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Trends in Vascular Disorders of Intestine Mortality in the United States (1999–2024): Disparities by Sex, Race/Ethnicity, Region, and Urbanization

Background: Vascular disorders of the intestine remain important contributors to gastrointestinal mortality in the United States. Although advances in diagnostic imaging and endovascular therapy have improved outcomes, national trends in age-adjusted mortality rates (AAMR) and disparities across demographic and geographic groups have not been fully characterized.

Methods: We obtained mortality data for vascular intestinal disorders from the CDC WONDER database for 1999–2024 using the ICD-10 code (K55). Annual mortality rates were age-adjusted to the 2000 U.S. standard population and expressed per 100,000 persons. Analyses were stratified by sex (male, female), race/ethnicity (Non-Hispanic Black or African American, Non-Hispanic White, Hispanic), U.S. Census region (Northeast, Midwest, South, West), and urbanization status (rural vs. urban). Joinpoint regression identified periods with distinct trends and estimated annual percent changes (APC); the average annual percent change (AAPC) summarized the overall trend.

Results: From 1999 to 2024, 214,372 deaths from vascular intestinal disorders were recorded. The overall AAMR declined from 3.27 (95% CI: 3.20–3.34) in 1999 to 1.82 (1.78–1.86) in 2024 (AAPC: –2.33%). Among females, rates fell from 3.53 to 1.97 (AAPC: –2.35%), and among males from 2.84 to 1.63 (AAPC: –2.21%). By race/ethnicity, Black or African American individuals decreased from 3.95 to 2.35 (AAPC: –2.16%), Hispanics from 2.60 to 1.58 (AAPC: –2.49%), and Whites from 3.25 to 1.88 (AAPC: –2.17%). Regionally, the Northeast declined from 3.05 to 1.79 (AAPC: –2.50%), West from 3.19 to 1.69 (AAPC: –2.47%), South from 3.40 to 1.88 (AAPC: –2.34%), and Midwest from 3.37 to 1.97 (AAPC: –2.11%). Urban areas fell from 3.26 to 1.70 (AAPC: –3.16%) and rural from 3.39 to 2.43 (AAPC: –1.58%).

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Conclusions: Mortality from vascular intestinal disorders declined substantially from 1999 to 2024 across all demographic and geographic subgroups, with the fastest declines in urban populations and the Northeast. Persistent disparities by race/ethnicity and setting underscore the need for targeted prevention, timely diagnosis, and equitable access to advanced vascular interventions.

Keywords: Vascular intestinal disorders, mortality trends, disparities, CDC WONDER, AAMR

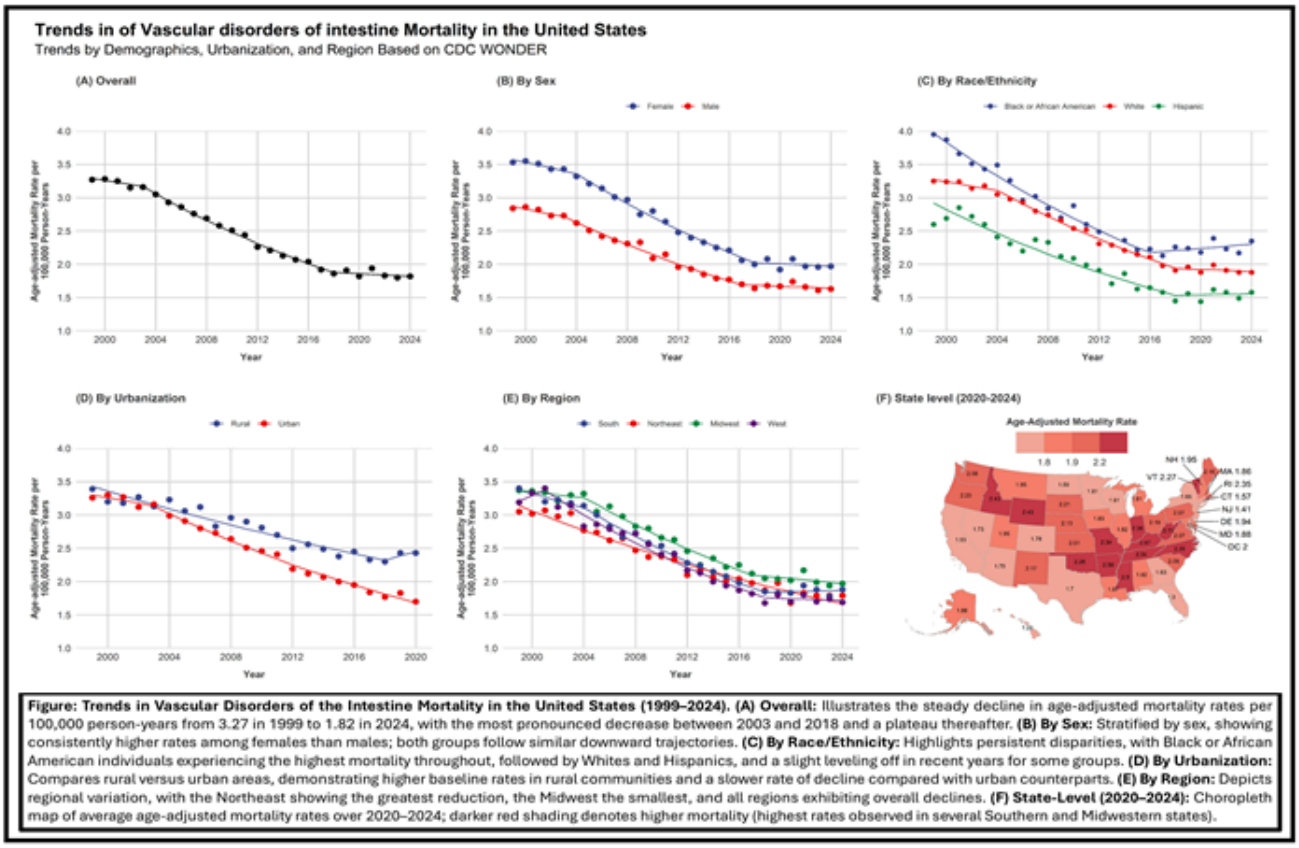

Figure: Trends in Vascular Disorders of the Intestine Mortality in the United States (1999–2024). (A) Overall: Illustrates the steady decline in age-adjusted mortality rates per 100,000 person-years from 3.27 in 1999 to 1.82 in 2024, with the most pronounced decrease between 2003 and 2018 and a plateau thereafter. **(B) By Sex:** Stratified by sex, showing consistently higher rates among females than males; both groups follow similar downward trajectories. **(C) By Race/Ethnicity:** Highlights persistent disparities, with Black or African American individuals experiencing the highest mortality throughout, followed by Whites and Hispanics, and a slight leveling off in recent years for some groups. **(D) By Urbanization:** Compares rural versus urban areas, demonstrating higher baseline rates in rural communities and a slower rate of decline compared with urban counterparts. **(E) By Region:** Depicts regional variation, with the Northeast showing the greatest reduction, the Midwest the smallest, and all regions exhibiting overall declines. **(F) State-Level (2020–2024):** Choropleth map of average age-adjusted mortality rates over 2020–2024; darker red shading denotes higher mortality (highest rates observed in several Southern and Midwestern states).