Population-Level Trends in Sepsis-Related Mortality Among Patients With Multiple Myeloma: Insights From CDC WONDER

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Background & objective

- Multiple myeloma (MM) causes disease- and treatment-related immune dysfunction; sepsis remains a major contributor to morbidity and mortality.
- Population-level mortality patterns by demographic group and region remain incompletely characterized.
- **Objective:** Evaluate US temporal trends in mortality associated with MM and sepsis from 1999–2020.

Methods

- **Study:** Retrospective population-based analysis.
- **Analysis:** Joinpoint regression estimated annual percent change (APC) with 95% confidence intervals.
- **Database:** CDC WONDER Multiple Cause of Death database, 1999–2020.
- **Case definition:** Death certificates listing MM (ICD-10 C90.0) and sepsis (A41.9).
- **Outcome:** Age-adjusted mortality rates (AAMRs) per 100,000, standardized to the 2000 US population.
- **Strata:** Sex, race/ethnicity, and US Census region.

Results

−0.96%
Female APC, 1999–2020
P <0.001

−1.41%
Male APC, 1999–2013
P <0.001

−2.11%
Asian/Pacific Islander APC
P <0.001

+0.56%
West APC, 1999–2020
P =0.029

−1.13%
African American APC
P <0.001

−1.09%
Latino
P =0.003

Figure 1. Joinpoint trends in age-adjusted mortality rates associated with multiple myeloma and sepsis by sex in the United States, 1999–2020.

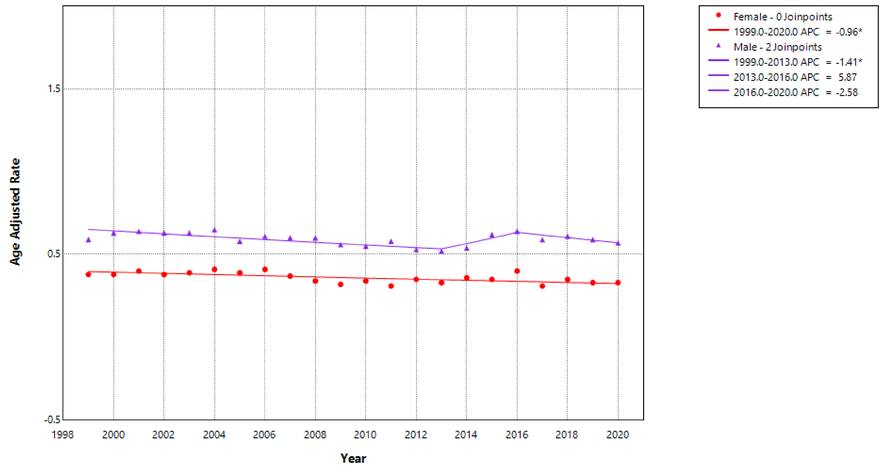
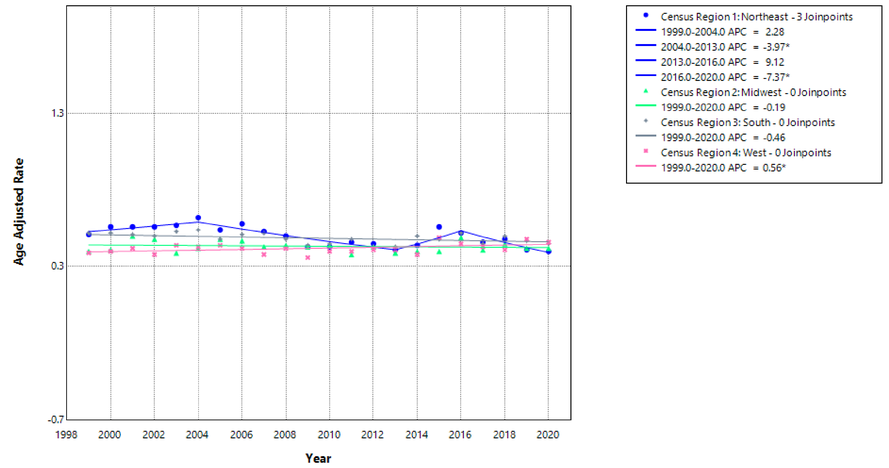


Figure 2. Joinpoint trends in age-adjusted mortality rates associated with multiple myeloma and sepsis by US Census region, 1999–2020.



Group / interval	APC	95% CI	P value
Female, 1999–2020	−0.96%	−1.41 to −0.50	<0.001
Male, 1999–2013	−1.41%	−1.97 to −0.85	<0.001
Asian/Pacific Islander	−2.11%	−2.95 to −1.26	<0.001
African American	−1.13%	−1.54 to −0.72	<0.001
Latino	−1.09%	−1.76 to −0.41	0.003
West, 1999–2020	+0.56%	0.06 to 1.06	0.029

Conclusions

- Mortality associated with multiple myeloma and sepsis generally declined in the United States from 1999 to 2020.
- Significant racial, ethnic, and geographic disparities persisted despite overall improvements.
- The increasing mortality trend in the Western United States warrants further investigation and targeted intervention.

References

- Centers for Disease Control and Prevention, National Center for Health Statistics. *Multiple Cause of Death, 1999–2020*. CDC WONDER Online Database. https://wonder.cdc.gov/mcd.html
- Kim HJ, Fay MP, Feuer EJ, Midthune DN. Permutation tests for Joinpoint regression with applications to cancer rates. *Stat Med*. 2000;19(3):335-351.

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