To assess clinical treatment patterns and refractory status in heavily pretreated patients with MM, this analysis used data from the LOT Plus® Interactive Database (www.lot-data.com), a global, longitudinal, observational database that collects clinical data on patients with MM who received treatment in the US from 2008 through 2019.

**Objectives**
- To assess clinical treatment patterns and refractory status in heavily pretreated patients with MM.

**Methods**
- This long-term longitudinal cohort study utilized the LOT database after and additional data collected from US electronic health records (EHR) through pharmacy databases until 2020.
- Study selection criteria and exclusion criteria are presented in Figure 1.
- Patients 18 years of age on index date with active MM were previously exposed to 5 PI and/or IMIDs, and who received ≥33 doses of each agent before index date were included.
- All patients were defined as class refractory or non-refractory at time of enrollment.
- The most recent treatment regimen before index date was included.
- Patients had data on ≥1 encounter within 365 days prior to index date and at least 1 follow-up observation after index date.
- Patients had available data at least one of the following: time to next treatment, treatment discontinuation reason, and last date of care.

**Results**
- Of the 381 patients included, 61% were male, and the median age was 65.1 years (range: 22 to 91 years).
- The median time from initial MM diagnosis to index date was 2.5 years (range: 0.1 to 9.7 years).
- The most common symptoms were bone pain and back pain, which were present in 78.6% and 78.3% of patients, respectively.
- The most common concomitant conditions were hypertension and diabetes mellitus, with incidences of 58.3% and 53.1%, respectively.
- The median number of treatment lines and agents received was 3 (range: 2 to 10 lines) and 4 (range: 3 to 6 agents), respectively.
- The most common agents used were bortezomib, carfilzomib, and lenalidomide, with incidences of 72.3%, 38.1%, and 36.8%, respectively.
- The most common treatment discontinuation reasons were patient preference, inadequate response, and toxicity.
- The median time to next treatment (TTNT) for patients with MM was 3.1 months (range: 0.1 to 24.5 months).
- The 1-year and 2-year DCR rates were 41.1% (95% CI: 37.0% to 45.2%) and 36.6% (95% CI: 32.6% to 40.6%), respectively.
- The median OS was 12.7 months (range: 0.1 to 44.9 months).
- The overall response rate (ORR) was 13.3% (95% CI: 10.5% to 16.8%), with a median duration of response of 14.2 months (range: 0.0 to 37.4 months).
- The median TTNT for patients who received double-class therapy (PI and IMID) was 7.1 months (95% CI: 5.8 to 8.4 months).
- The median TTNT for patients who received triple-class therapy (PI, IMID, and CD38 monoclonal antibody) was 3.9 months (95% CI: 3.0 to 5.2 months).
- The median OS for patients who received double-class therapy was 13.9 months (range: 3.6 to 43.7 months).
- The median OS for patients who received triple-class therapy was 11.0 months (range: 2.4 to 39.1 months).

**Conclusions**
- This analysis demonstrated the high rate of retreatment with PI, IMIDS, and CD38 monoclonal antibodies among heavily pretreated patients with MM.
- The high rate of retreatment with PI, IMIDS, and CD38 monoclonal antibodies highlights the need for new treatment options to address this patient population.
- The high rate of retreatment with PI, IMIDS, and CD38 monoclonal antibodies underscores the importance of developing targeted therapies that can effectively manage the complex disease landscape of MM.

**Abbreviations**

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- The authors declare no conflicts of interest.

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