

Real-World Inpatient Outcomes with BCMA-Directed Bispecific Antibody Therapy in Relapsed/Refractory Multiple Myeloma: A National Inpatient Sample Analysis, 2022–2023

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50,013

Adult multiple myeloma hospitalizations analyzed, NIS 2022–2023



1,715 (3.4%)

Hospitalizations involving BCMA-directed bispecific therapy



aOR 1.45

Adjusted odds ratio for in-hospital mortality with bispecific therapy



9.6 vs 6.0 days

Length of stay: bispecific vs non-bispecific admissions



2023 aOR 0.83

Lower in-hospital mortality in 2023 vs 2022



BACKGROUND

- BCMA-directed bispecific antibodies are rapidly emerging therapies for relapsed/refractory multiple myeloma (MM).
- However, real-world inpatient utilization and outcomes during early adoption remain poorly characterized.



METHODS

- We analyzed adult MM hospitalizations (ICD-10 C90.*) using the National Inpatient Sample (2022–2023).
- BCMA-directed bispecific therapy was identified using ICD-10-PCS code XW033E5 in 2022, and XW033E5 or XW01348 in 2023.
- Survey-weighted analyses evaluated utilization trends, in-hospital mortality, length of stay (LOS), sepsis, and acute respiratory failure (ARF).
- Multivariable logistic regression assessed the association between bispecific therapy and mortality, adjusting for age, sex, elective admission status, and year.

STUDY DESIGN



1 National Inpatient Sample, 2022–2023



2 Adult MM hospitalizations (ICD-10 C90.*)



3 BCMA-bispecific therapy identified via ICD-10-PCS

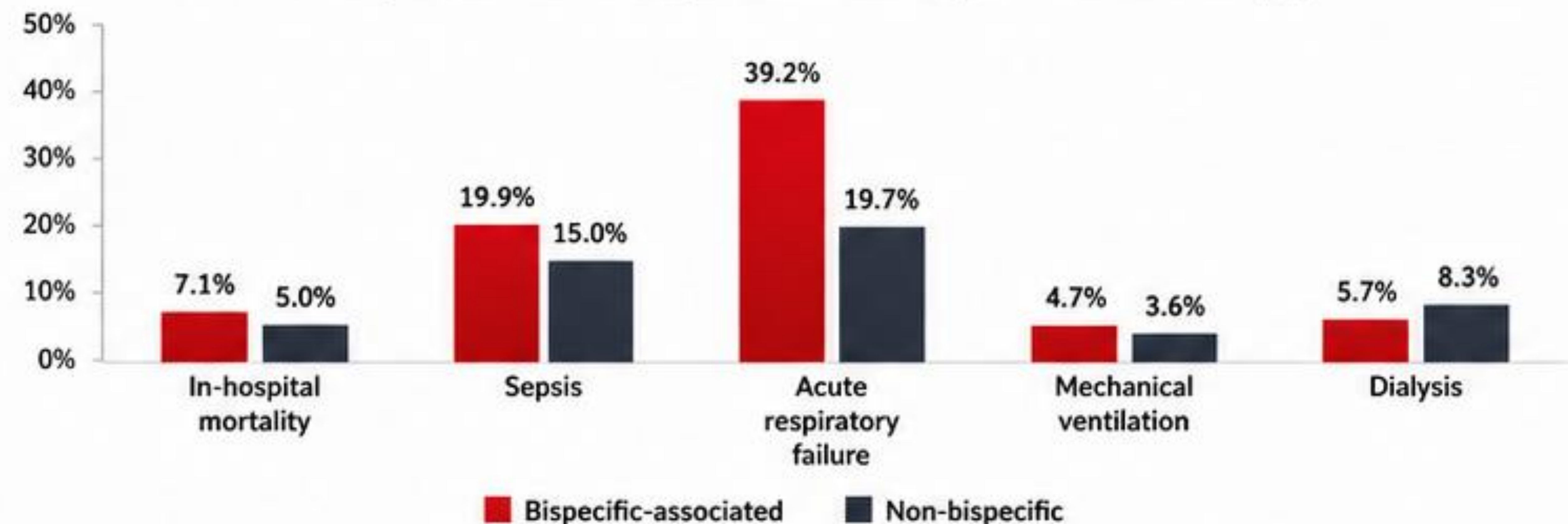


4 Survey-weighted and multivariable analysis

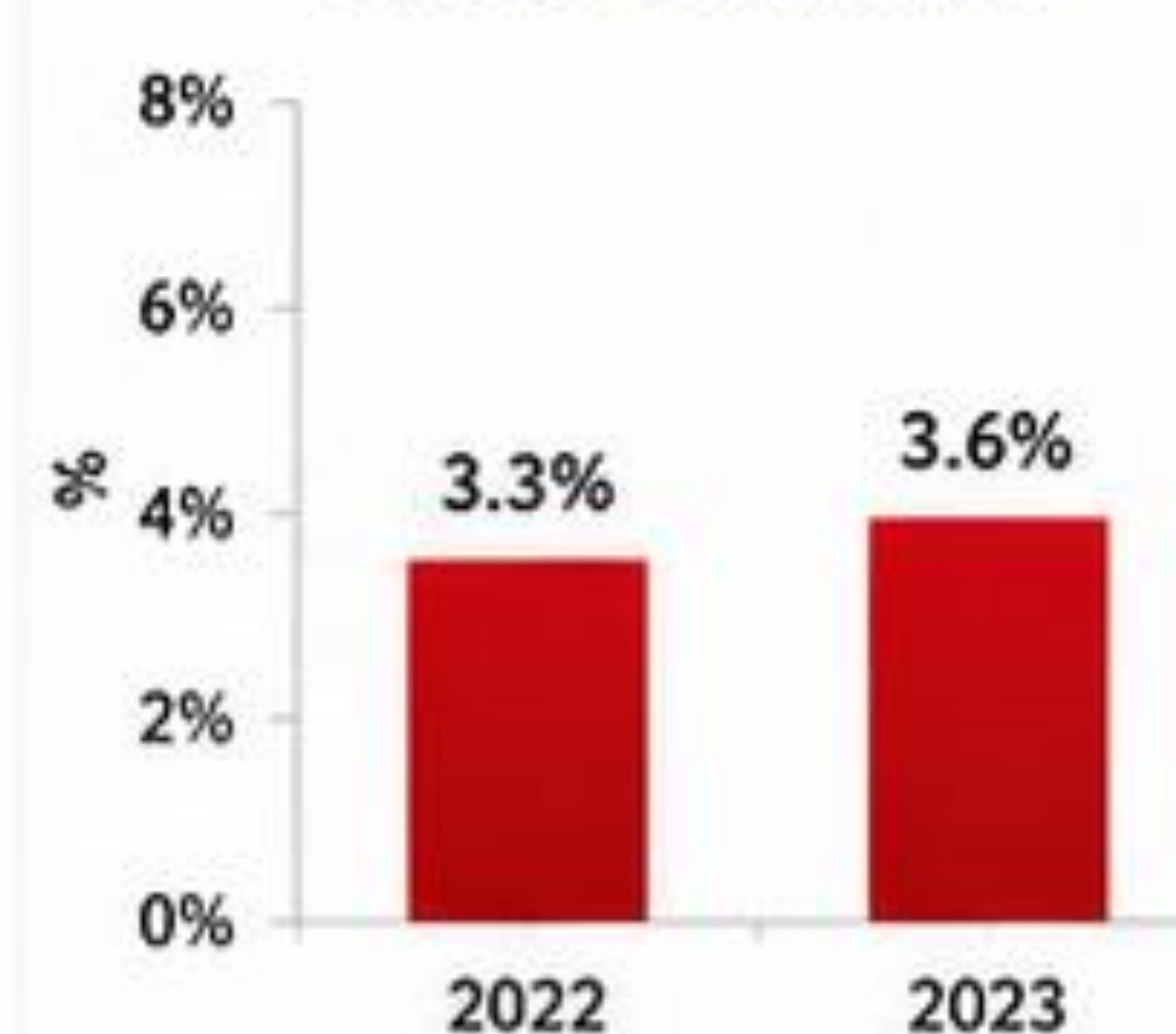


RESULTS

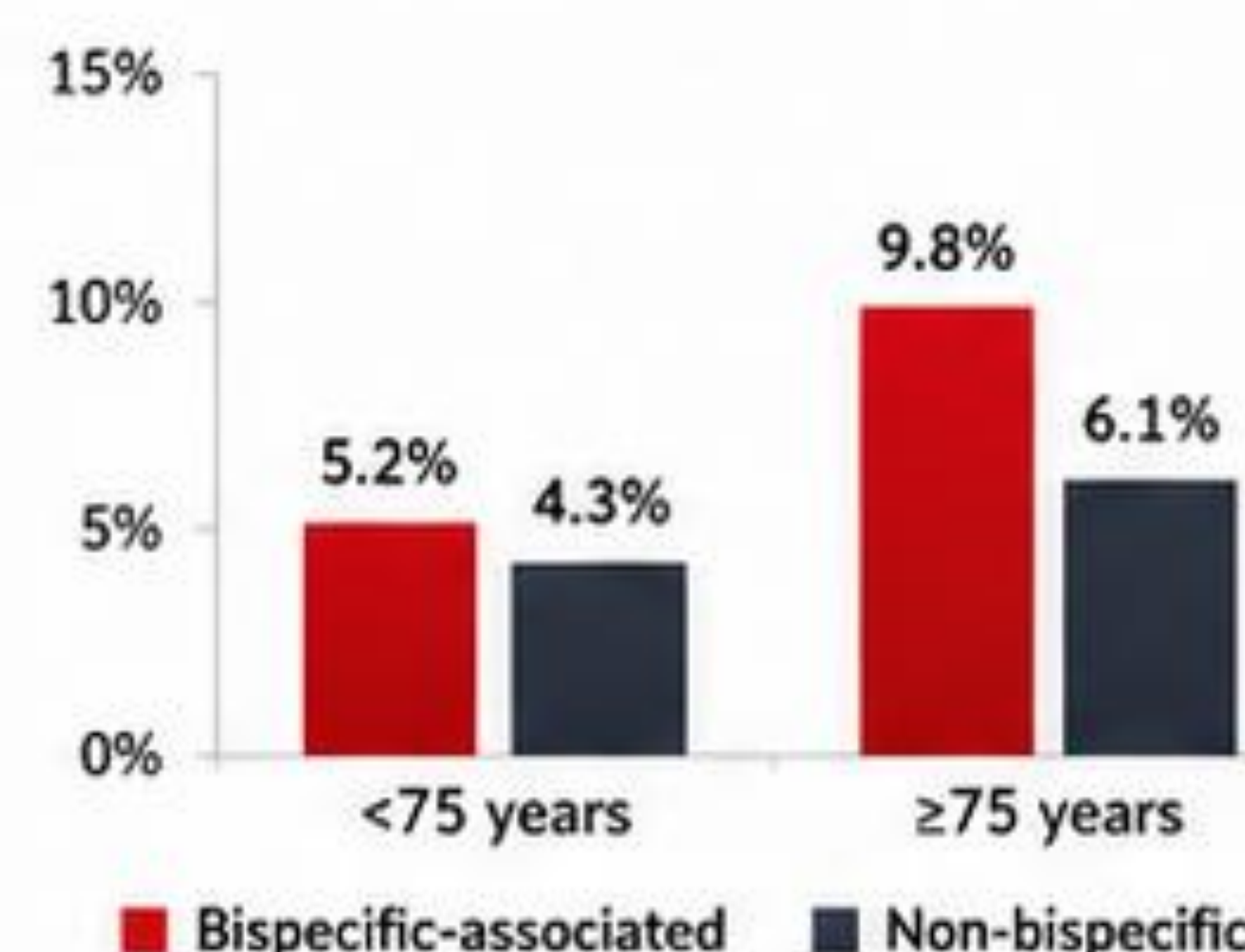
In-Hospital Outcomes: Bispecific vs Non-Bispecific Admissions (%)



Bispecific Utilization Among MM Hospitalizations



Mortality Gap Widens with Age



Results Summary

- ✓ Bispecific-associated hospitalizations had higher in-hospital mortality (7.1% vs 5.0%).
- ✓ Length of stay was longer (9.6 vs 6.0 days).
- ✓ Sepsis and ARF were more frequent (19.9% vs 15.0% and 39.2% vs 19.7%).
- ✓ Mechanical ventilation use was modestly higher (4.7% vs 3.6%), whereas dialysis utilization was lower (5.7% vs 8.3%).
- ✓ Bispecific therapy was independently associated with increased in-hospital mortality (aOR 1.45; $P < 0.001$).
- ✓ Admissions in 2023 were associated with lower mortality compared with 2022 (aOR 0.83; $P < 0.001$).
- ✓ The mortality difference was more pronounced in patients aged ≥75 years (9.8% vs 6.1%) than in those <75 years (5.2% vs 4.3%).



CONCLUSIONS



BCMA-directed bispecific antibodies are associated with increased inpatient resource utilization and higher rates of infectious and respiratory complications during early real-world adoption.



The observed decline in mortality from 2022 to 2023 suggests a learning curve in toxicity recognition and management.



These findings highlight the need for optimized inpatient care strategies and risk stratification, particularly in older patients, as bispecific therapies continue to expand in clinical practice.



TAKE-HOME MESSAGE

Toxicity vigilance and risk-stratified inpatient care are essential as BCMA-directed bispecific antibody use expands in real-world multiple myeloma management, especially in older adults.