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Healthcare Resource Utilization and Costs in Patients with Multiple Myeloma who Received 1 to 3 Prior Lines of Therapy, Including a Proteasome Inhibitor, an Immunomodulatory Drug, and Exposed to (and Discontinued) Lenalidomide in the United States

Sundar Jagannath,[1] MD; Nedra Joseph,[2] PhD; Eric E Chinaeke,[3] PhD; Concetta Crivera,[2] PharmD MPH; Alex Z Fu,[3,4] PhD; Ashraf Garrett,[5] PharmD RPh; Nina Shah,[6] MD

[1] Icahn School of Medicine at Mount Sinai, New York, NY, USA; [2] Janssen Scientific Affairs, LLC, RWV&E Oncology, Horsham, PA USA; [3] Janssen Scientific Affairs, LLC, RWV&E Real World Research, Titusville, NJ USA; [4] Georgetown University Medical Center, Washington, DC USA; [5] Legend Biotech Inc., Piscataway, NJ USA; [6] University of California San Francisco, San Francisco, CA USA

INTRODUCTION

- An estimated 34,920 patients were diagnosed with multiple myeloma (MM) in the US in 2021.[1]
- Newly diagnosed MM patients are routinely treated with regimens containing a proteasome inhibitor (PI) and/or immunomodulatory drug (IMiD; e.g., lenalidomide) in combination with a corticosteroid or chemotherapy.[2]
- Many patients eventually relapse or become refractory to treatment.[2]
- Subsequent lines of therapy (LOTs) are typically comprised of treatment regimens containing PIs, IMiDs, or monoclonal antibodies with corticosteroids and/or chemotherapy.[2]

OBJECTIVES

- To provide a better understanding of the potential value of new treatment options for MM patients who have received 1 to 3 prior LOTs, were exposed to a PI and an IMiD, and exposed to (and discontinued) lenalidomide in the US.
- This retrospective database study assessed real-world healthcare resource utilization (HCRU) and associated costs in this patient population.

METHODS

Study population

- Patients (≥18 years of age) diagnosed with MM were selected from the IBM MarketScan Commercial and Medicare Supplemental databases between January 2012 and April 2021.
- Patients were required to be continuously enrolled in a medical/pharmacy benefit plan and have had no exposure to MM treatments for ≥12 months prior to their first-observed MM diagnosis.
- Patients were additionally required to have received 1 to 3 prior LOTs, including a PI and an IMiD, and exposed to (and discontinued) lenalidomide.
  - Lenalidomide exposure and discontinuation was defined by a gap of <60 days between the last supply-day of lenalidomide and the initiation of the subsequent LOT not containing lenalidomide.
- Every occurrence of a treatment change (including augmentation and switching) or initiation of a new regimen after discontinuation of a previous regimen constituted a LOT.
- Index date was defined as the initiation date of the first subsequent LOT after meeting study eligibility criteria.
  - Index date was required to have occurred after January 1, 2018 in order to capture contemporary cost estimates.
- Patients were required to have at least 12 months of follow-up after the index date with continuous enrollment.
  - Sensitivity analysis: All patients who met study eligibility criteria (without a 12-month follow-up requirement).

HCRU and cost assessment

- All-cause and MM-related HCRU and the associated costs were evaluated from the index date to the end of follow-up.
  - MM-related events were identified using 203.0 and C90.0 codes (ICD-9-CM/ICD-10-CM)

RESULTS

TABLE 1: Characteristics of study cohorts

	N=93 ≥12 months FU	N=224 All patients
Age in years on index date,[a] mean (SD)	57.6 (8.5)	59.5 (9.1)
Age group, N (%)		
18-44	9 (9.7)	13 (5.8)
45-54	18 (19.4)	40 (17.9)
55-64	56 (60.2)	133 (59.4)
65-74	6 (6.5)	23 (10.3)
≥75	4 (4.3)	15 (6.7)
Sex, N (%)		
Male	51 (54.8)	121 (54.0)
Female	42 (45.2)	103 (46.0)
Health plan type, N (%)		
Comprehensive	9 (9.7)	15 (6.7)
Preferred provider organization (PPO)	37 (39.8)	102 (45.5)
Health maintenance organization (HMO)	19 (20.4)	34 (15.2)
Other	28 (30.1)	73 (32.6)
Insurance type, N (%)		
Commercial	75 (80.1)	172 (76.7)
Medicare	18 (19.9)	52 (23.3)
US region of residence, N (%)		
South	41 (44.1)	101 (45.1)
Midwest	22 (23.7)	49 (21.9)
West	19 (20.4)	37 (16.5)
Northeast	10 (10.8)	34 (15.2)
Unknown	1 (1.1)	3 (1.3)
Quan CCI score, mean (SD)	5.2 (3.5)	5.3 (3.3)
Time in months from first MM diagnosis to index date,[a] mean	19.2	17.6

[a] The index date was defined as the initiation date of the first subsequent LOT after meeting study eligibility criteria.
CCI: Charlson Comorbidity Index; FU: Follow-up; SD: Standard deviation.

TABLE 2: HCRU and associated costs post-index date[a]

	N=93 Mean FU: 22.1 months Mean (SD)	N=224 Mean FU: 12.4 months Mean (SD)
All-cause HCRU		
Number of hospitalizations	2.1 (5.6)	1.6 (3.9)
Length of inpatient stays (days)	15.8 (22.6)	13.3 (20.3)
Number of emergency room visits	0.9 (1.6)	0.5 (1.2)
Number of outpatient visits	84.2 (48.9)	51.5 (45.6)
Number of pharmacy fills	76.9 (44.5)	43.5 (42.5)
Total all-cause healthcare costs per patient during follow-up period	$652,837 ($801,326)	$412,636 ($753,949)
Total all-cause healthcare costs per patient per month[b]	$31,302 ($40,943)	$45,298 ($99,130)
MM-related HCRU		
Number of hospitalizations	1.5 (2.3)	1.3 (1.9)
Length of inpatient stays (days)	14.7 (22.2)	12.5 (20.0)
Number of emergency room visits	0.3 (0.8)	0.2 (0.6)
Number of outpatient visits	58.2 (39.0)	36.4 (34.4)
Number of pharmacy fills	15.4 (11.3)	8.9 (9.9)
Total MM-related healthcare costs per patient during follow-up period	$627,146 ($767,077)	$393,382 ($718,816)

[a] The index date was defined as the initiation date of the first subsequent LOT after meeting study eligibility criteria.
[b] Average cost for all patients in the sample; all patients may not have incurred cost in each category.

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KEY TAKEAWAYS

Among the study cohort with ≥12 months of follow-up, mean total all-cause healthcare costs per patient was $652,837 (equivalent to $31,302 per patient per month [PPPM]).

- MM-related costs per patient accounted for 96.1% ($627,146) of total all-cause healthcare costs.
- 65.1% of total MM-related healthcare costs were attributed to MM drug and infusion costs.

In patients without the ≥12 months of follow-up requirement, mean total all-cause healthcare costs per patient was $412,636 (equivalent to $45,298 PPPM).

- MM-related costs per patient accounted for 95.3% ($393,382) of total all-cause healthcare costs.

CONCLUSIONS

In this retrospective database study using US administrative claims, MM patients with exposure to PI and IMiD drug classes and receiving subsequent MM treatments continue to incur high healthcare costs, with the majority of these costs being MM-related.

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DISCLOSURES

SJ has been or is a consultant to Bristol-Myers Squibb, Janssen Pharmaceuticals, Karyopharm Therapeutics, Legend Biotech, Sanofi, and Takeda. **NJ**, **EC**, **CC**, and **AF** are employees of Janssen Scientific Affairs, LLC and own company stock. **AG** is an employee of Legend Biotech and owns company stock. **NS** has been or is a consultant to GlaxoSmithKline, Amgen, Indapta Therapeutics, Sanofi, Bristol-Myers Squibb, CareDx, Kite, and Karyopharm, and has received research funding from Celgene/Bristol-Myers Squibb, Janssen, Bluebird Bio, Sutro Biopharma, Teneobio, and Poseida.

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