Real-world Costs, Health Care Resource Utilization, and Outcomes Among Patients With Triple-Class Exposed Relapsed/Refractory Multiple Myeloma in the US

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INTRODUCTION

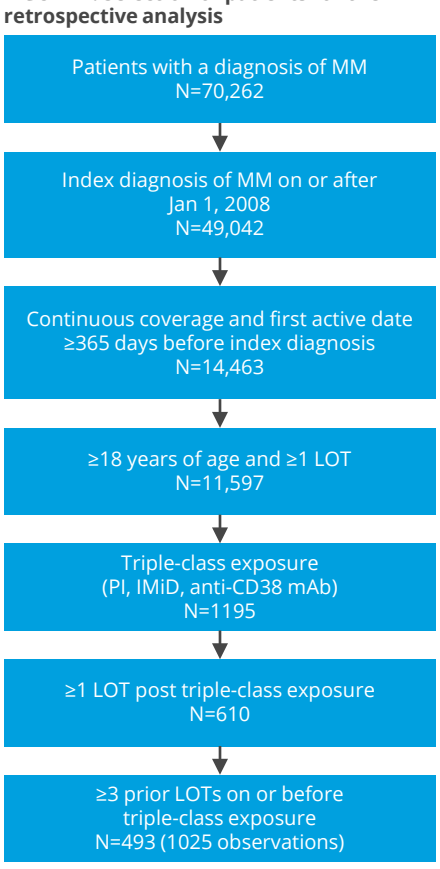
- Patients with multiple myeloma (MM) are treated with proteasome inhibitors (PIs), immunomodulatory drugs (IMiDs), and anti-CD38 monoclonal antibodies (mAbs); however, they often relapse or their disease becomes refractory to these treatments[1]
- Patients with relapsed/refractory MM (RRMM) who are triple-class exposed (TCE) are difficult to treat and have a poor prognosis[1-4]
- Patients may cycle through several treatments, leading to increased healthcare resource utilization (HCRU) and costs[3,4]
- Here, we analyze real-world costs, HCRU, and outcomes in patients with TCE RRMM

METHODS

Data sources

- A retrospective cohort analysis was performed using data from the Surveillance, Epidemiology, and End Results-Medicare database (January 1, 2008, to December 31, 2017)
- Inclusion criteria are shown in **Figure 1**

FIGURE 1: Selection of patients for the retrospective analysis



LOT, line of therapy.

Assessments

- Demographics and baseline characteristics were evaluated for all patients
  - Comorbidities were scored per the Charlson Comorbidity Index (CCI)
  - Elixhauser comorbidities (based on diagnosis codes) were captured
- Overall survival (OS) and time to next treatment (TTNT) were estimated for time from initiation of any eligible LOT to event occurrence
- Per-patient per-month (PPPM) costs from the first LOT post triple-class exposure to loss to follow-up (LTFU) were calculated
- HCRU including outpatient visits, hospitalizations, emergency room (ER) visits, and lab visits was assessed
- Analyses of treatment patterns and outcomes are based on the number of instances; cost and HCRU analyses are based on the total number of patients

Statistical analyses

- Descriptive statistics are reported for all analyzed data

MULTIPLE MYELOMA

RESULTS

Patient demographics and baseline characteristics

- A total of 493 patients with 1025 observations were included; clinical characteristics and demographics are shown in the **Table**
- Mean (SD) time from start of first LOT post triple-class exposure to LTFU was 8.2 (8.0) months

TABLE: Demographics and baseline characteristics

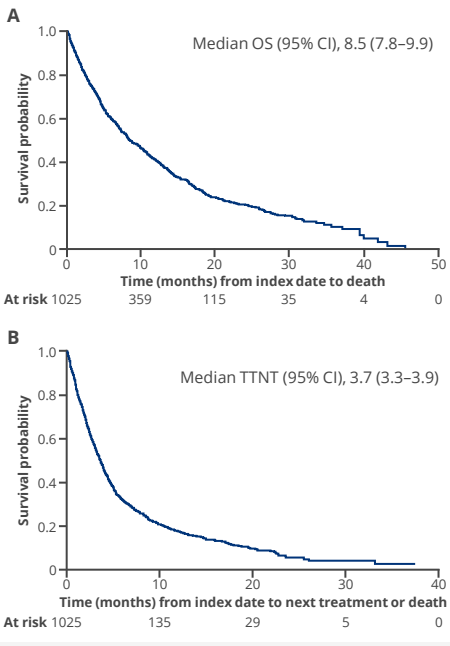
Variable	N=1025
Age at index date, years	
Mean (SD)	75.1 (6.99)
Median (IQR)	75 (71.0–79.0)
Female, n (%)	528 (51.5)
SCT (prior to index date), n (%)	304 (29.7)
Time from index MM diagnosis to index date, months	
Mean (SD)	52.6 (27.86)
Median (IQR)	48.2 (31.7–69.4)
Refractory status, n (%)	
Penta-refractory[a]	151 (14.7)
Triple-refractory[b]	266 (26.0)
Number of prior LOTs, n (%)	
3	369 (36.0)
4	295 (28.8)
≥5	361 (35.2)
CCI score	
Mean (SD)	4.6 (3.25)
Median (IQR)	4 (2.0–7.0)
Range	0–14
CCI score, n (%)	
0	92 (9.0)
1	144 (14.0)
2	125 (12.2)
3	83 (8.1)
≥4	581 (56.7)
Elixhauser comorbidities, n (%)	
Hypertension	844 (82.3)
Fluid and electrolyte disorders	595 (58.0)
Renal failure	449 (43.8)
Coagulopathy	424 (41.4)
Cardiac arrhythmia	497 (48.5)
Metastatic cancer	360 (35.1)

[a]At least 2 IMiDs, 2 PIs, and 1 anti-CD38 mAb. [b]At least 1 IMiD, 1 PI, and 1 anti-CD38 mAb.
IQR, interquartile range; SCT, stem cell transplant.

Treatment patterns

- The most common treatments post triple-class exposure included regimens that were:
  - Carfilzomib-containing (27.6%)
  - Pomalidomide-containing (24.5%)
  - Daratumumab-containing (16.1%)
- The most frequently used regimens included doublets (91.7%), followed by monotherapy (44.2%), quadruplets (38.3%), and triplets (33.7%)
  - 11–48% of patients who received a PI, IMiD, or anti-CD38 mAb before their index date subsequently received the same treatment after the index date

FIGURE 2: Kaplan-Meier plots for (A) OS and (B) TTNT



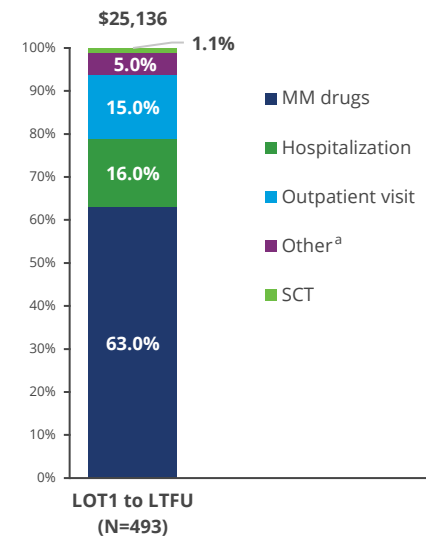
Outcomes

- Median (95% CI) OS and TTNT were 8.5 (7.8–9.9) and 3.7 (3.3–3.9) months, respectively (**Figure 2**)

Costs and HCRU

- Mean (SD) duration of time on and off treatment during the first LOT post triple-class exposure through LTFU was 298 (268) days
- Mean (SD) overall PPPM cost from start of first LOT post triple-class exposure through LTFU was $25,136 ($11,158)
  - Distribution of costs is shown in **Figure 3**

FIGURE 3: Mean PPPM costs incurred from initiation of first LOT post triple-class exposure to LTFU



[a]Other costs include ER visits, lab visits, and other drug costs.
LOT1, first line of therapy post triple-class exposure.

- HCRU is shown in **Figures 4** and **5**
- From initiation of the first LOT post triple-class exposure through LTFU:
  - Approximately two-thirds of patients had ≥1 hospitalization
  - Nearly 75% had ≥1 ER visit
  - Over 90% had ≥1 outpatient visit and 1 lab visit
- Mean (SD) length of hospital stay was 1.8 (3.1) days PPPM overall and 2.3 (3.4) days PPPM among patients with ≥1 hospitalization

FIGURE 4: Proportion of patients with ≥1 hospitalization, ER visit, outpatient visit, and lab visit

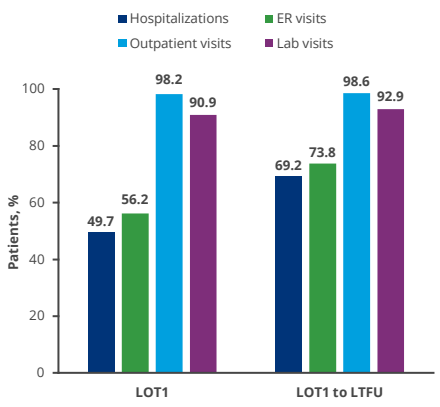
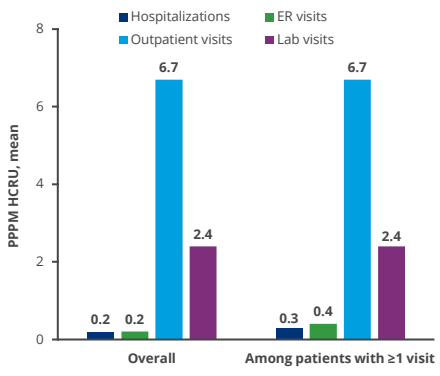


FIGURE 5: PPPM hospitalizations, ER visits, outpatient visits, and lab visits (LOT1)



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Presented at ISPOR Europe 2022; 6–9 November 2022; Vienna, Austria.

KEY TAKEAWAY

Real-world data highlight the need for effective treatments with novel mechanisms of action to improve outcomes in patients with TCE RRMM; emerging therapies may also reduce HCRU and costs

CONCLUSIONS

Patients with TCE RRMM cycle through limited treatment options and have poor outcomes

Patients with TCE RRMM incur high costs, especially drug costs, and have high HCRU that could be mitigated with emerging therapies with novel mechanisms of action

ACKNOWLEDGMENTS

This study was funded by Janssen Global Services, LLC. Medical writing support was provided by Niraja Suresh, PhD, of Eloquent Scientific Solutions, and Claire Line, PhD, on behalf of Eloquent Scientific Solutions, and funded by Janssen Global Services, LLC.

DISCLOSURES

SN, XL, MS, and **AM** are employees of Janssen. **RP** is an employee of Smart Analyst, Inc, which was commissioned by Janssen to conduct the study.

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