MM-619

Estimating the Size of Patients With Relapsed/Refractory Multiple Myeloma Treated With 1 to 3 and 4 or More Prior Lines of Therapy in the United States

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INTRODUCTION

- Approximately 35,000 new cases of multiple myeloma (MM) are diagnosed in the United States every year[1]
- Multiple therapies are available for MM treatment within the proteasome inhibitor (PI), immunomodulatory drug (IMiD), and anti-CD38 antibody drug classes
  - High treatment-attrition rates have been observed after frontline therapy in patients with newly diagnosed MM[2]
- Treatment choice is influenced by the number of prior lines of therapy (LOTs) and treatment history[3]
  - Patient outcomes often worsen after each LOT[4]

OBJECTIVE

- To build a disease-progression model for MM stratified by prior LOTs to estimate the number of treatment starts among (1) patients who have had 1-3 prior LOTs and were PI and IMiD exposed and refractory to lenalidomide in ≥1 prior LOT and (2) patients who have had ≥4 prior LOTs including exposure to a PI, an IMiD, and an anti-CD38 monoclonal antibody (ie, triple-class exposed) in the United States

METHODS

Study design

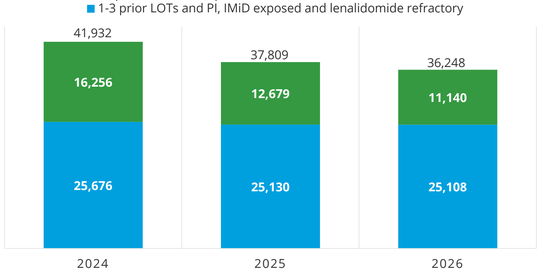
- A disease-progression model was developed based on patients diagnosed with MM and starting treatment in a given calendar year and progressing to subsequent LOTs over time

1. Incidence rates of MM from the SEER*Stat epidemiologic database (2000-2019) and Kanas et al (2020-2025) were applied to the US population (UN population estimates) to derive annual incidence rates[5,6]
2. Annual numbers of frontline-treated patients with MM were estimated by application of previously published frontline treatment rates[5,6]
3. Annual treated patients were divided into different treatment groups based on their share estimated from a claims database analysis (Optum Clinformatics® Data Mart claims [study period, January 1, 2010-March 31, 2022])
4. Patients progressed to next LOT based on time-on-treatment Kaplan-Meier curves and proportion starting next LOT. Both sets of inputs were derived from analyses of claims databases (Optum Clinformatics® Data Mart claims [study period, January 2010-March 2022]; Komodo Health claims and Symphony Health claims databases [study period, January 2019-February 2023])
5. In each new LOT, patients were grouped into different treatment history buckets based on exposure to different treatment classes in prior LOTs (eg, PI + IMiD exposed, triple-class exposed, IMiD exposed). For each treatment history bucket, step 3 was conducted
6. Steps 3 to 5 were then repeated successively until LOT5
7. LOT5 was consolidated with later lines as LOT5+ by applying a multiplier to LOT5. The ratio of treatment starts in LOT5+ to treatment starts in LOT5 was as seen in Komodo Health claims and Symphony Health claims database analysis for the latest 12 months (March 2022-February 2023)
8. From 2021, treatment groups included CAR-T therapies. Patients treated with CAR-T were not considered eligible for retreatment
9. The number of expected patients in 2024, 2025, and 2026 was further estimated by assuming a share/uptake of CAR-T therapies to reach the following proportions by 2026: 20%, 35%, and 50% among patients with 1, 2, and 3 prior LOTs, respectively, among those who were exposed to a PI and an IMiD and refractory to lenalidomide, and 50% among patients with ≥4 prior LOTs and triple-class exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody as the base case. Sensitivity analysis was conducted by assuming a share/uptake of CAR-T therapies to reach the following proportions by 2026: 50% among patients with 1-3 prior LOTs who were exposed to a PI and an IMiD and refractory to lenalidomide, and 50% among patients with ≥4 prior LOTs and triple-class exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody
10. Distribution by race, insurance type, US region, and urban/rural location was done using inputs from SEER*Stat and other public sources[5,7-12]

MULTIPLE MYELOMA

RESULTS

FIGURE 1: Estimated size of the eligible RRMM patient population in earlier and later LOTs from 2024 to 2026 (base case)



IMiD, immunomodulatory drug; LOT, line of therapy; mAb, monoclonal antibody; PI, proteasome inhibitor; RRMM, relapsed/refractory multiple myeloma.

Estimated size of the eligible RRMM patient population in earlier and later LOTs from 2024 to 2026 (sensitivity analysis)

- In 2024, 2025, and 2026, an estimated 25,096, 23,376, and 22,848 patients will have had 1-3 prior LOTs and be PI and IMiD exposed and refractory to lenalidomide, respectively
- In 2024, 2025, and 2026, an estimated 15,772, 11,427, and 9,643 patients will have had ≥4 prior LOTs including exposure to a PI, an IMiD, and an anti-CD38 monoclonal antibody, respectively

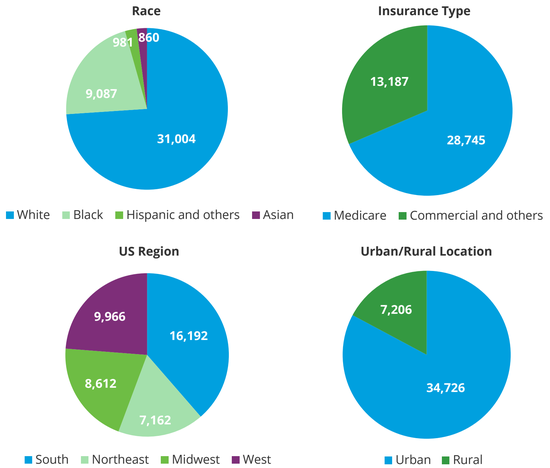
Estimated size of the eligible RRMM patient population by LOT from 2024 to 2026 (base case)

- In 2024, the number of estimated patients PI and IMiD exposed and refractory to lenalidomide is 8,524 for 1 prior LOT, 9,029 for 2 prior LOTs, and 8,123 for 3 prior LOTs; and 16,256 for ≥4 prior LOTs and exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody
- In 2025, the number of estimated patients PI and IMiD exposed and refractory to lenalidomide is 8,799 for 1 prior LOT, 8,954 for 2 prior LOTs, and 7,378 for 3 prior LOTs; and 12,679 for ≥4 prior LOTs and exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody
- In 2026, the number of estimated patients PI and IMiD exposed and refractory to lenalidomide is 8,994 for 1 prior LOT, 9,024 for 2 prior LOTs, and 7,089 for 3 prior LOTs; and 11,140 for ≥4 prior LOTs and exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody

Estimated size of the eligible RRMM patient population by LOT from 2024 to 2026 (sensitivity analysis)

- In 2024, the number of estimated patients PI and IMiD exposed and refractory to lenalidomide is 8,524 for 1 prior LOT, 8,770 for 2 prior LOTs, and 7,801 for 3 prior LOTs; and 15,772 for ≥4 prior LOTs and exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody
- In 2025, the number of estimated patients PI and IMiD exposed and refractory to lenalidomide is 8,799 for 1 prior LOT, 8,156 for 2 prior LOTs, and 6,421 for 3 prior LOTs; and 11,427 for ≥4 prior LOTs and exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody
- In 2026, the number of estimated patients PI and IMiD exposed and refractory to lenalidomide is 8,994 for 1 prior LOT, 7,992 for 2 prior LOTs, and 5,861 for 3 prior LOTs; and 9,643 for ≥4 prior LOTs and exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody

FIGURE 2: Estimated size of the eligible RRMM patient population in 1-3 prior LOTs and ≥4 prior LOTs combined by race, insurance type, US region, and urban/rural location in 2024 (base case)[a]



[a]1-3 prior LOTs defined as patients who have had 1-3 prior LOTs and were PI and IMiD exposed and refractory to lenalidomide in ≥1 prior LOT; ≥4 prior LOTs defined as patients who have had ≥4 prior LOTs including exposure to a PI, an IMiD, and an anti-CD38 mAb. IMiD, immunomodulatory drug; LOT, line of therapy; mAb, monoclonal antibody; PI, proteasome inhibitor; RRMM, relapsed/refractory multiple myeloma.

Estimated size of the eligible RRMM patient population in 1-3 prior LOTs and ≥4 prior LOTs combined by race, insurance type, US region, and urban/rural location in 2024 (sensitivity analysis)

- Combined estimates for 1-3 prior LOTs and PI and IMiD exposed and lenalidomide refractory, and ≥4 prior LOTs and exposed to a PI, an IMiD, and an anti-CD38 monoclonal antibody are as follows:
  - In 2024, population estimates would include 30,217 White (74%); 8,857 Black (22%); 956 Hispanic and others (2%); and 838 Asian (2%) patients
  - In 2024, population estimates would include 28,016 Medicare (69%) and 12,852 commercial and others (31%) patients
  - In 2024, population estimates for US regions would include 15,782 from the South (39%); 9,713 from the West (24%); 6,980 from the Northeast (17%); and 8,393 from the Midwest (20%)
  - In 2024, population estimates would include 33,845 from urban areas (83%) and 7,023 from rural areas (17%)

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KEY TAKEAWAY

The results of the study can help decision-makers determine the potential size of the patient population with RRMM in earlier lines (1-3 prior LOTs, PI and IMiD exposed, and lenalidomide refractory) and later lines (≥4 prior LOTs, triple-class exposed to PI, IMiD, and anti-CD38 monoclonal antibodies).

As more patients are eligible and assumed to be treated with CAR-T in 2024, fewer patients are eligible for treatment in 2025 and 2026 versus 2024.

CONCLUSION

The data from this model indicate that in 2026 versus 2024, fewer patients are estimated to move into 1-3 prior LOTs (PI-and IMiD-exposed, lenalidomide-refractory RRMM) and ≥4 prior LOTs (triple-class–exposed RRMM) settings.

LIMITATIONS

The study relies on administrative claims databases for inputs and therefore may have limitations associated with use of administrative claims data, which are primarily used for billing and not research purposes. The study relies on published literature and secondary database analyses and assumes treatment patterns to remain similar from 2024-2026; however, estimates could be impacted by changes in treatment patterns or guidelines or availability and uptake of newer therapies.

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DISCLOSURES

DKH has consulted with BMS, Karyopharm, Janssen, and Pfizer; received research funding from BMS, International Myeloma Society, Karyopharm, and the Pentecost Family Myeloma Research Center; received honoraria from Onc Live and Survivorship; and has served on BMS IMW Ide-cel academic advisory board, BMS MM ASH Steering Committee, and MM Pfizer Advisory Board. SH and AK are employees of Janssen Scientific Affairs, LLC, and hold Johnson & Johnson stock. RP and SP are employees of Putnam Associates, a consulting company that has provided paid consulting services to Janssen Scientific Affairs. JK has consulted with Janssen; received honoraria from GPCR Therapeutics; received travel support from DAVA Oncology; served on a Janssen advisory board and Case Comprehensive Cancer Center data safety monitoring committee; and served in a leadership role for the ASH amyloidosis guideline committee and ASTCT stem cell mobilization committee.