

Residual Excess Mortality During the COVID-19 Era in Multiple Myeloma and Related

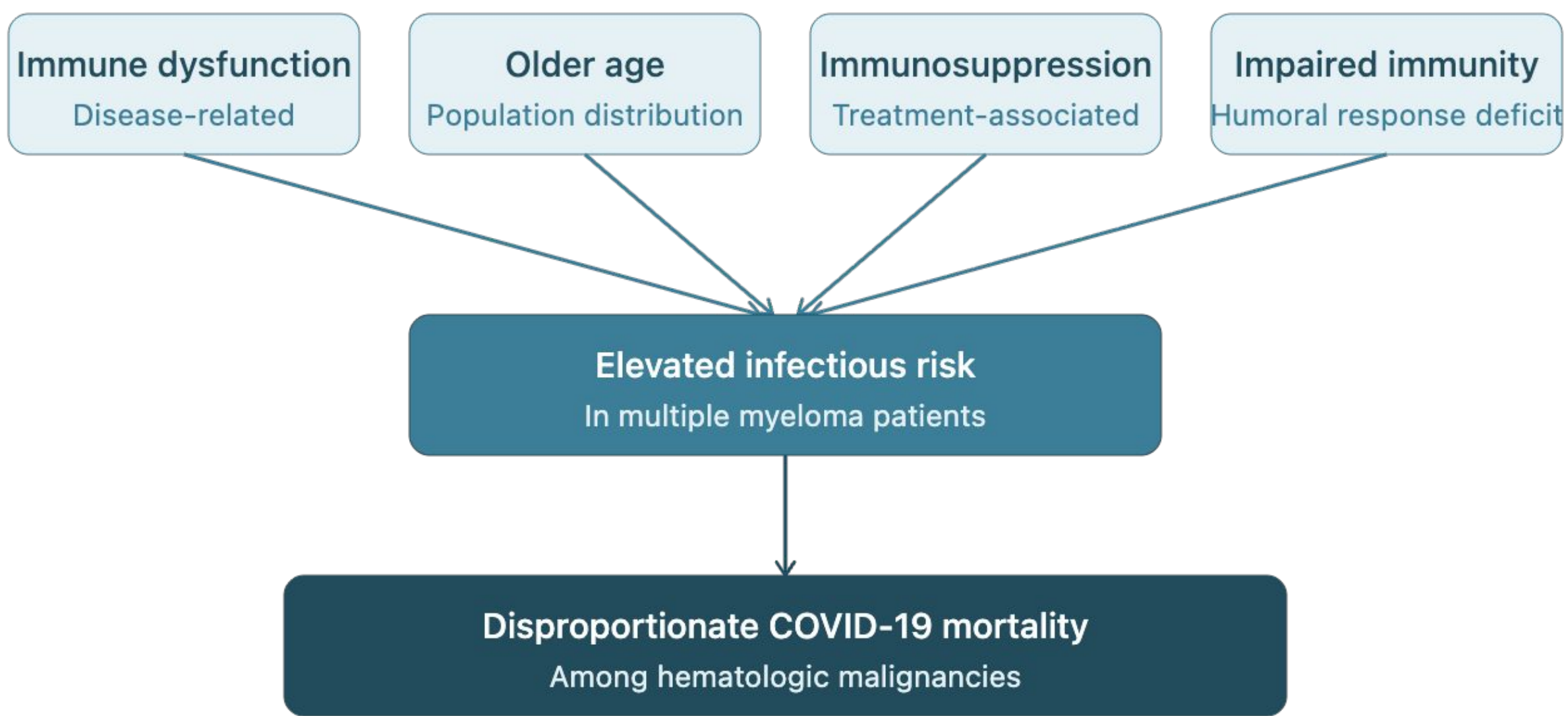
Plasma Cell Neoplasms: A CDC WONDER Counterfactual Predictive Analysis

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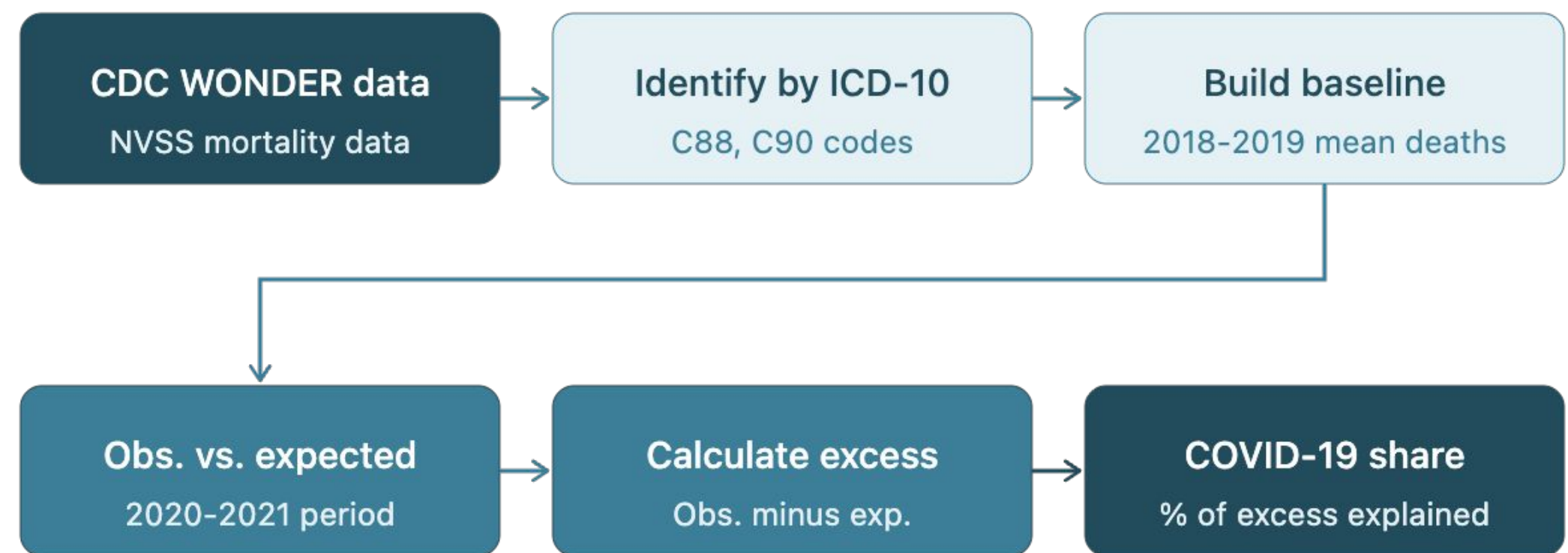
INTRODUCTION

Patients with multiple myeloma are vulnerable to infectious mortality because of disease-related immune dysfunction, older age distribution, treatment-associated immunosuppression, and impaired humoral immunity. National cancer mortality data suggest that COVID-19 contributed disproportionately to deaths among patients with hematologic malignancies, including myeloma.



METHODS

Retrospective population-based mortality analysis using CDC-reported National Vital Statistics System/CDC WONDER Multiple Cause of Death data. Deaths involving multiple myeloma and immunoproliferative neoplasms were identified using ICD-10 codes C88 and C90. Annual mortality counts from 2018–2021 were extracted. A pre-pandemic counterfactual model estimated expected deaths during 2020–2021 using the 2018–2019 mean annual mortality count. Excess mortality was calculated as observed minus expected deaths. COVID-19–associated mortality was defined as deaths with COVID-19 listed as the underlying cause. CDC WONDER mortality files are based on U.S. death certificates and include one underlying cause of death and up to 20 additional contributing causes.

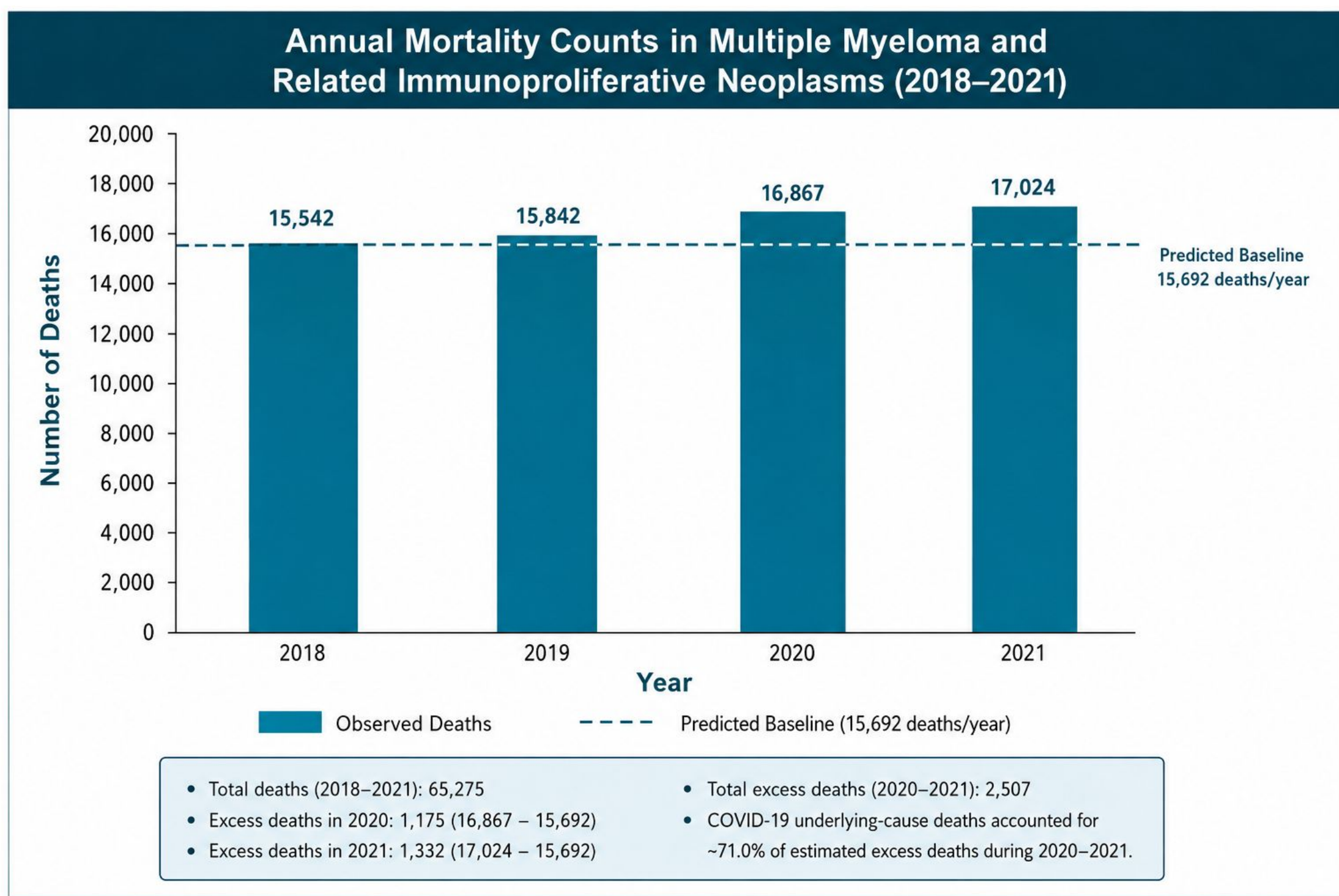


OBJECTIVE

To estimate COVID-era excess mortality among patients with multiple myeloma and related immunoproliferative neoplasms in the United States using a counterfactual pre-pandemic predictive model.

RESULTS

A total of 65,275 deaths involving multiple myeloma and related immunoproliferative neoplasms were reported from 2018–2021. Annual deaths increased from 15,542 in 2018 and 15,842 in 2019 to 16,867 in 2020 and 17,024 in 2021, representing a 7.5% increase from 2019 to 2021. The pre-pandemic predicted baseline was 15,692 deaths/year. Compared with this baseline, observed-to-expected mortality ratios were 1.075 in 2020 and 1.085 in 2021, corresponding to 1,175 excess deaths in 2020 and 1,332 excess deaths in 2021. Overall, 2,507 excess deaths occurred during 2020–2021. COVID-19 was listed as the underlying cause in 4.7% of deaths in 2020 and 5.8% in 2021, corresponding to approximately 793 and 987 deaths, respectively. COVID-19 underlying-cause deaths accounted for approximately 71.0% of estimated excess deaths during 2020–2021.



KEY WORDS

Multiple myeloma, COVID-19, excess mortality, CDC WONDER, predictive modeling

DISEASE CATEGORY

Multiple Myeloma

SETTING

United States national mortality database.

PATIENTS OR OTHER PARTICIPANTS

Decedents with multiple myeloma or related immunoproliferative neoplasms are listed among the causes of death.

MAIN OUTCOME MEASURES

Annual mortality counts, observed-to-expected mortality ratio, excess deaths, and COVID-19 underlying-cause mortality proportion.

CONCLUSIONS

The COVID-19 era was associated with measurable excess mortality among patients with multiple myeloma and related plasma cell/immunoproliferative neoplasms. Counterfactual predictive modeling estimated more than 2,500 excess deaths during 2020–2021, with COVID-19 underlying-cause mortality explaining most of the excess. These findings support continued infection-prevention, vaccination optimization, early antiviral access, and risk-adapted survivorship strategies for patients with plasma cell malignancies.

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