Trends in Mortality Rates due to Complications of Medical and Surgical Care in the United States (1999-2020)

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Background: Complications of care in healthcare, encompassing surgical errors, healthcare-associated infections, medication-related issues, and other iatrogenic injuries, pose a significant threat to patient well-being and increase mortality rates. Objectives: This study aims to analyze trends related to complications of care from 1999-2020, supporting healthcare providers, policymakers, and researchers in their efforts to optimize patient safety and healthcare delivery.

Methods: CDC WONDER public database was accessed to retrieve age-adjusted mortality data (AAMR) from 1999 to 2020 using ICD-10 Codes: Y40-Y84 classified as “Complications of medical and surgical care”. Annual percentage changes (APC) were examined using the Joinpoint Regression Program. Subgroups were categorized by sex, race, and ethnicity.

Results: Sex: Women and men experienced a decline in AAMR from 1999 to 2015, followed by an increase until 2020 (women APC, 13.7% [95% CI, 9.9% to 17.6%]; p<0.01; men APC, 16.6% [95% CI, 13.1% to 20.2%]; p<0.01). Race: Black/African American showed the highest mortality rates throughout the study; all races showed a decrease in AAMR from 1999 to 2015 and an increase until 2020. Ethnicity: Hispanic/Latinx experienced a downtrend in AAMR from 1999 to 2015 followed by a significant uptrend from 2015 to 2020 (APC, 21.5% [95% CI, 15.4% to 28%]; p<0.01).

Conclusion: All subgroups observed a similar trend with an AAMR decline from 1999 to 2015 due to advancements in minimally invasive surgeries, anesthesia and antimicrobial protocols. Black/African American consistently had the highest mortality due to greater baseline disease burdens, socioeconomic challenges in access, and systemic healthcare disparities. The rise after 2015 reflects a rise in the aging

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population with higher surgical risks, a shift to value-based care with increased transparency and documentation, and specifically for 2020: the strain of COVID-19 on healthcare delivery. These results emphasize the need for targeted interventions to address the AAMR inequities.

Keywords: Complications of Care, Patient Safety

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