Real-World Economic Burden and Healthcare Resource Utilization Among Patients With Triple-Class Exposed Relapsed/Refractory Multiple Myeloma in the United States

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INTRODUCTION

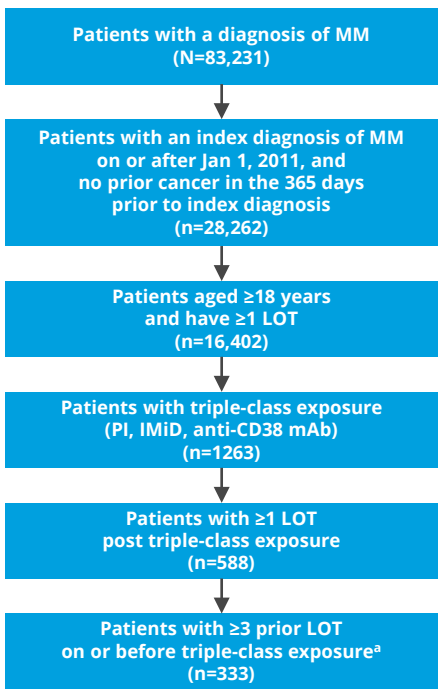
- Advances in treatment of multiple myeloma (MM) have led to the approval of novel therapeutic options (eg, T-cell redirection therapies)[1-3]
- However, patients with MM are at persistent risk of relapsing or becoming refractory to therapies[4-6]
- Patients with relapsed/refractory MM (RRMM) often cycle through multiple treatments, including 3 of the most commonly used classes of therapy (proteasome inhibitors [PIs], immunomodulatory drugs [IMiDs], and anti-CD38 monoclonal antibodies [mAbs]), which may result in increased costs and healthcare resource utilization (HCRU)[7]
- Here, we assess real-world costs and HCRU in patients with triple-class exposed RRMM

METHODS

Data sources

- Data were extracted from the Optum Clinformatics® Data Mart database for the period from January 1, 2010, to March 31, 2022
- The inclusion criteria are shown in **Figure 1**

FIGURE 1: Selection of patients for the retrospective analysis



[a]Index cohort date for a patient is the start date of the LOT immediately after they met inclusion criteria (triple-class exposure and ≥3 prior LOT).
LOT, line of therapy.

Assessments

- Demographics and baseline characteristics were evaluated for all patients
  - Comorbidities were scored per the Charlson Comorbidity Index (CCI); an increasing CCI score reflects increasing mortality risk
  - The presence of the most common Elixhauser comorbidities (based on diagnosis codes) was also assessed
- Before the first line of therapy (LOT 1), patients met inclusion criteria (triple-class exposure and ≥3 prior LOT)
- Per-patient per-month (PPPM) costs during a LOT or until loss to follow-up (LTFU) were calculated post triple-class exposure
- PPPM HCRU, including outpatient visits, hospitalizations, emergency room (ER) visits, and laboratory (lab) visits, was also assessed

Statistical analyses

- Descriptive statistics are reported for all analyzed data

MULTIPLE MYELOMA

RESULTS

Patient demographics and baseline characteristics

- Clinical characteristics and demographics of the 333 patients analyzed are shown in **Table 1**
- Median (interquartile range [IQR]) time from index cohort date to end of follow-up was 6 (2–15) months

TABLE 1: Demographics and baseline characteristics

Variable	N=333
Age (years) at index cohort date	
Mean (SD)	71.9 (10.16)
Median (IQR)	74 (66–79)
Male sex, n (%)	169 (50.8)
Stem cell transplant (before index cohort date), n (%)	115 (34.5)
Time (months) from index MM diagnosis to index cohort date	
Mean (SD)	38.4 (23.79)
Median (IQR)	33 (22–49)
Number of prior LOT, n (%)	
3	170 (51.1)
4	96 (28.8)
≥5	67 (20.1)

Variable	N=333
Prior exposure, n (%)	
Daratumumab	332 (99.7)
Lenalidomide	316 (94.9)
Bortezomib	308 (92.5)
Pomalidomide	146 (43.8)
Carfilzomib	137 (41.1)
Ixazomib	70 (21.0)
Thalidomide	14 (4.2)
CCI, n (%)	
0	79 (23.7)
1	50 (15.0)
2	48 (14.4)
3	35 (10.5)
≥4	121 (36.3)
Median (IQR)	2 (1–6)
Elixhauser comorbidities (>30% of patients), n (%)	
Hypertension	211 (63.4)
Renal failure	132 (39.6)
Fluid and electrolyte disorders	121 (36.3)

Treatment patterns

- Of patients with prior exposure to daratumumab, pomalidomide, bortezomib, carfilzomib, lenalidomide, ixazomib, and thalidomide, 56.9%, 27.4%, 18.8%, 17.5%, 13.3%, 2.9%, and 0% received the respective drug post index cohort date
- The most frequently used regimens included daratumumab and pomalidomide (10.8%), dexamethasone (10.5%), carfilzomib and daratumumab (5.1%), and prednisolone (5.1%)

Costs and HCRU

- Overall mean (SD) PPPM cost was $30,090 ($25,735) from LOT 1 to LTFU (**Figure 2**); costs during each LOT increased at each subsequent LOT to $33,903 ($26,409) during LOT 4 (**Table 2**)
  - MM drugs generally incurred about half the overall cost
- Highest HCRU from LOT 1 to LTFU was outpatient visits (**Figure 3**); this was similar during subsequent LOT, with highest outpatient visits during LOT 3, and more ER and lab visits during LOT 3 and LOT 4 (**Table 2**)
- For patients with ≥1 hospitalization, length of stay PPPM was ~3 days during LOT 1; this generally increased during subsequent LOT

Duration of therapy

- For LOT 1, mean duration of therapy from start of LOT to end of LOT, without considering censoring, was 239 days; this decreased with subsequent LOT to 107 days for LOT 4
  - With each subsequent LOT, costs and HCRU increased despite shorter duration of therapy

FIGURE 2: PPPM costs from LOT 1[a] to LTFU

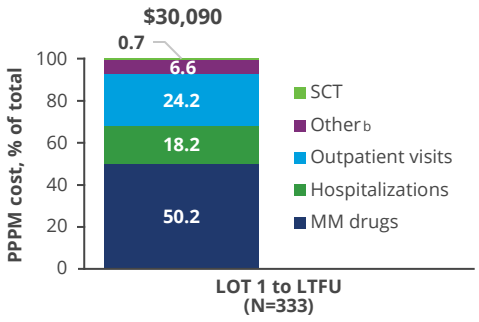


FIGURE 3: PPPM HCRU from LOT 1[a] to LTFU

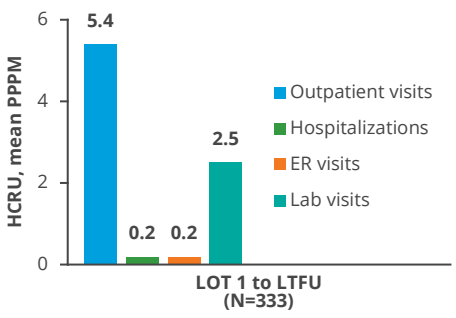


TABLE 2: Costs and HCRU across LOT

Variable	During LOT 1[a] (N=333)	During LOT 2[a] (n=169)	During LOT 3[a] (n=78)	During LOT 4[a] (n=36)
Cost, mean (SD) PPPM				
Overall cost	$28,154 ($22,074)	$32,506 ($39,689)	$32,976 ($21,231)	$33,903 ($26,409)
MM cost	$14,910 ($11,577)	$16,668 ($12,680)	$13,401 ($10,682)	$17,859 ($15,435)
MM drugs cost	$14,676 ($11,552)	$16,531 ($12,638)	$12,929 ($10,361)	$17,708 ($15,590)
SCT cost	$234 ($2505)	$136 ($2132)	$472 ($3525)	$151 ($750)
Hospitalizations cost	$5157 ($12,554)	$5669 ($13,573)	$7017 ($11,311)	$3799 ($9299)
Outpatient visits cost	$6396 ($11,328)	$8127 ($31,169)	$10,171 ($12,776)	$7482 ($11,524)
Other[b] cost	$1691 ($2627)	$2043 ($3853)	$2386 ($2651)	$4763 ($5994)
HCRU, mean (SD) PPPM				
Outpatient visits	5.4 (3.38)	5.2 (3.00)	6.2 (3.39)	5.3 (3.41)
Hospitalizations	0.2 (0.39)	0.3 (1.16)	0.2 (0.32)	0.2 (0.33)
ER visits	0.2 (0.41)	0.2 (0.38)	0.3 (0.39)	0.3 (0.48)
Lab visits	2.4 (1.69)	2.5 (1.68)	2.8 (1.42)	2.8 (1.61)

[a]LOT 1, 2, 3, and 4, refers to the first, second, third, and fourth LOT after the patient satisfied key inclusion criteria (triple-class exposure and ≥3 prior LOT), not the line number after initial MM diagnosis. [b]Other costs include ER visits, lab visits, and other drug costs.

REFERENCES:

1. Granger K, et al. *J Oncol Pharm Pract* 2023;29:722-6. 2. TALVEY™ (talquetamab-tgvs). Prescribing information. Horsham, PA: Janssen Biotech, Inc.; 2023. 3. ELREXFIO™ (elranatamab-bcmm). Prescribing information. New York, NY: Pfizer Inc.; 2023. 4. Ravi P, et al. *Blood Cancer J* 2018;8:26. 5. Dimopoulos M, et al. *Eur J Haematol* 2010;86:1-15. 6. Touzeau C, et al. *Ann Hematol* 2021;100:1825-36. 7. Madduri D, et al. *Future Oncol* 2021;17:503-15.

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KEY TAKEAWAY

Triple-class exposed RRMM is associated with substantial costs that increase with each subsequent LOT, suggesting the need for novel treatments that can improve disease management and lessen economic burden associated with multiple LOT

CONCLUSIONS

Patients with triple-class exposed RRMM incur high costs, particularly for MM therapies, that increase with LOT

Hospitalization and outpatient costs also remain high across LOT

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DISCLOSURES

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