Real-World patterns of intravenous immunoglobulin (IVIG) and antimicrobial use in members with multiple myeloma treated with chimeric antigen receptor T-cell (CAR T) or bispecific antibody (BsAbs) therapies

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Background

- Multiple myeloma (MM), a plasma cell malignancy representing ~1–2% of all cancers, primarily affects older adults, with a 5-year relative survival exceeding 60% despite its incurable and relapsing nature.[1,2]
- The treatment landscape has evolved to include targeted chimeric antigen receptor (CAR) T-cell therapies (idecabtagene vicleucel (ide-cel), ciltacabtagene autoleucel (cilta-cel)) and bispecific antibodies (teclistamab, talquetamab, linvoseltamab).[2,3,4,5]
- These immune therapies increase infection risk due to B-cell depletion and hypogammaglobulinemia.[6,7]
- Guideline bodies recommend intravenous immunoglobulin (IVIG) for members receiving CAR T or BsAb therapy, based on clinical context or treatment duration, to reduce infection risk.[8,9,10,11]

Objective

- To characterize IVIG use and infection rates post BsAb and CAR T.

Methods

- This retrospective cohort study (March 1, 2021 – November 30, 2024) used de-identified medical and pharmacy claims from a national database (~17 million commercial and 950,000 Medicare members).
- Members with MM who received ide-cel, cilta-cel, unspecified autologous CAR T, teclistamab, elranatamab, or talquetamab were included. The first therapy claim was the index date. Continuous enrollment was required ≥6 months before and after the index date. Members receiving bridging therapy were excluded.
- IVIG use was classified by timing (pre-index, post-index, both pre-index and continued post-index IVIG, or pre-index only), frequency (based on days between claims), and site of care (hospital outpatient, inpatient, home, physician office, or pharmacy).
- Systemic antimicrobial use was used as a proxy for infection burden. Prophylactic agents (acyclovir, valacyclovir, TMP-SMX, pentamidine, and atovaquone) were excluded.[9]
- Average allowed amount was used to estimate annualized spending.
- Figures and tables reflect different levels of attrition based on eligibility for subgroup analyses. Starting from the full cohort (N = 271), smaller subgroups were used for IVIG interval timing (N = 101) and pre-/post-index dosing frequency comparisons (N = 33), depending on IVIG claim patterns.

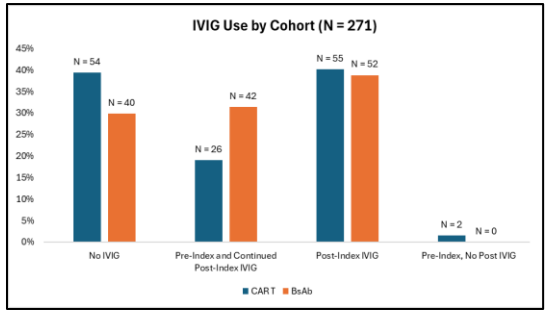

Figure 1: IVIG use among 271 multiple myeloma members. IVIG use was higher in the post-index cohort. CAR T members had a higher rate of no IVIG use, while BsAb patients showed a more even distribution across use categories. Pre-index, no post IVIG use was rare.

Percent of Members with Pre- and Post-Index versus Post-Index Only IVIG Use (N = 101)			
Index Drug	**% Receiving IVIG**	**Pre-Index and Continued Post-Index IVIG**	**Post-Index IVIG Only**
ide-cel (N = 12)	54.5%	25.0%	75.0%
cilta-cel (N = 37)	61.7%	27.0%	73.0%
elranatamab (N = 8)	57.1%	50.0%	50.0%
talquetamab (N = 10)	43.5%	70.0%	30.0%
teclistamab (N = 34)	59.6%	26.5%	73.5%

Table 1: Among members with multiple post-index IVIG claims or those with greater than one pre-index and post-index IVIG claims. The majority of ide-cel (75%), cilta-cel (73%), and teclistamab (73.5%) recipients received IVIG post-index only. In contrast, 70% of talquetamab-treated members received both pre-index and continued post-index IVIG. Elranatamab recipients showed an even split between post-index only and both pre-index and continued post-index IVIG use.

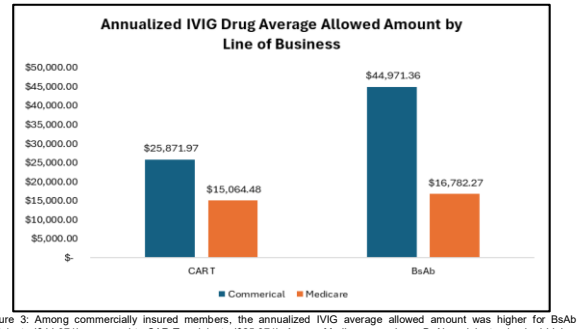

Figure 3: Among commercially insured members, the annualized IVIG average allowed amount was higher for BsAb recipients ($44,971) compared to CAR T recipients ($25,871). Among Medicare members, BsAb recipients also had higher IVIG annualized IVIG average allowed amount ($16,782) versus CAR T recipients ($15,064).

Antimicrobial Use by Cohort (N = 271)		
Antimicrobials in Relationship to IVIG	**CAR T**	**BsAb**
NO IG	96.3% (N = 54)	87.5% (N = 40)
Pre-Index and Continued Post-Index IVIG	76.9% (N = 26)	90.5% (N = 52)
Post-Index IVIG	96.4% (N = 55)	90.4% (N = 52)
Pre-Index, No Post	100.0% (N = 2)	-
Avg Days Between Index and First Antimicrobial Claim	19.5	53.2

Table 3: In the CAR T cohort, antimicrobial use was highest among those who received no IVIG (96.3%) or post-index IVIG only (96.4%), and lower among those with both pre-index and continued post-index IVIG (76.9%). In the BsAb cohort, antimicrobial use was similar across all groups: 87.5% in the no IVIG group, 90.5% in the both pre-index and continued post-index group, and 90.4% in the post-index only group. Among members with pre-index IVIG, the average time to first antimicrobial was shorter for CAR T (19.5 days) compared to BsAb (53.2 days).

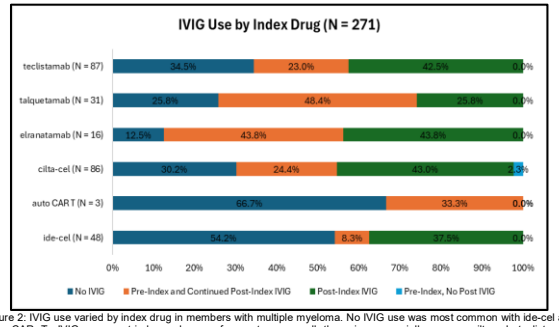

Figure 2: IVIG use varied by index drug in members with multiple myeloma. No IVIG use was most common with ide-cel and auto CAR T. IVIG use post-index only was frequent across all therapies, especially among cilta-cel, teclistamab, elranatamab, and talquetamab recipients. Both pre-index and continued post-index use was observed across agents, while pre-index only use was rare.

IVIG Interval Use by Cohort (N = 33)			
Cohort	**Avg Days Between IVIG Claims (Pre-Index)**	**Avg Days Between IVIG Start and Index**	**Avg Days Between IVIG Claims (Post-Index)**
CAR T (N = 13)	49.9	66.8	38.2
BsAb (N = 20)	35.4	38	35.2

Table 2: Among pre-index IVIG CAR T members, the average days from treatment initiation to first IVIG was 66.8 days; IVIG dosing intervals shortened from 49.9 days pre-drug to 38.2 days post-drug. Among pre-index IVIG BsAb members, the average days to first IVIG was 38 days, with IVIG dosing intervals remaining stable at 35.4 days pre-index and 35.2 days post-index.

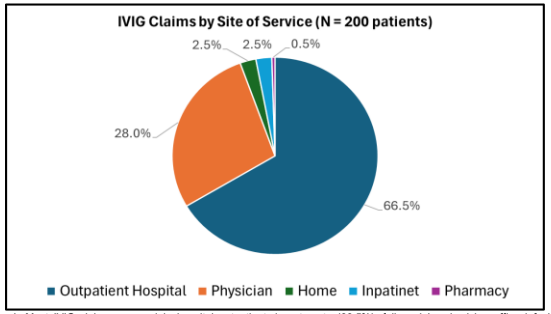

Figure 4: Most IVIG claims occurred in hospital outpatient departments (66.5%), followed by physician office infusions (28%). Home infusion, inpatient, and pharmacy sites were rarely used, each accounting for 2.5% or less of total claims.

Antimicrobial Use in Members Who Did Not Receive IVIG Post-Index (N = 94)		
Cohort	**Total Members with No IVIG**	**Received ≥1 Antimicrobial Post-Index**
CAR T	54	48 (88.9%)
BsAb	40	31 (77.5%)

Table 4: Among members who did not receive IVIG, 88.9% of CAR T and 77.5% of BsAb patients initiated at least one post-index antimicrobial claim. This suggests increased infections due to IVIG absence. These findings highlight a potential opportunity for expanded IVIG use in this population, which may increase IVIG spending for health plans but could address an unmet infection prevention need.

Limitations

- Small cohort and subgroup size limited statistical power and increased sensitivity.
- Due to the absence of IgG levels, infection severity and duration data in claims, antimicrobial use served as a proxy for infection burden.
- Site-of-care classification may be inaccurate due to practices like white bagging and brown bagging, potentially misclassifying infusion locations.
- Bundled inpatient reimbursement made it difficult to isolate IVIG infusion costs, complicating site-of-care cost comparisons.

Conclusion

- IVIG was used in nearly two-thirds of members (65.3%), but patterns differed by therapy type, suggesting inconsistent application of guideline recommendations.
- Infection risk remained high across cohorts, with systemic antimicrobials used by more than nine in ten members (91.1%), reinforcing the need for more effective prevention strategies.
- Most IVIG administration occurred in hospital outpatient departments (66.5%) compared with home infusion (2.5%), highlighting opportunities for payers to shift care to lower-cost settings.
- Among members who never received IVIG, use of systemic antimicrobials was similar to members who received IVIG post index, suggesting the need for alternative supportive treatment to reduce downstream infection risk and spend.
- The findings highlight variability in supportive care patterns and the need to expand access to lower-cost, patient-centered delivery models.

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