Multiple Myeloma Survival in the Novel Therapy Era: From a Rapidly Fatal Disease to a Chronic Malignancy

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INTRODUCTION

Multiple myeloma (MM) was historically considered a rapidly fatal hematologic malignancy with median overall survival (OS) under three years. Prior to the modern treatment era, MM was characterized by limited therapeutic options and poor prognosis.
Sequential introduction of immunomodulatory drugs, proteasome inhibitors, and monoclonal antibodies has fundamentally reshaped the therapeutic landscape since the early 2000s.

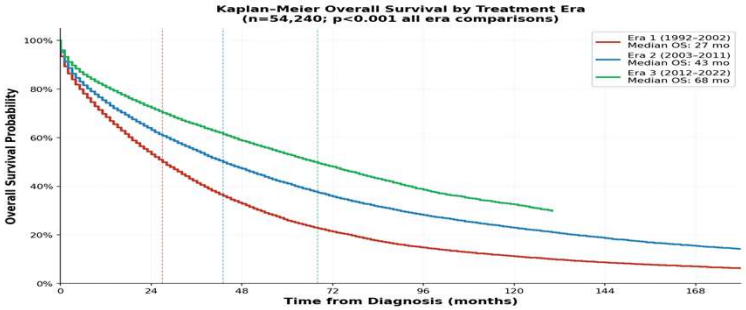
AIM

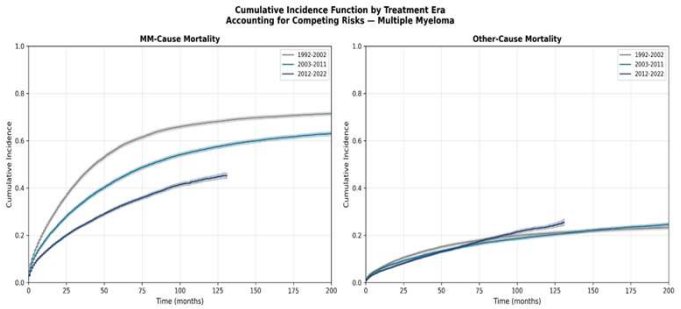
To characterize changes in overall survival (OS) for patients diagnosed with multiple myeloma across three sequential treatment eras using a large, population-based national cohort.

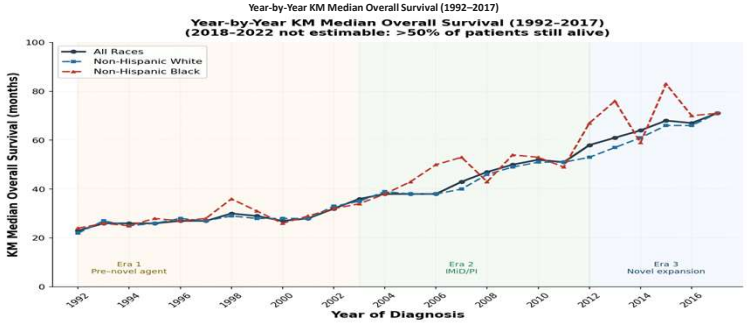
Specific aims: (1) Quantify changes in KM median OS and 5-year survival across Era 1 (pre-novel agent), Era 2 (IMiD/PI introduction), and Era 3 (novel agent expansion); (2) Evaluate year-by-year survival trends from 1992–2022; (3) Assess whether survival gains are equitable across race, sex, and ethnicity.

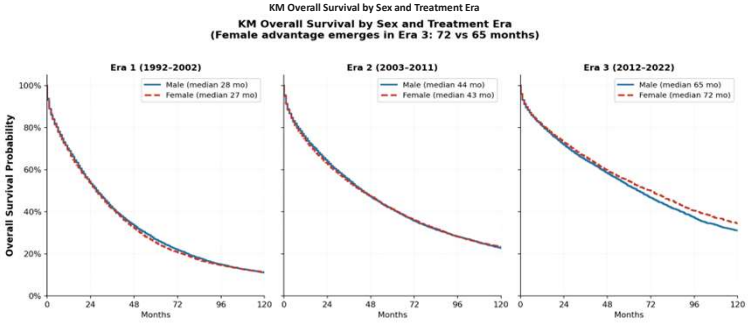
METHOD

Data source: SEER Research Data, 17 Registries (1992–2022); n=54,240 patients diagnosed with multiple myeloma.
Treatment eras: Era 1 (1992–2002, pre–novel-agent); Era 2 (2003–2011, IMiD/PI introduction); Era 3 (2012–2022, novel-agent expansion with monoclonal antibodies).
Endpoints: Kaplan-Meier (KM) median overall survival, 5-year survival probability, and year-of-diagnosis survival trend.
Subgroup analyses: Stratified by race (Non-Hispanic White, Non-Hispanic Black, Hispanic, NH Asian/PI), sex (male/female), and treatment era.
Statistical testing: Pairwise era comparisons via Mann-Whitney U test; Cox proportional hazards model for adjusted hazard ratios. Statistical significance: p<0.05.









CONCLUSIONS

KM median OS more than doubled across three treatment eras: 27, 43, and 68 months (Era 1→2 and Era 2→3, both p<0.001), representing a near-tripling over three decades.
5-year OS improved from 26.3% (Era 1) to 40.9% (Era 2). Era 3 estimate is censored by ongoing follow-up, with 56.1% still alive at study end. Among patients diagnosed 2018–2022, median OS is not yet estimable — an unprecedented milestone in MM.

Non-Hispanic Black patients matched or exceeded NHW median OS in every era (Era 2: +4 months, p=0.002; Era 3: +6 months, p=0.133). Survival gains spanned all racial groups (NHW 27→66 mo; NHB 28→72 mo; Hispanic 27→67 mo; NHAPI 28→70 mo).

A female survival advantage emerged specifically in Era 3 (72 vs 65 months), suggesting differential benefit from modern immunotherapy regimens.

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