Burden of Disease in Patients Who Are Eligible for BCMA-Targeted Immunotherapy for Multiple Myeloma: A Retrospective Claims Database Analysis

Smith Giri[1,2], Dee Lin[3], Ruth Dixon[4], Nina Kim[3], Jessica Fowler[3], John Barron[4], Hiangkiat Tan[4], Chi Nguyen[4], Feven Asefaha[4], Shiva Vojjala[4], Elissa E Min[3,5], Bingcao Wu[3]

[1]University of Alabama at Birmingham, Birmingham, AL; [2]O'Neal Comprehensive Cancer Center at University of Alabama at Birmingham, Birmingham, AL; [3]Janssen Scientific Affairs, LLC, a Johnson & Johnson company, Horsham, PA; [4]Carelon Research, Wilmington, DE; [5]Purdue University College of Pharmacy, West Lafayette, IN

INTRODUCTION

- Despite treatment advances, multiple myeloma (MM), the second most common hematologic malignancy in the US, remains incurable, with poor patient outcomes, particularly for those with relapsed/refractory MM (RRMM)[1,2]
- The emergence of T-cell redirecting immunotherapies, including B-cell maturation antigen (BCMA)–targeted therapies, has shown promising outcomes in clinical trials for patients with heavily pretreated RRMM[2,3]
- In the past few years, multiple BCMA-targeted therapies have gained approval for treating adult patients with triple-class exposed (TCE, defined as having prior exposure to an immunomodulatory drug, a proteasome inhibitor, and an anti-CD38 monoclonal antibody) RRMM who had received at least 4 lines of therapy (LOT) [4]
- While real-world data on effectiveness, safety, and economic values of BCMA-targeted therapies are being generated, this study aimed to quantify the economic burden of MM in patients who were eligible for but had not received any BCMA-targeted therapies per US Food and Drug Administration–approved labels

METHODS

Study design and data source

- This was a retrospective observational analysis using integrated medical and pharmacy administrative claims data from Carelon Research's Healthcare Integrated Research Database® (HIRD) from January 1, 2006, to March 31, 2023 (the study period)
- HIRD contains enrollment information and medical and pharmacy claims data from large US commercial health plans

Patient population

- Patients with ≥2 medical claims for an MM diagnosis (ICD-9-CM: 203.00; ICD-10-CM: C90.00) during the study period who met the below criteria were included:
  - Had ≥12 months of continuous health plan enrollment without any MM treatment before the first MM diagnosis (washout period to identify the first MM diagnosis and the initiation of the first LOT
  - Received treatment for MM after the first MM diagnosis
  - Received at least the fifth line of therapy (5L or later) during the patient identification period (January 1, 2016, to September 30, 2022)
  - Became TCE prior to receiving 5L or later LOTs
- Patients were indexed on the initiation of the earliest LOT being a 5L or later therapy between January 1, 2016, and September 30, 2022, after becoming TCE
  - Were ≥18 years old as of the index date
  - Had continuous health plan enrollment during the 12 months before and ≥6 months after the index date
  - Had not received any BCMA-targeted CAR-T therapies or bispecific antibodies by the index date

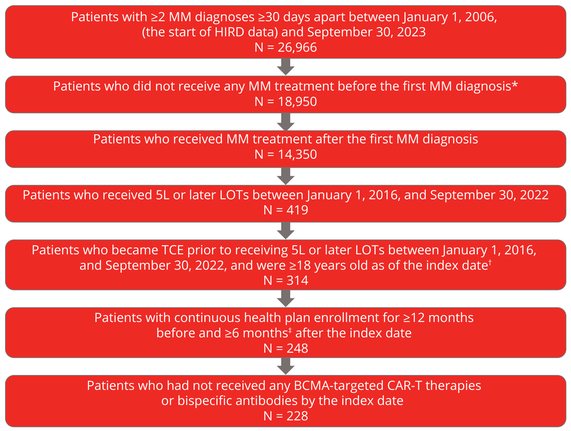
Data analysis

- Patient characteristics were described during the 12-month baseline period
- All-cause healthcare resource utilization (HRU) and costs were described as per-patient-per-month (PPPM) during baseline and ≥6-month post-index follow-up period (from the index date to the end of continuous health plan enrollment, end of study period, or death, whichever was earliest)
- All variables were reported descriptively

Multiple Myeloma

RESULTS

FIGURE 1: Patient attrition



Abbreviations: BCMA, B-cell maturation antigen; CAR-T, chimeric antigen receptor–modified T-cell therapy; HIRD, Healthcare Integrated Research Database®; LOT, line of therapy; MM, multiple myeloma; TCE, triple-class exposed.
*A washout period (≥12 months) before the first MM diagnosis was used to exclude patients with a prior diagnosis of MM or prior use of MM treatment.
†Patients who met the study criteria were indexed on the initiation of the 5L or earliest of later LOTs.
‡Patients who died within 6 months of the index date were required to have continuous health plan enrollment between the index date and the first day of the month of death.

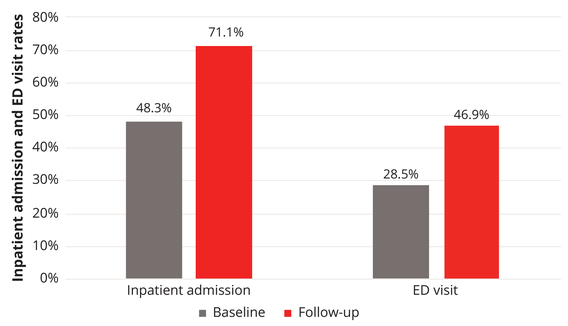
Patient baseline characteristics

- Among 228 patients who met the inclusion criteria, the median age was 64.0 years and 17.1% were ≥75 years old; 52.6% of the patient were male, 68.7% were Non-Hispanic White, and 85.1% had commercial insurance (**Table 1**)
- Prevalent baseline conditions included anemia (65.4%), hypertension (64.9%), neutropenia (36.8%), renal dysfunction (36.8%), peripheral neuropathy (36.4%), and lytic bone lesions (32.9%) (**Table 1**)

Healthcare resource utilization

- During the 12-month baseline period, 48.3% of patients had inpatient admissions, with a mean (standard deviation [SD]) length of hospital stay of 1.6 (2.1) days PPPM, and 28.5% had emergency department (ED) visits (**Figure 2**)
- Post-index (median follow-up: 11.8 months), inpatient admission increased to 71.1%, with a mean (SD) length of hospital stay of 2.7 (3.5) days PPPM; 46.9% of patients had ED visits (**Figure 2**)

FIGURE 2: Inpatient admission and ED visit rates increased post-index



Mean (SD) length of hospital stay for baseline and follow-up: 1.6 (2.1) days versus 2.7 (3.5) days.

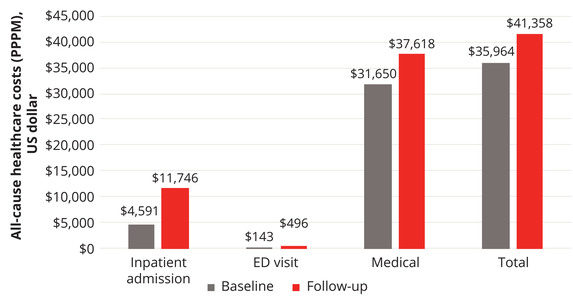
TABLE 1: Baseline patient characteristics (N = 228)

Patient demographics	
Age, years, median (IQR)	64.0 (58.0–72.0)
Age categories, years, n (%)	
<65	116 (50.9)
≥65–<75	73 (32.0)
≥75	39 (17.1)
Sex, n (%)	
Male	120 (52.6)
Female	108 (47.4)
Race/ethnicity, n (%)[a]	
Non-Hispanic White	125 (68.7)
Non-Hispanic Black or African American	28 (15.4)
Hispanic	18 (9.9)
Asian	7 (3.9)
Other	≤5
Insurance type, n (%)	
Commercial	194 (85.1)
Medicare	34 (14.9)
Region, n (%)[b]	
West	76 (34.1)
South	53 (23.8)
Midwest	49 (22.0)
Northeast	45 (20.2)
Clinical characteristics	
Prevalent baseline conditions of interest, n (%)	
Anemia	149 (65.4)
Hypertension	148 (64.9)
Neutropenia	84 (36.8)
Renal impairment/failure[c]	84 (36.8)
Peripheral neuropathy	83 (36.4)
Lytic bone lesions	75 (32.9)
Mean (SD) CCI	2.7 (2.9)
Median IQR CCI	2.0 (0.8–4.0)

Abbreviation: CCI, Charlson comorbidity index; IQR, interquartile range.
[a]Race/ethnicity data were available for 182 patients.
[b]Region data were available for 223 patients.
[c]Renal impairment/failure includes all stage chronic kidney disease, dialysis, end stage renal disease, kidney transplant, and kidney failure.

- Compared with costs during baseline, mean post-index costs PPPM increased from $4,591 to $11,746 for inpatient admissions, $143 to $496 for ED visits, $31,650 to $37,618 for medical costs, and $35,964 to $41,358 for total costs (**Figure 3**)

FIGURE 3: All-cause healthcare costs were higher during follow-up than baseline period



REFERENCES:
1. Cancer Stat Facts: *Myeloma*. https://seer.cancer.gov/statfacts/html/mulmy.html. Accessed March 11, 2024. 2. Mateos MV et al. *Leukemia*. 2022;36(5):1371-1376.
3. Hasanali ZS et al. *Hematol Oncol Clin North Am*. 2024;38(2):383-406. 4. Oncology (Cancer)/Hematologic Malignancies Approval Notifications. https://www.fda.gov/drugs/resources-information-approved-drugs/oncology-cancer-hematologic-malignancies-approval-notifications. Accessed March 11, 2024.

Presented at the International Society for Pharmacoeconomics and Outcomes Research (ISPOR); May 5-8, 2024; Atlanta, Georgia

LIMITATIONS

This study has limitations associated with claims data. For example, it used a claims-based algorithm to determine the number of lines of treatment that patients had received, which might have excluded patients who switched health plans during the disease journey and therefore did not have at least 5 LOTs in the database. It only included patients who had commercial health plans (or Medicare Advantage) and available clinical data, which limited the generalizability of the findings

CONCLUSIONS

These results found profound economic disease burden in patients who were eligible for and had yet to receive BCMA-targeted therapies for MM. The costs for inpatient admissions and ED visits increased as patients advanced to the 5L or later therapy, leading to an increased total healthcare cost post-index

This data could support economic assessment and value framework for novel therapies that may improve treatment outcomes for patients with heavily pretreated MM

ACKNOWLEDGMENTS
This study was funded by Janssen Scientific Affairs, LLC, a Johnson & Johnson company, Horsham, PA. Editorial assistance was provided by Cobbs Creek Healthcare, LLC.

CONTACT INFORMATION
Smith Giri, MD: smithgiri@uabmc.edu

DISCLOSURES

DL, NK, JF, EM, and BW are employees of Johnson & Johnson and may hold stocks or stock options of Johnson & Johnson. RD, JB, HT, and SV are employees of Carelon Research, which is a consultancy whose activities on research projects are funded by various life sciences companies and health plans. CN was an employee of Carelon Research during the conduct of the study. FA is an employee of Panalgo. SG receives honoraria from CareVive, OncLive, and Sanofi and is an employee of the University of Alabama at Birmingham, which receives research funding from Carevive Systems, PackHealth, Sanofi, and Janssen Oncology.

Supported by Janssen Scientific Affairs, LLC, a Johnson & Johnson company

Scan the QR code

https://bit.ly/3lUjceB