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Septicemia as a Concurrent Condition in Multiple Myeloma Mortality: Trends and Racial/Ethnic Disparities in the United States, 2018–2024: A CDC WONDER Database Analysis

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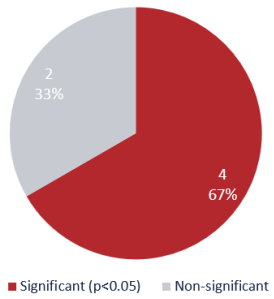
BACKGROUND: Multiple myeloma (MM) causes profound immunosuppression predisposing patients to septicemia. Trends and disparities in septicemia documentation among MM patients remain poorly characterized. This study evaluated temporal trends and disparities in the United States 2018–2024.

METHODS: We used CDC WONDER Multiple Cause of Death database (2018–2024, Single Race). Deaths with C90.0 as underlying cause and septicemia (A40–A41) anywhere on death certificates in adults aged ≥25 years were included. AAMRs per 100,000 were calculated using 2000 US standard population stratified by race (Single Race 6), Hispanic or Latino ethnicity, and sex. Joinpoint regression (NCI Version 6.0.1; WBIC; maximum 1 joinpoint) estimated APC with 95% CIs.

RESULTS: Among 6,613 MM deaths with concurrent septicemia, overall AAMR declined from 0.4 to 0.3 with significant decline 2018–2021 (APC −10.56%; 95% CI −17.91 to −6.63; p<0.001) followed by plateau (APC +0.58%; p=0.793). Black or African American patients had higher AAMRs than White patients (0.9 vs. 0.3 in 2018; 0.7 vs. 0.2 in 2024), a persistent 3.0–3.5-fold disparity with significant decline (APC −3.31%; 95% CI −6.51 to −0.17; p=0.037). Males had higher AAMRs than females (0.5 vs. 0.3 in 2018; 0.4 vs. 0.2 in 2024), significant male decline (APC −4.00%; 95% CI −8.20 to −0.05; p=0.046), females non-significant (APC −5.36%; p=0.268). Hispanic or Latino patients showed non-significant rising trend (APC +3.51%; p=0.243) contrasting significant declines among non-Hispanic or Latino patients (APC −13.49%; 95% CI −19.73 to −6.03; p<0.001) followed by plateau.

Statistical Significance of Trends Across Subgroup Analyses



Of 6 subgroup-level Joinpoint trend analyses (overall 2018–2021 phase, Black or African American, White reference, male, female, Hispanic/Latino, non-Hispanic/Latino), 4 showed statistically significant declines (p<0.05): overall 2018–2021, Black or African American, male, and non-Hispanic or Latino. Female and Hispanic or Latino trends were non-significant.

Table 1. Age-Adjusted Mortality Rates and Trends for Septicemia as a Concurrent Condition in Multiple Myeloma Deaths, by Subgroup (US, 2018–2024)

Subgroup	AAMR 2018	AAMR 2024	APC (%)	95% CI	p-value
Overall (2018–2021)	0.4	–	−10.56	−17.91 to −6.63	<0.001*
Overall (2021–2024)	–	0.3	+0.58	–	0.793
Black or African American	0.9	0.7	−3.31	−6.51 to −0.17	0.037*
White	0.3	0.2	–	–	–
Male	0.5	0.4	−4.00	−8.20 to −0.05	0.046*
Female	0.3	0.2	−5.36	–	0.268
Hispanic or Latino	–	–	+3.51	–	0.243
Non-Hispanic or Latino	–	–	−13.49	−19.73 to −6.03	<0.001*

*AAMR = age-adjusted mortality rate per 100,000 (2000 US standard population). APC = annual percent change (Joinpoint regression, max 1 joinpoint). * p < 0.05. Source: CDC WONDER Multiple Cause of Death, 2018–2024.*

CONCLUSION: Septicemia documentation declined 2018–2021 before plateauing, reflecting improvements in infection prophylaxis, though pandemic disruptions may have influenced trends. Black or African American patients continue experiencing 3.0–3.5-fold higher rates than White patients. Rising trend among Hispanic or Latino contrasting declines among non-Hispanic or Latino patients warrants investigation. Equitable antimicrobial prophylaxis and infection management are urgently needed across all racial and ethnic groups in MM care.

Table 2. Study Characteristics

Characteristic	Detail
Data source	CDC WONDER, Multiple Cause of Death
Study period	2018–2024
Underlying cause	Multiple myeloma (ICD-10 C90.0)
Concurrent condition	Septicemia (ICD-10 A40–A41), any position
Population	Adults ≥25 years, United States
Rate standardization	2000 US standard population
Stratification	Race (Single Race 6), Hispanic/Latino ethnicity, sex
Trend analysis	Joinpoint regression v6.0.1, WBIC, max 1 joinpoint
Total deaths (N)	6,613

FUTURE DIRECTIONS: Future studies should validate these trends using patient-level longitudinal cohorts to better characterize septicemia incidence and outcomes in patients with multiple myeloma. Studies should evaluate the impact of contemporary myeloma therapies and treatment-related immunosuppression on septicemia risk and mortality.