

Real-World Treatment Patterns and Sequencing Among Patients With Newly Diagnosed and Relapsed/Refractory Multiple Myeloma

Rohan Vashi, PharmD¹; David Iwanyckyj¹; **Fernando Otalora, MS^{1*}**; Melanie Jardim, PhD¹
¹Amplity Inc, Langhorne, PA, USA



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Introduction

- MM is the second most common hematologic malignancy in the United States, with an estimated 36,000 new cases and 10,850 deaths expected in 2026^{1,2}
- Treatment options for ND and R/R MM continue to expand, creating increasing complexity of treatment decision-making^{3,4}
 - For ND MM, frontline treatment is guided by transplant eligibility and may include anti-CD38–based triplet or quadruplet induction therapy, ASCT, consolidation, and maintenance therapy
 - For R/R MM, treatment selection is guided by prior treatment exposure and refractory status and may include IMiDs, Pls, anti-CD38 monoclonal antibodies, CAR T-cell therapies, bispecific antibodies, and other novel therapies
- Despite evolving treatment recommendations, understanding real-world factors influencing treatment selection and sequencing in ND and R/R MM has become increasingly important
- AI and NLP applied to physician notes may provide insights into treatment patterns, adverse events, and documented drivers of clinical decision-making in routine practice

Objective

- This study characterizes real-world treatment patterns, AEs, and treatment selection decision-making among community and academic physicians treating patients with ND and R/R MM

Methods

- This retrospective observational study utilized AnswerY™, Amplity's proprietary real-world database and commercialization intelligence platform, that searched, analyzed, and reviewed a real-world database built from HIPAA-compliant, US-based, transcribed physician notes
 - Using AI and NLP, the platform extracts, visualizes, and summarizes treatment discussions and clinical decisions covering inpatient and outpatient care across 70+ specialties since 2017
 - AnswerY was known as Amplity Insights™ prior to January 2025
- Patients with a documented diagnosis of MM, including both newly diagnosed and relapsed/refractory disease, from 2021–2025 were included and followed from 1L through 4L therapy
- Treatment patterns, AEs, and reasons for treatment decisions were analyzed and reported descriptively
- In addition, a contemporary sub-analysis was conducted among transplant-eligible patients entering the transplant pathway from July 2024 onward

Strengths

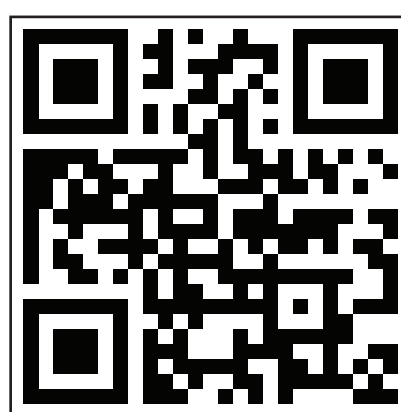
- Large number of patients with MM boosts confidence in the results of the overall MM population
- AnswerY enabled capture of treatment decisions and clinical factors, including treatment selection factors, ASCT utilization, AEs, and reasons for treatment switching documented in patient charts
- The results reflect actual clinical practice as captured by chart notes rather than what should be done via guideline-directed therapy

Limitations

- Treatment patterns were evaluated at the treatment-class level, limiting assessment of agent-specific regimens and sequencing patterns in clinical practice
- Observed treatment patterns may be influenced by the time frame evaluated, and more recent post-approval utilization trends may differ from those reported in the overall dataset

Conclusions

- Real-world treatment patterns in MM remain heterogeneous, reflecting the influence of disease characteristics, treatment response, tolerability, and anticipated clinical benefit on therapeutic decision-making
- Triplet therapy remained the predominantly documented frontline approach in ND MM relative to quadruplet therapy
- ASCT was incorporated into frontline management, primarily among younger patients with favorable treatment response and anticipated clinical benefit
- Treatment utilization and sequencing patterns in R/R MM were heterogeneous, with multiple treatment classes represented throughout the treatment journey, and limited documented use of CAR-T therapy
- Hematologic AEs were the most frequently documented AE category across treatment lines, and disease progression was the leading documented reason for switching from 1L to 2L therapy
- The increasing number of therapeutic options in MM has transformed care into a highly individualized decision-making process, highlighting the importance of understanding how treatment selection, sequencing, and transplantation decisions are made in routine clinical practice



Disclosures
D1*, FO, and MJ are employees of Amplity; RV was a previous employee of Amplity. Medical writing support was provided by Arpita Kulkarni, PhD, an employee of Amplity.
*Presenting Author

Abbreviations

1L, first-line; 2L, second-line; 3L, third-line; 4L, fourth-line; AE, adverse event; AI, artificial intelligence; ASCT, autologous stem cell transplantation; CD38, cluster of differentiation 38; IMiD, immunomodulatory drug; MM, multiple myeloma; ND, newly diagnosed multiple myeloma; NLP, natural language processing; PI, proteasome inhibitor; R/R, relapsed/refractory; SD, standard deviation; SOC, standard of care.

References

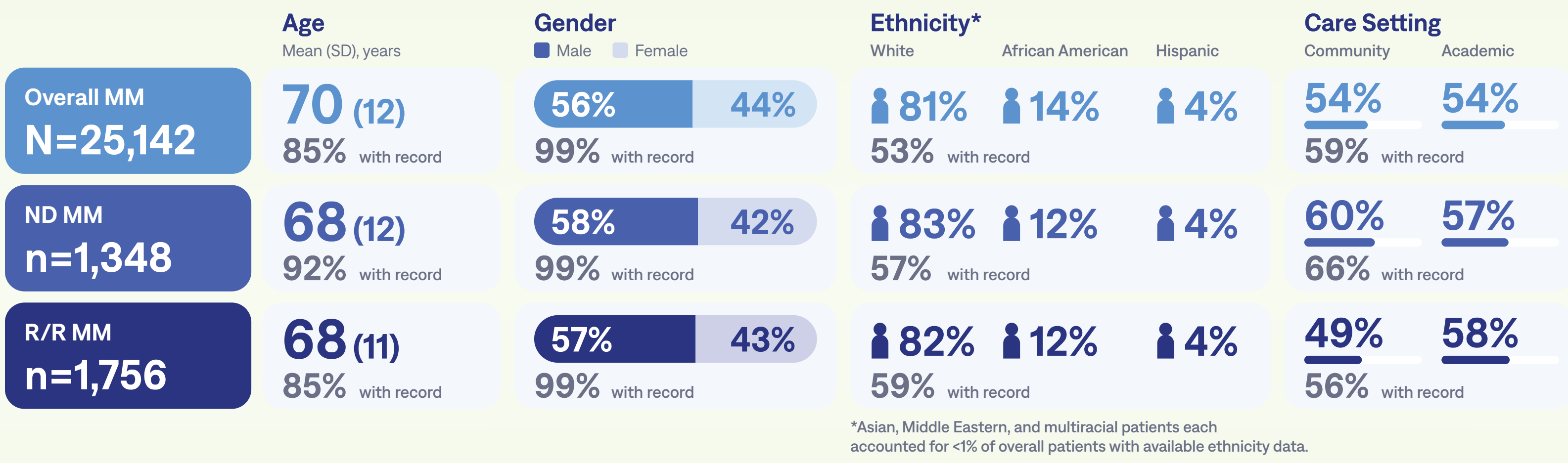
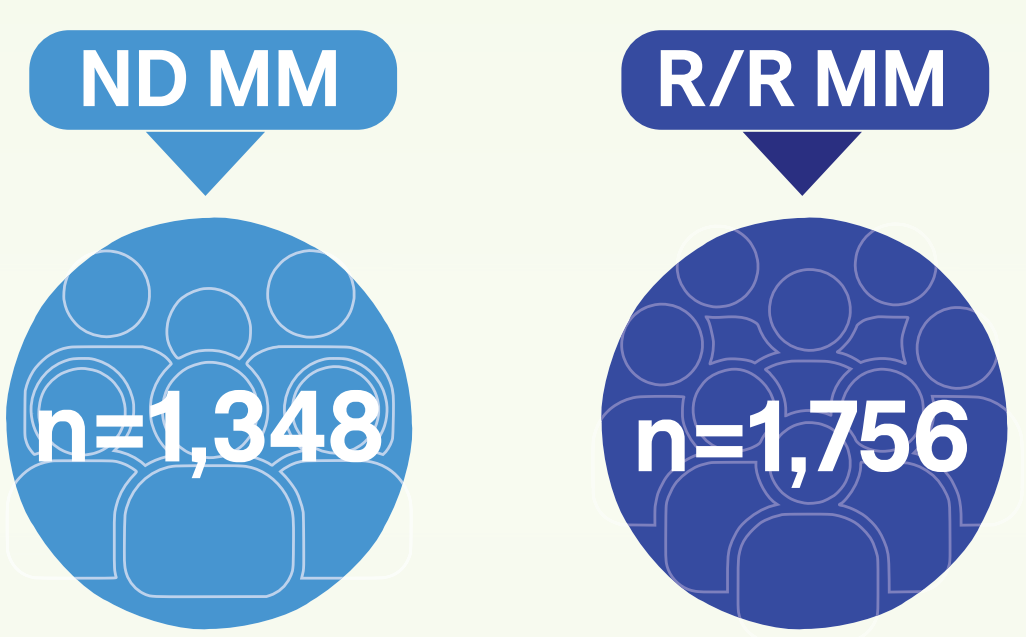
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Demographic characteristics were similar across MM disease settings, with patients enrolled from community and academic practices across all major US Census regions

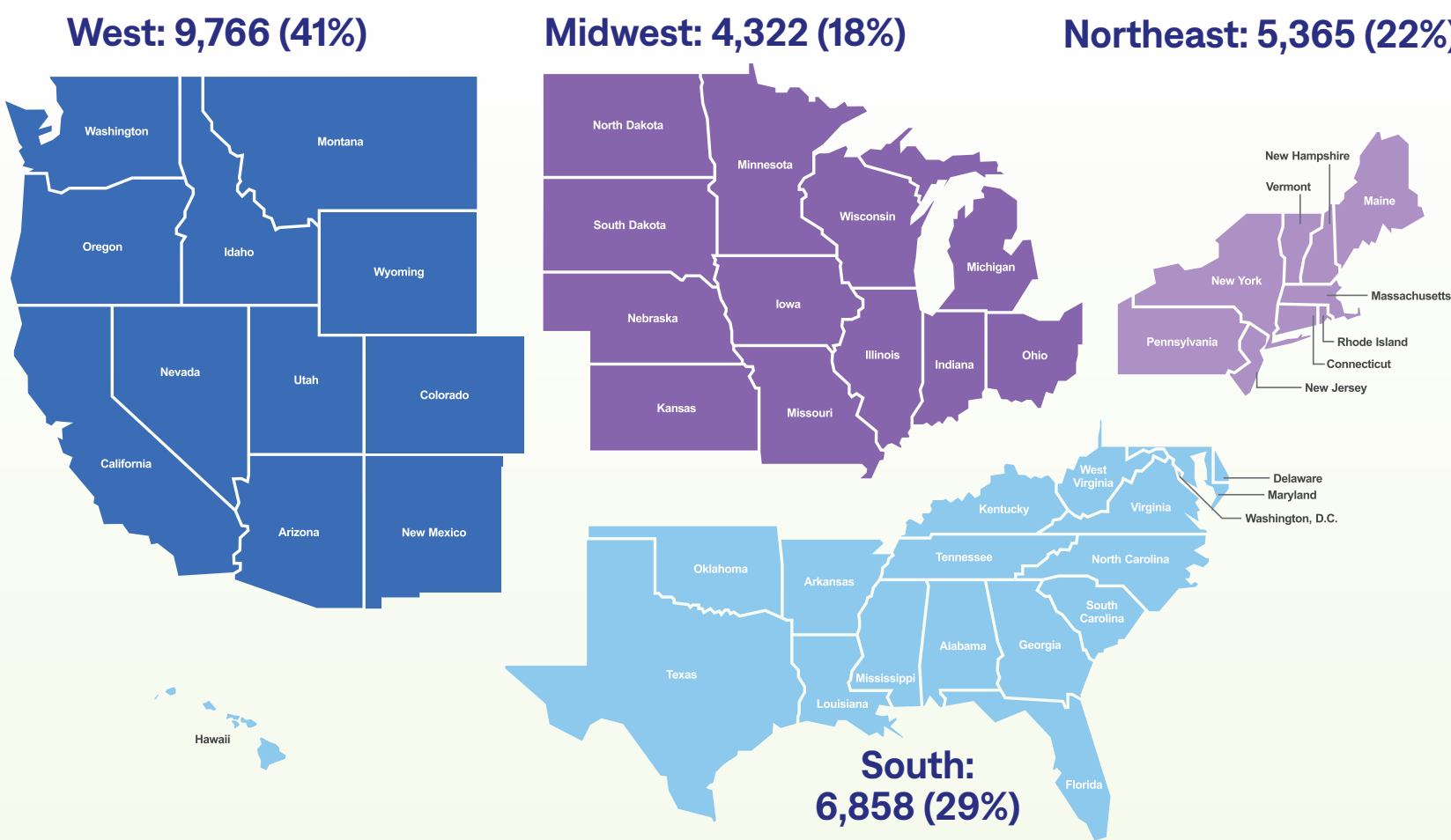
Patient Demographics

- AnswerY identified 25,142 patients with MM diagnosed between 2021 and 2025
- Of these, sufficient information was available to further refine the cohort and categorize disease status in 1,348 patients with ND MM and 1,756 patients with R/R MM
- The mean age of all patients with MM was approximately 70 years, and more than 80% identified as White
- Patients were represented across community and academic practice settings and across all major US Census regions

Summary of Patient Demographics



Geographic Distribution of Patients With MM Across US Regions



Among patients with newly diagnosed MM, triplet therapy was the predominant documented frontline treatment approach, whereas quadruplet therapy was used infrequently and primarily among patients with higher-risk disease features

Treatment Patterns in ND MM

- Among patients with an identified treatment regimen, triplet therapy accounted for 28.0% of patients and approximately half of documented treatment regimen (Figure 1)
- Patients receiving quadruplet therapy were more commonly treated in academic vs community care settings (Figure 2)
- Among patients with documented treatment rationale, renal dysfunction and high-risk cytogenetic features were among the most frequently reported treatment selection factors
- Figure 3 highlights the most common documented factors influencing treatment selection

Figure 1: 1L Treatment Choices Among Patients With ND MM (n=1,348)

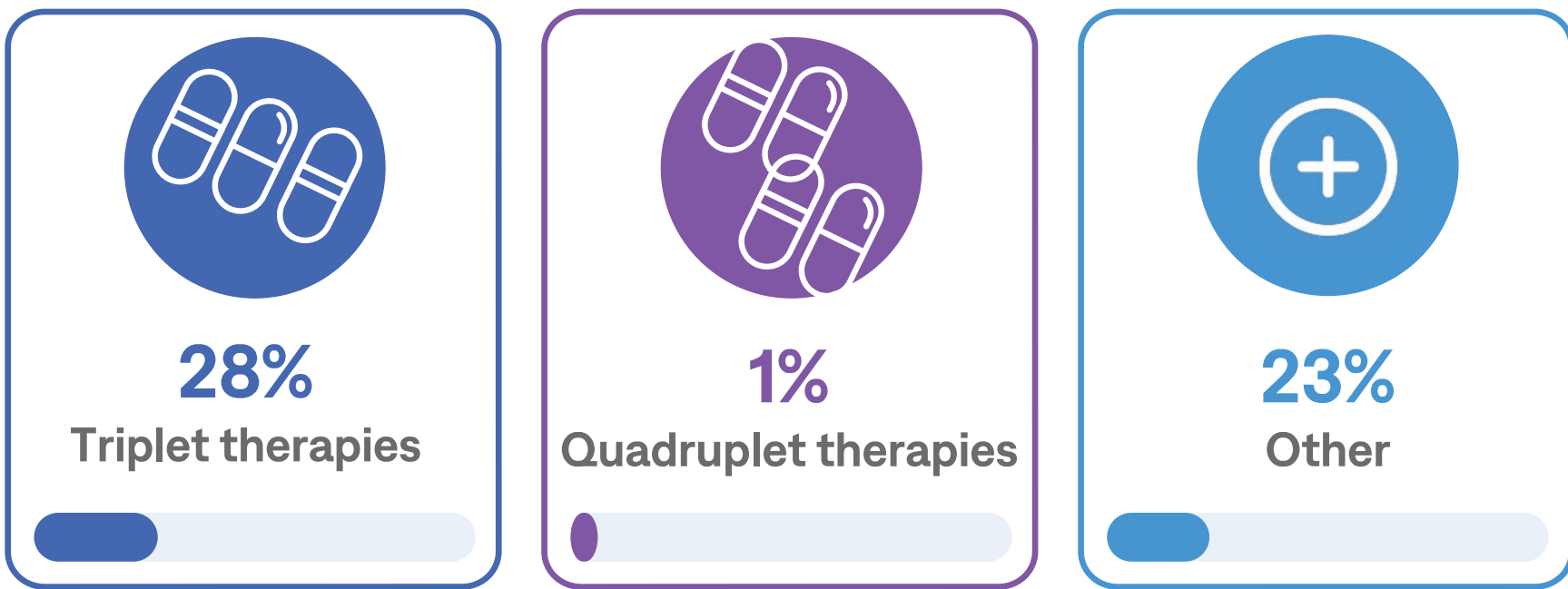


Figure 2: Care Setting Distribution Among Patients Receiving Triplet or Quadruplet Therapy

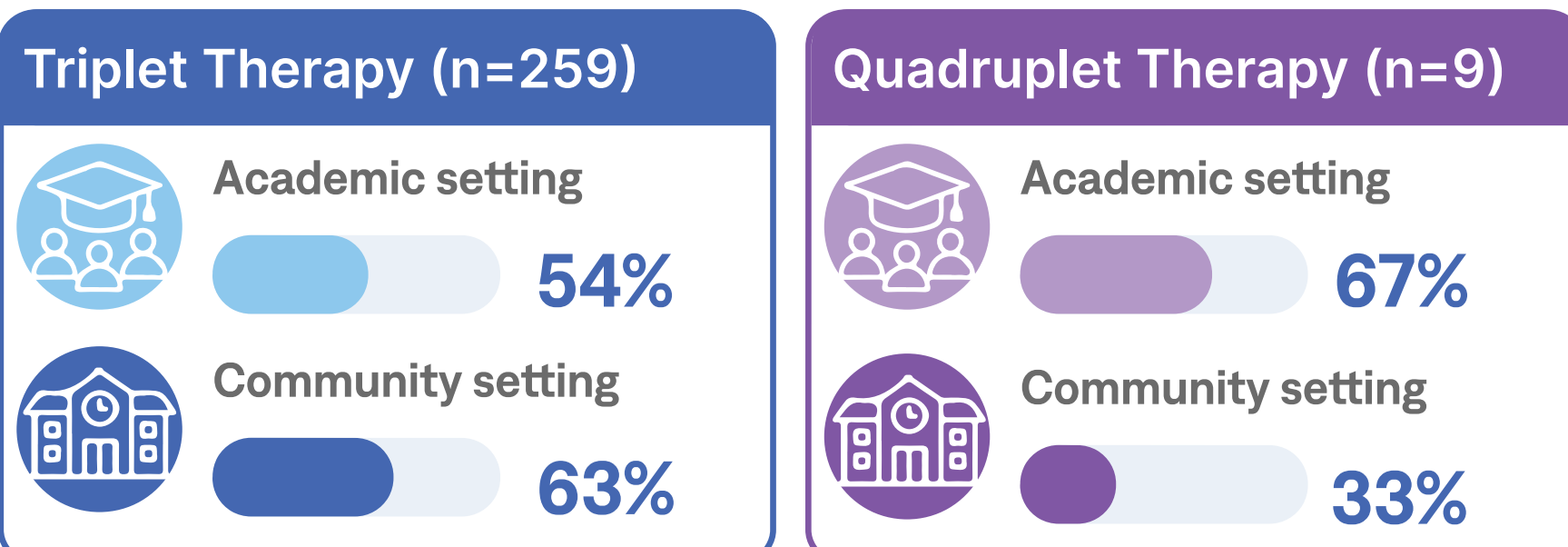
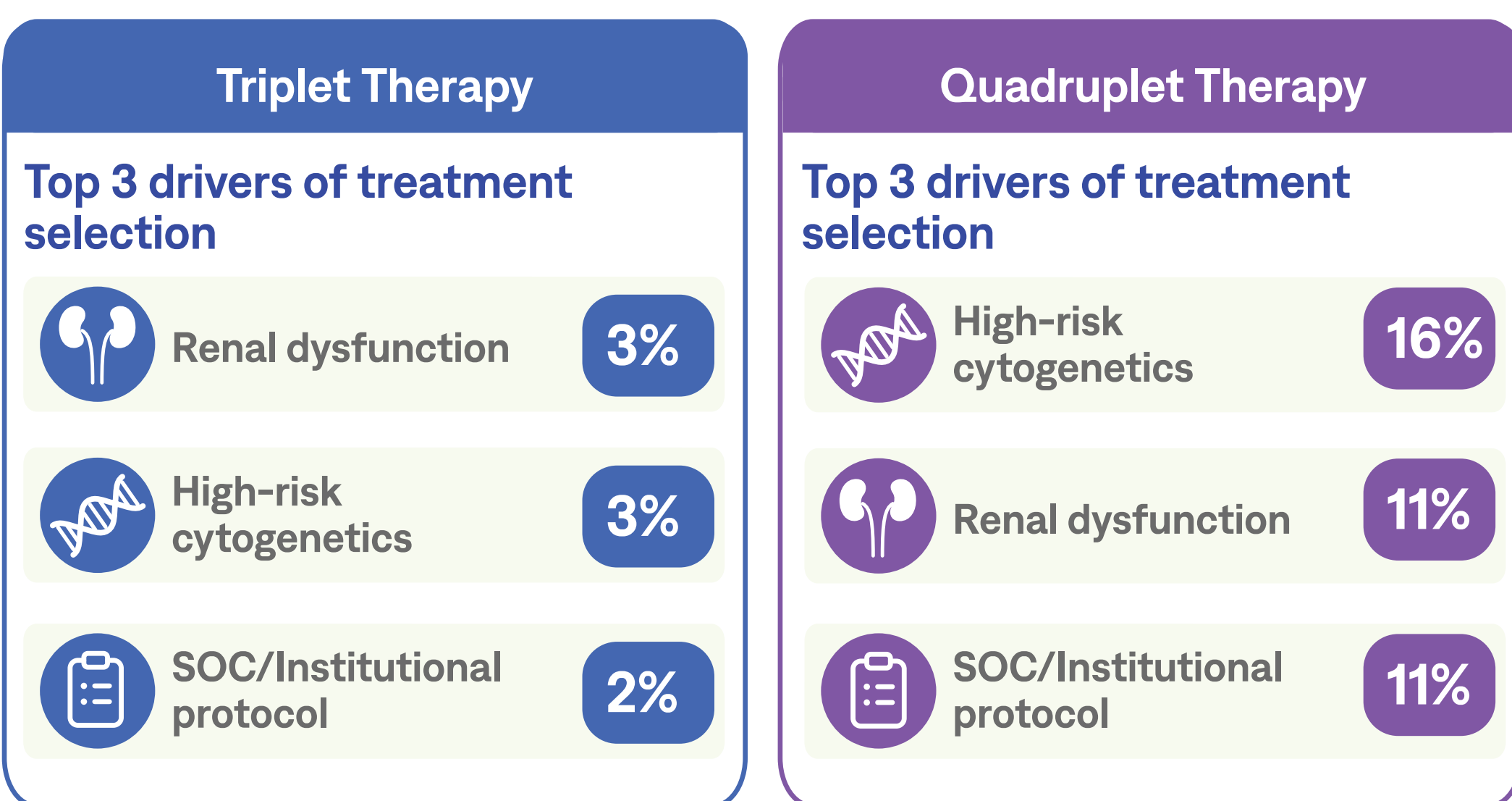


Figure 3: Most Common Drivers of Treatment Selection

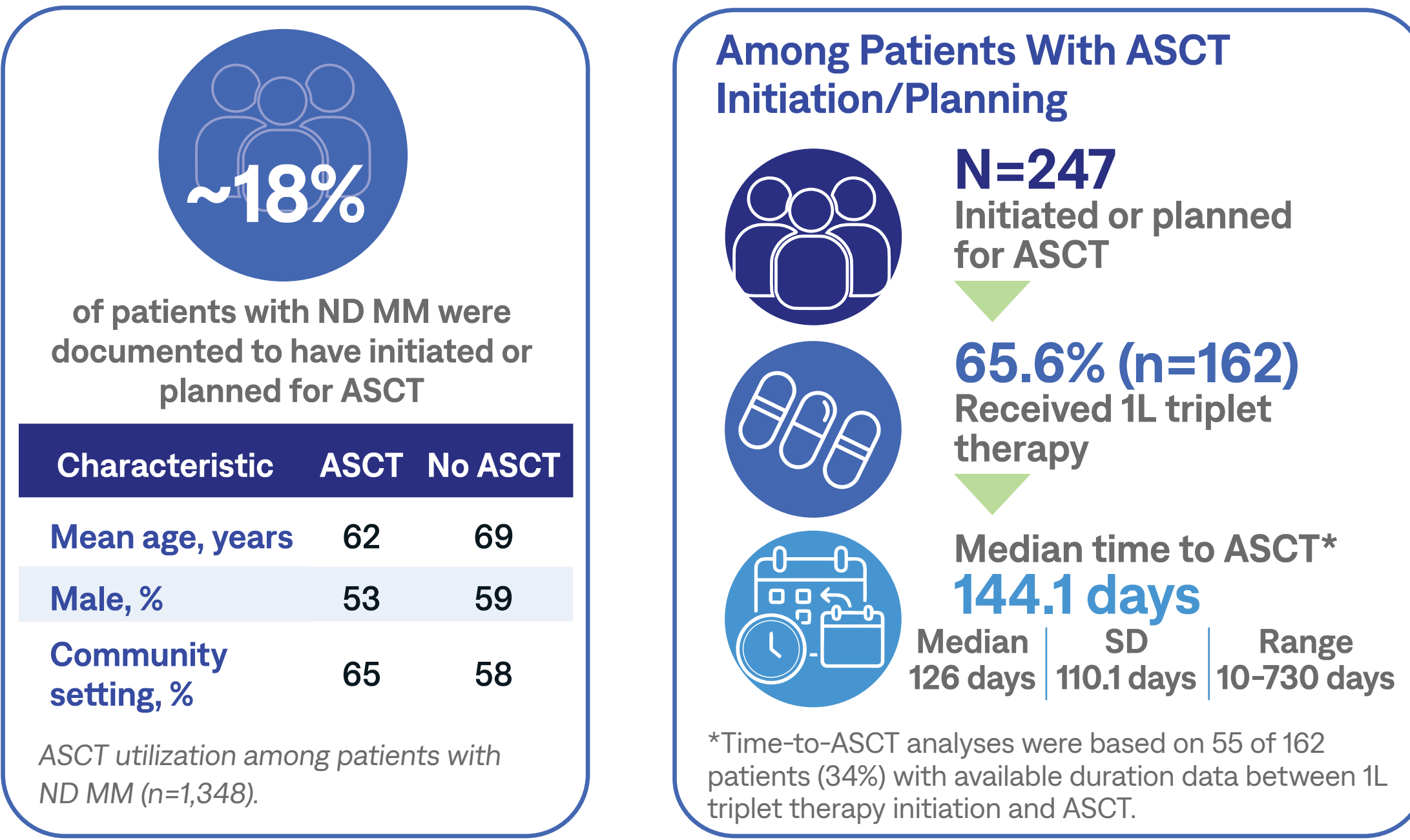


Contemporary ND MM Treatment Context (July 2024 Onward)
Additional analysis combining claims data with transcription data revealed that 27%-29% of transplant-eligible patients with ND MM received a daratumumab-based quadruplet induction regimen during the post-approval period (July 2024 onward). Daratumumab-based quadruplet induction was documented in 1 of 250 patients with ND MM in 2024 (0.4%) and 5 of 46 patients in 2025 (11%)

Following first-line therapy, about one-fifth of patients were documented to have initiated ASCT; ASCT recipients tended to be younger, with anticipated survival benefit and favorable response to induction therapy commonly influencing treatment decisions

Treatment Patterns in ND MM

- Among patients with ND MM, 18% were documented to have initiated or planned for ASCT
- Documented reasons for ASCT initiation and patient characteristics are summarized in Figure 4



Treatment utilization and sequencing patterns in R/R MM were heterogeneous across lines of therapy, with limited use of CAR-T therapy observed in the study cohort

Treatment Patterns in R/R MM

- The most frequently observed 1L→2L treatment pathway was IMiD→PI, accounting for 3.9% of patients receiving second-line therapy (Figure 5)
- Table 1 summarize treatment class utilization across lines of therapy and the most frequently observed 1L→2L treatment pathways in R/R MM
 - PI-only regimens were among the most frequently observed treatment classes across all lines of therapy (18%-22%)
- Following 2024, 46% of patients received a CD38-containing treatment, compared with 43% before 2024 (Figure 6)

Figure 5: Treatment Patterns and Flow Among Patients With R/R MM (n=241)

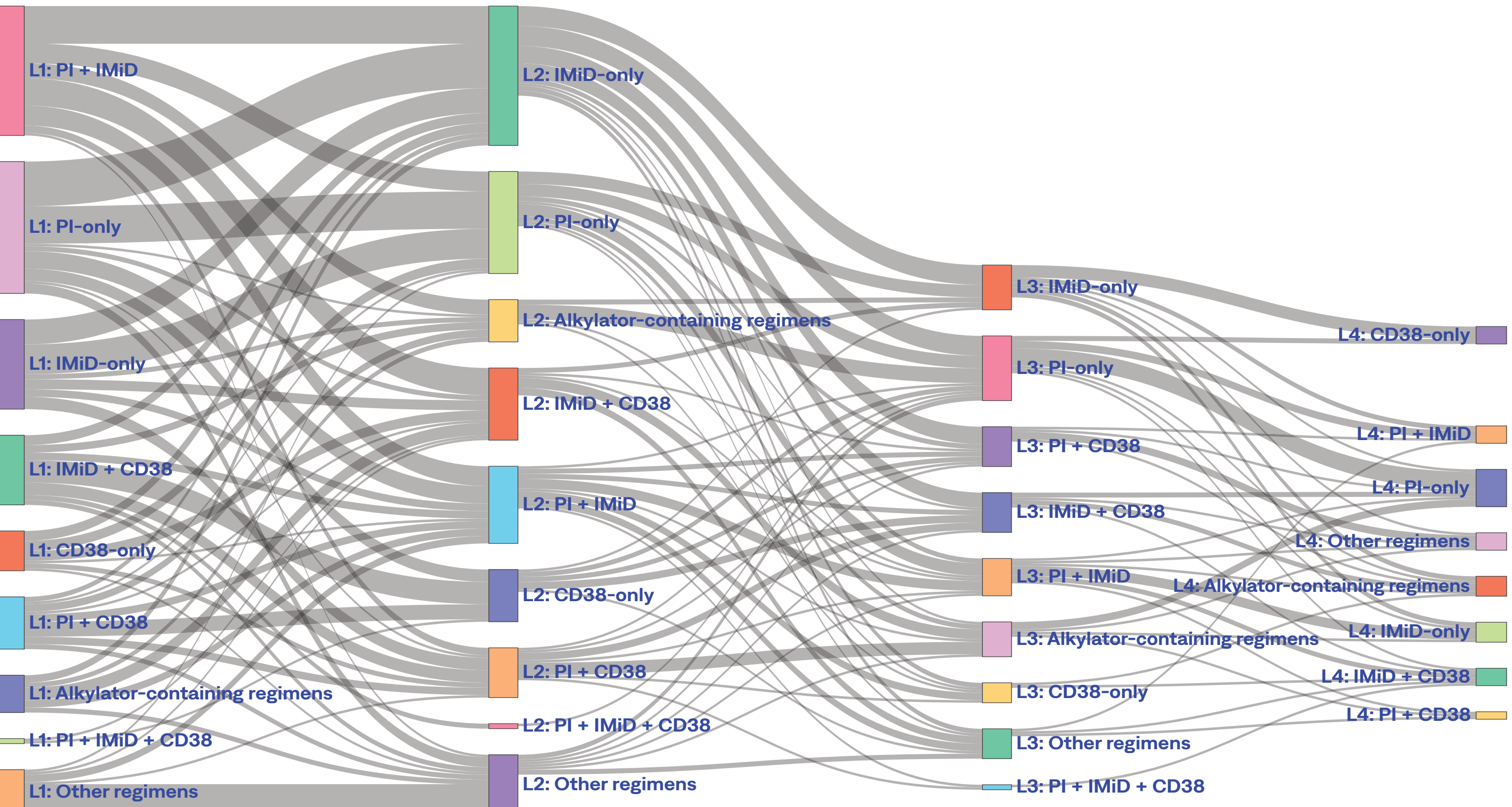


Table 1: Most Common Treatment Classes by Line of Therapy

Treatment Class	1L (n=700)	2L (n=281)	3L (n=164)	4L (n=84)
PI only	19%	18%	22%	18%
PI + IMiD	16%	11%	10%	12%
IMiD only	14%	19%	9%	10%
IMiD + CD38	14%	11%	15%	10%
CD38 only	9%	8%	12%	12%

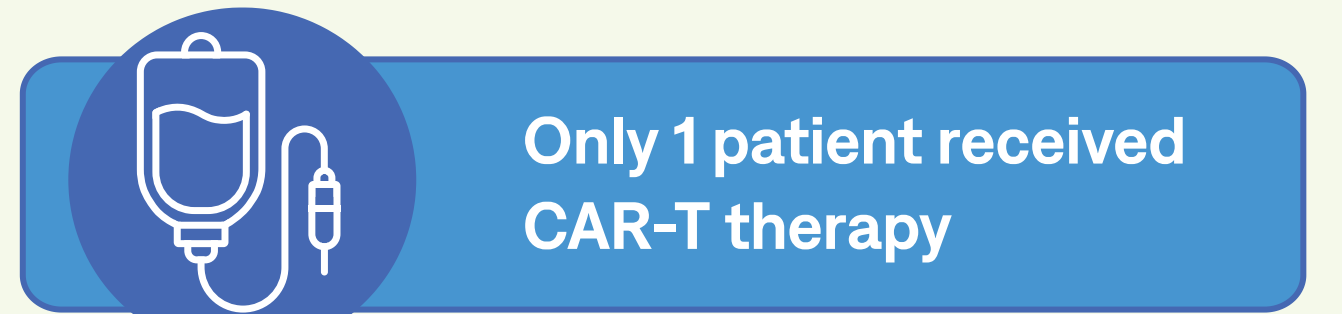
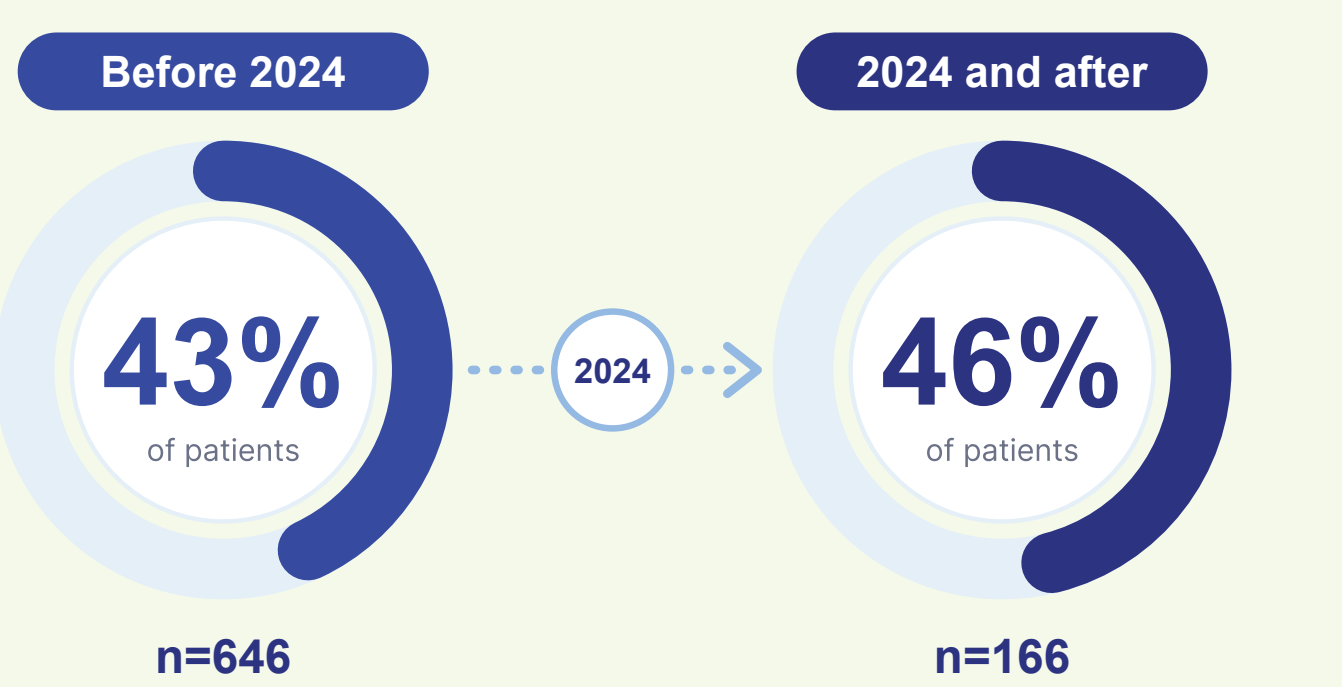


Figure 6: CD38-Containing Treatments*



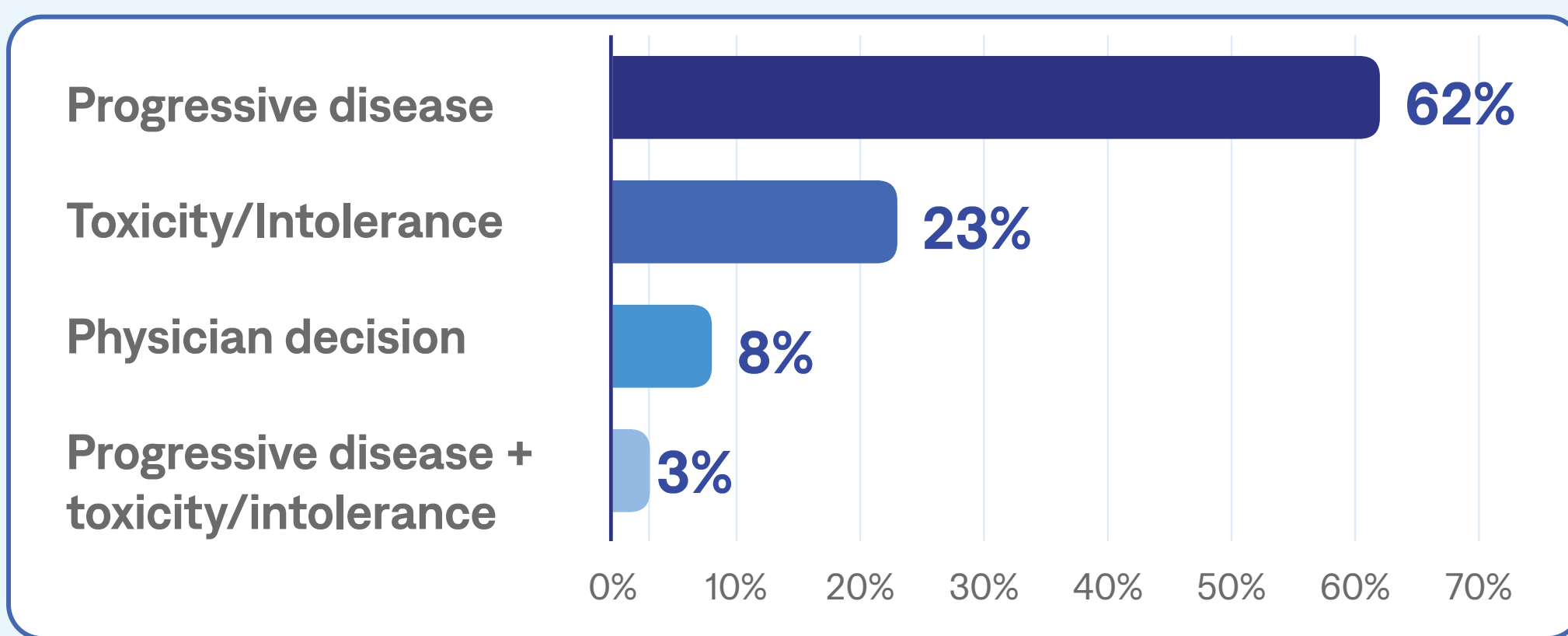
*Patients with information of at least 1 line among the R/R MM cohort. Patients can appear across different years so there is overlap.

Progressive disease was the most frequently documented reason for switching from 1L to 2L therapy, followed by toxicity/intolerance

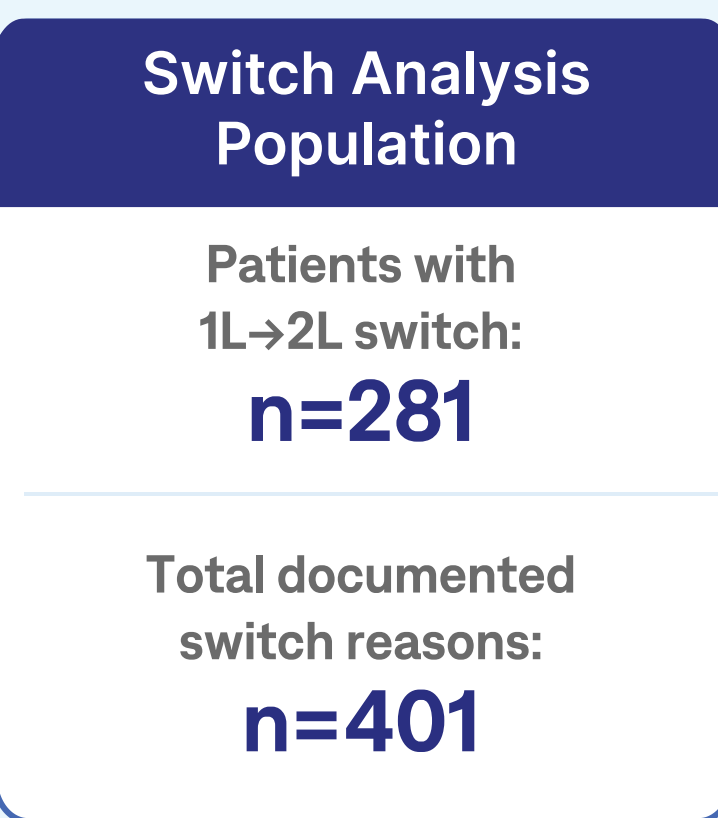
Reasons for Switching From 1L→2L Therapy

- Among patients switching from 1L to 2L therapy, the most frequently documented reasons were progressive disease (62%), toxicity/intolerance (23%), and physician decision (8%) (Figure 7)

Figure 7: Most Frequently Documented Reasons for Switching From 1L to 2L Therapy*



*Patients may have had more than 1 documented reason for treatment switch



Hematologic adverse events were the most frequently documented AE category across all lines of therapy, with neurologic and general/constitutional events also commonly reported

AEs Across Lines of Therapy in R/R MM

- Hematologic AEs were the most frequently documented AE category across all lines of therapy, occurring in 38%-52% of patients, followed by neurologic (26%-29%) and general/constitutional AEs (23%-31%) (Figure 8)

*General/Constitutional AEs included fatigue, fever/pyrexia, chills, frailty, deconditioning, failure to thrive, night sweats, performance status decline, weakness, edema, anorexia, anasarca, multiorgan failure, fall, hiccup, and swelling

Figure 8: Most Frequently Documented AE Categories Across Lines of Therapy

	1L (n=446)	2L (n=153)	3L (n=96)	4L (n=67)
Hematologic	52%	38%	43%	48%
Neurologic	29%	26%	28%	27%
General/Constitutional*	23%	31%	30%	28%
Gastrointestinal	16%	17%	20%	21%
Metabolic/Electrolyte	19%	18%	15%	10%
Renal	13%	7%	11%	10%