

TRENDS IN PROSTATE CANCER AND SEPSIS RELATED MORTALITY: A 21 YEAR ANALYSIS FROM CDC WONDER DATABASE

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Introduction

Background: Prostate cancer and sepsis are both significant public health challenges. However, their coexistence as comorbid causes of death remains underexplored in epidemiological literature.

Objective: This study aimed to analyze national mortality trends, demographic disparities, and regional variations in prostate cancer and sepsis-related deaths in the United States from 1999–2023, to identify high-risk populations for targeted interventions.

Methodology

Data Source: Data were extracted from the CDC WONDER database for adults aged ≥25 years.

ICD-10 Codes Used: Prostate cancer (C61), Sepsis (A41.9)

Measures: Age-adjusted mortality rates (AAMRs) per 100,000 population were calculated. Joinpoint regression analysis was performed to estimate Annual Percent Changes (APCs) and Average Annual Percent Change (AAPC) with 95% confidence intervals (CIs). Statistical significance was defined as $p < 0.05$ (*).

Stratification: Mortality trends were analyzed by:

- Year
- Race/Ethnicity
- Geographic region
- Urbanization level

Results

Overall: AAMR declined from 2.02 in 1999 to 1.58 in 2011, then rose to 2.00 in 2023 (AAPC 0.08, 95% CI: -0.30 to 0.46).

Race: Non-Hispanic Whites showed a significant post-2011 increase (APC 2.83*, 95% CI: 2.07–3.60); Non-Hispanic Blacks rose after 2013 (APC 1.25*, 95% CI: 0.09–2.41).

Region: Midwest showed the sharpest rise during 2017–2023 (APC 4.45*, 95% CI: 1.13–7.89).

Urbanization: Metropolitan areas showed a significant increase between 2011–2020 (APC 1.27*, 95% CI: 0.47–2.08).

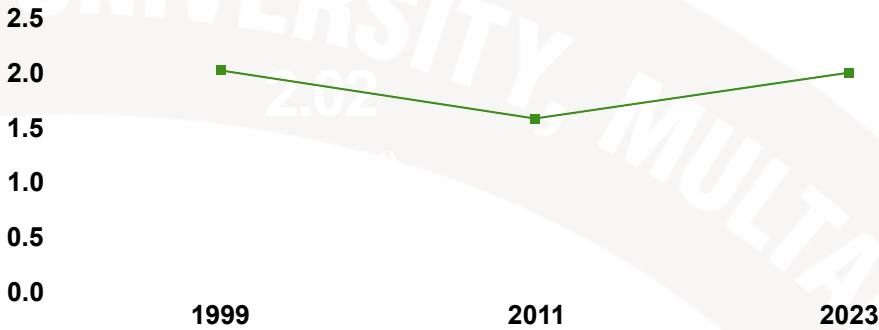


Figure 1. Overall AAMRs per 100,000 for prostate cancer and sepsis in the U.S.

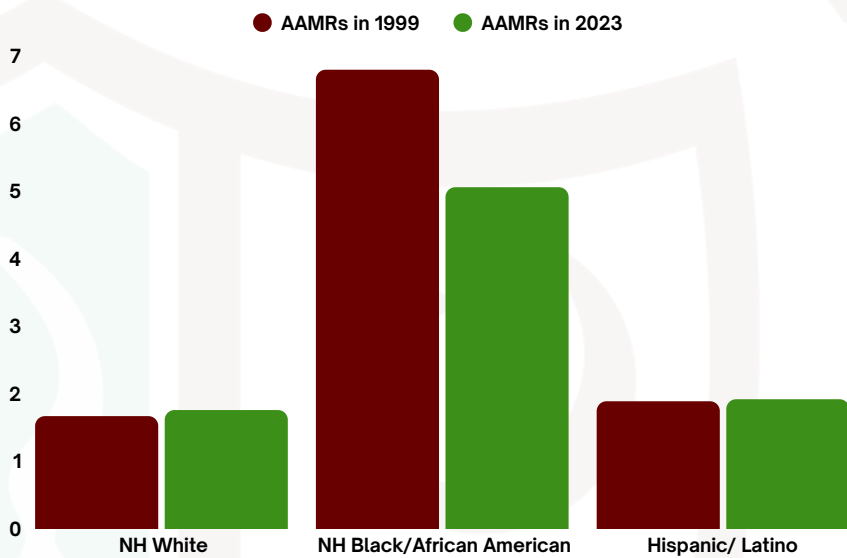


Figure 2. AAMRs per 100,000 for prostate cancer and sepsis by race in the U.S

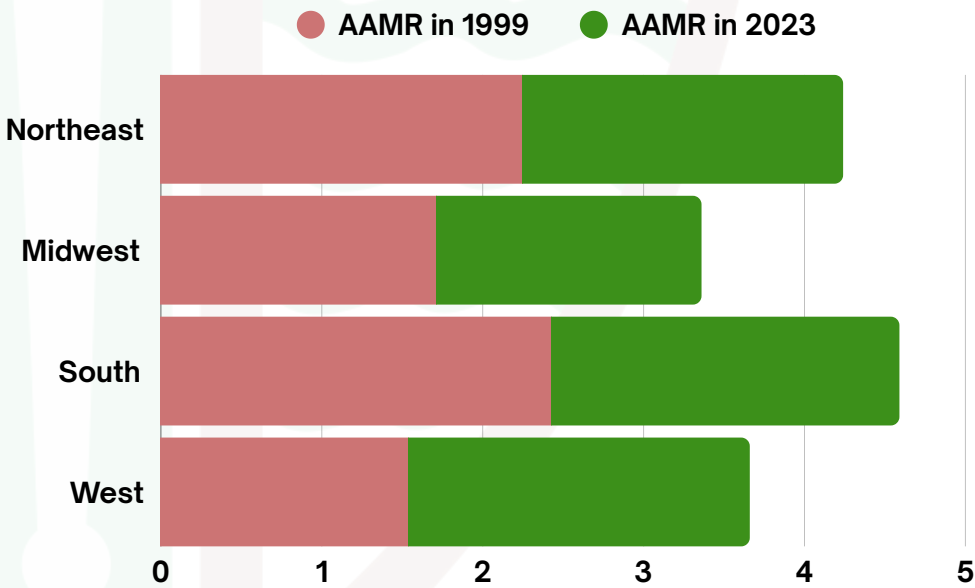


Figure 3. AAMRs per 100,000 for prostate cancer and sepsis by U.S. region

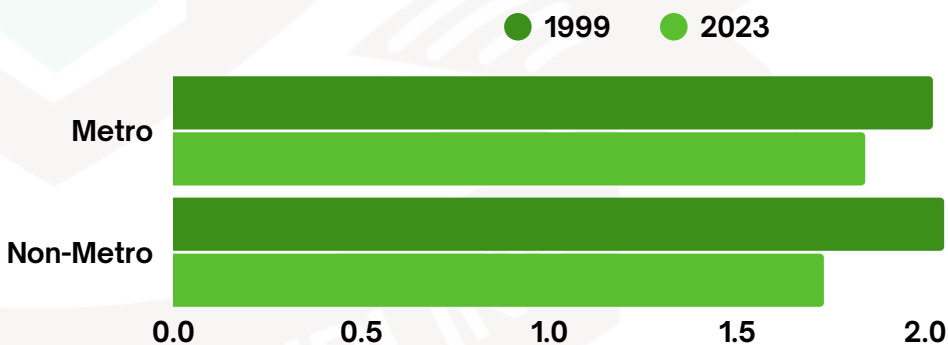


Figure 4. AAMRs per 100 000 for prostate cancer and sepsis by U.S. urbanization level

Conclusion

Mortality due to prostate cancer and sepsis exhibited a biphasic pattern, with a notable resurgence after 2011. The most affected populations included males, non-Hispanic White and Black individuals, residents of the Midwest region, and metropolitan areas. These findings emphasize the need for region-specific strategies, infection management in oncology, and targeted interventions to reduce disparities in mortality outcomes.