

Trends and Disparities in Outcomes of Hospitalizations With *Clostridium difficile* infection: A Decade-Long Analysis of the Nationwide Inpatient Sample

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Introduction

- *Clostridioides difficile* infection (CDI) is the most frequently reported nosocomial infection.
- There is a paucity of research on the impact of sociodemographic indices on CDI hospitalization outcomes.
- This study aimed to describe epidemiologic trends, sex, race, and economic disparities in outcomes among CDI hospitalizations over a decade.

Methods and Materials

- We queried Nationwide Inpatient Sample (NIS) databases from 2010 to 2019, identified hospitalizations with CDI, and excluded those of patients less than 18 years.
- We obtained the incidence and admission rate of CDI per 100,000 adult hospitalizations for each year.
- We analyzed trends in mortality rate, mean length of hospital stay (LOS), and mean total hospital charge (THC).

Methods and Materials – cont'd

- We highlighted disparities in outcomes stratified by sex, race, and mean household income (MHOI) quartile.
- We used multivariable regression analysis to obtain trends in incidence and admission rates, mortality, LOS, and THC adjusted for age categories, sex, and race.
- We used Joinpoint regression analysis to obtain trends in adjusted rates. The threshold for statistical significance was set at 0.05.

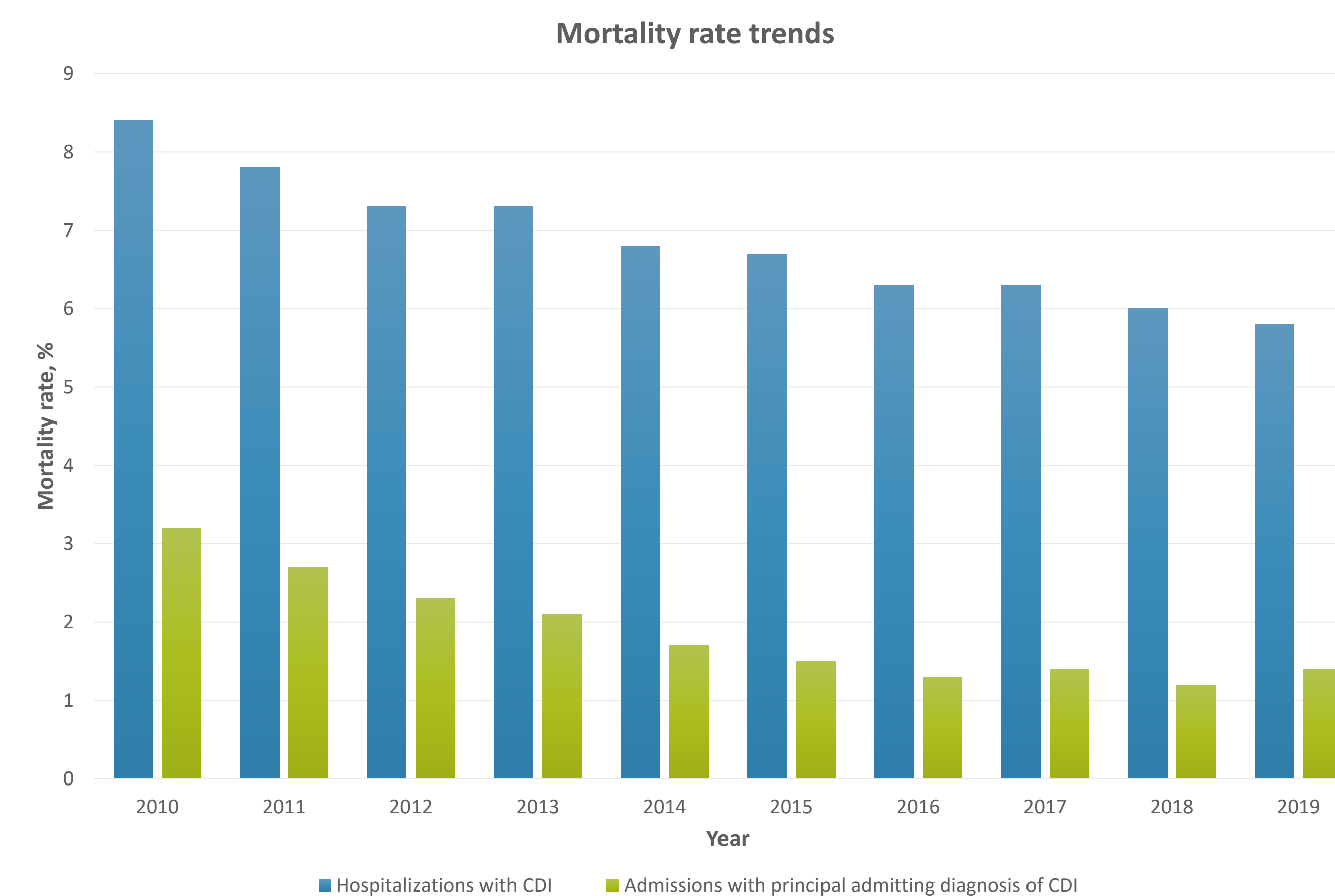


Figure 1: Trends in mortality rates among hospitalizations with CDI and admissions with principal admitting diagnosis of CDI

Results

- Of the 305 million hospitalizations included in our study, over 3.3 million were complicated by CDI, with 1.01 million principal admissions for CDI.
- There was an average annual percentage change (AAPC) of -2% reduction in adjusted CDI incidence and AAPC for CDI admissions was -3.2%.
- Joinpoint regression analysis showed an increased adjusted CDI admission rate from 2010 to 2012 (annual percentage change [APC] = 4.15%), with a subsequent decrease from 2012 to 2016 (APC = -2.17%), and 2016 to 2019 (APC = -9.87%).
- Among primary admissions for CDI, mortality rate decreased from 3.2% in 2010 to 1.4% in 2019. The AAPC for adjusted mortality rate was -10.2%.
- Mean LOS reduced from 6.6 to 5.3 days while mean THC increased from US\$40,593 to US\$42,934 between 2010 and 2019.

Results – cont'd

- Females had a 21% decrease in adjusted odds of mortality compared to males (all p-trends <0.001).
- Mortality rates showed a steady decline among Whites over the study period. Mean LOS trends were similar across racial subgroups.
- Mortality rates, mean LOS and mean THC followed similar trends in hospitalizations among low and high MHOI quartiles.

Conclusions

- Outcomes of CDI hospitalizations improved over the studied decade but were consistently better in females than males, with better improvements among Whites than Blacks or Hispanics.
- Further studies are needed to elucidate the reasons for these findings.