Trends in Septicemia-Related Mortality Among Adults with Multiple Myeloma: A 22-Year Nationwide Analysis (1999–2020)

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Keywords

Multiple Myeloma, Septicemia, Epidemiology, CDC WONDER

Context

Multiple myeloma (MM) is associated with immune dysfunction, predisposing patients to a heightened risk of infections and sepsis. Despite improvements in MM survival, infections remain a leading cause of death in this population. A comprehensive understanding of long-term trends is essential to inform clinical practice and healthcare resource allocation.

Objectives

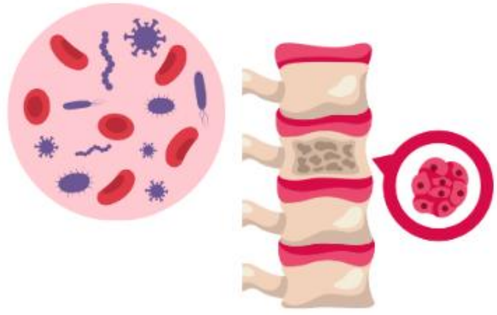
To examine national trends in infection and sepsis among adults aged +25 with multiple myeloma in the U.S. between 1999 and 2020.

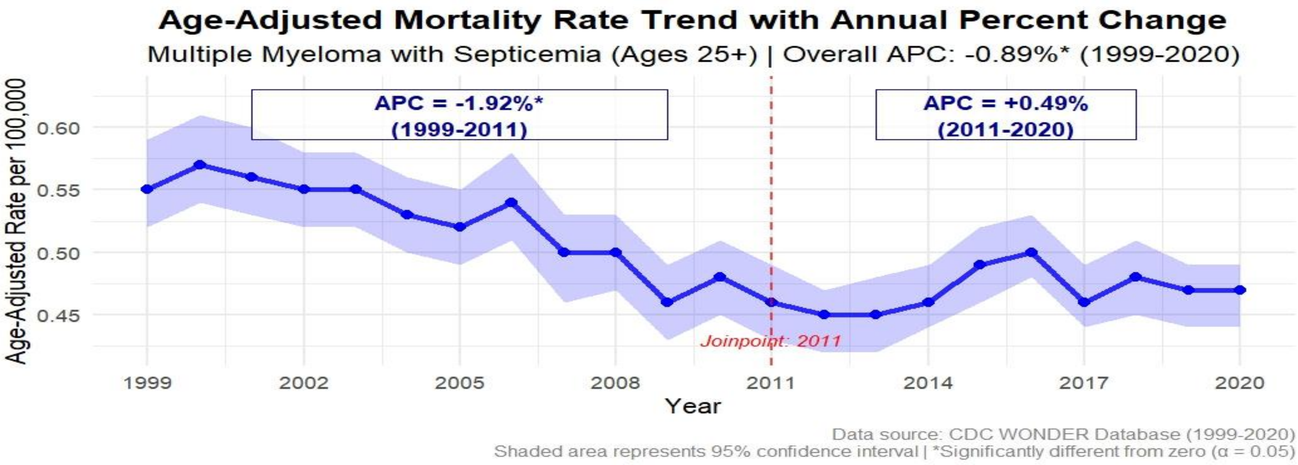
Methods

This retrospective study analyzed death certificate data from the CDC WONDER database (1999-2020), focusing on multiple myeloma (ICD-10: C90) and septicemia (ICD-10: A40–A41) as underlying causes of death in U.S. adults aged +25. Age-adjusted mortality rates were calculated and analyzed using JoinPoint to estimate Annual Percent Change (APC) and Average Annual Percent Change (AAPC). Trends were examined across sex, age groups, race/ethnicity, regions, and metropolitan versus non-metropolitan areas.

Results

From 1999 to 2020, mortality due to multiple myeloma and infection/sepsis among U.S. adults aged 25+ declined significantly with an overall AAPC of -0.89% (95% CI: -1.41 to -0.37). In females, mortality declined steadily with an AAPC of -1.47% (95% CI: -1.88 to -1.06). Males exhibited more variability, with an initial decline (1999–2013: APC= -1.92%, 95% CI: -2.33 to -1.51), a non-significant increase (2013–2016: APC = 4.71%), and a later decline (2016–2020: APC= -2.66%); overall, the trend was not significant (AAPC= -1.14%). By region, significant declines occurred in the Midwest (AAPC= -0.73%) and South (AAPC= -0.87%, P= 0.0265). Racial groups with significant declines included Hispanics (-1.67%), Asians (-2.108%), and Whites (-0.91%). Black individuals saw an overall significant decrease (AAPC= -1.54%, P= 0.00019), despite stabilization post-2012. Ages 45–64 had a strong decline (AAPC= -1.66%, 95% CI: -2.13 to -1.19). Metropolitan areas showed fluctuating patterns but no significant overall change (AAPC= -0.97%).





Conclusion

Despite overall declining mortality trends, disparities persist by sex, age, region, and race/ethnicity, highlighting the need for targeted strategies to reduce infection-related deaths in multiple myeloma patients.

Acknowledgements

No funding has been received for this study.

AAMR: Age-adjusted Mortality Rate, AAPC: Average Annual Percent Change, NH: Non-Hispanic