully resolved CRS events.

HY and OP-toci strategies reduce HCRU and may enable broader patient access and support wider adoption of Tec and Tal across different healthcare practices.

KEY TAKEAWAY

Prophylactic tocilizumab-based OP SUD models improve patient safety, reduce hospitalization, and expand access, enabling broader real-world adoption of Tec and Tal.

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DISCLOSURES

MR, **AL-C**, **MB**, **ST**, **AL**, and **TS** have no conflicts of interest to declare; **CR**: AbbVie, Bristol Myers Squibb, Johnson & Johnson, Pfizer, Regeneron, and Sanofi; **SJ**: Bristol Myers Squibb, Caribou, Genmab, GSK, Johnson & Johnson, Regeneron, Roche, Sanofi, and Takeda; **AR**: Bristol Myers Squibb, Caribou, Johnson & Johnson, Kite, and Sanofi; **SR**: AstraZeneca, Bristol Myers Squibb, C4 Therapeutics, Genentech, Haymarket, Heidelberg Pharma, Johnson & Johnson, Karyopharm Therapeutics, MJH LifeSciences, and OncLive; **JR**: AbbVie, Adaptive Biotechnologies, Bristol Myers Squibb, Forus, Genentech, Johnson & Johnson, Kite/Arcellx, Menarini, Pfizer, Regeneron, Sanofi, and Takeda; **HJC**: Genentech and Roche, and is an employee of The Multiple Myeloma Research Foundation; **GK**: Arcellx, Bristol Myers Squibb, Johnson & Johnson, Karyopharm Therapeutics, Kite, Prothena, and Sanofi; **LS**: Johnson & Johnson, Pfizer, and Sanofi; **SP**: AstraZeneca, Bristol Myers Squibb, Caribou, Celgene, Genentech/Roche, Grail, imCORE, Johnson & Johnson, Karyopharm Therapeutics, and Poseida Therapeutics; **NG-W**, **MD**, **MT**, **SK**, **TLB**, and **JF** are employees of Johnson & Johnson and may own shares/stock options in Johnson & Johnson.

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