

Black children diagnosed with severe sepsis more likely to die than White or Hispanic children, hospital data suggests

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Black children hospitalised in the U.S. due to severe sepsis have 20% greater odds of death than White or Hispanic children, according to research published in *The Lancet Child & Adolescent Health* journal.

The analysis of childhood [sepsis](#) outcomes based on race/ethnicity and [socioeconomic position](#) also found that while no difference in mortality was observed between publicly and privately insured children, 'other' insurance (self-pay, no charge, and other) was associated with increased mortality. Black and Hispanic children also had longer hospital stays than White children (averages of 10 days compared with eight).

The new study is one of the first to identify disparities in outcomes for [severe sepsis](#)—a life-threatening reaction caused by the immune system overreacting to an infection—in children outside the neonatal period based on race/ethnicity and insurance status. The authors say it is another clear example of the large health inequalities that exist the U.S..

Hannah Mitchell, BMBS, of Children's Hospital of Philadelphia (CHOP), U.S., who led the study, said: "Some of the disparities in outcomes from sepsis that we've identified related to race/ethnicity and socioeconomic position are alarming, but this analysis is an important step towards working out why they exist and what measures can be taken to address them. Importantly, no differences in survival were seen between publicly and privately insured children."

"There is growing evidence that structural racism may be an important factor in the social and economic conditions that ultimately lead to health inequalities in children," said Nadir Yehya, MD, attending physician in the Pediatric Sepsis Program and the Division of Critical Care Medicine at CHOP and senior author. "Our findings demonstrate a need to examine the different ways in which these biases may contribute at structural, interpersonal or individualised levels to sepsis outcomes in children."

Previous studies have found that Black adults and uninsured patients have higher mortality rates for sepsis. Higher rates of the condition are also seen in adults who live in high poverty areas. Until now, very limited data existed on racial/ethnic and socioeconomic disparities in outcomes of sepsis during childhood and adolescence.

9,816 children with severe sepsis were included in the analysis using data from the 2016 Kids' Inpatient Database (KID), which records 80% of paediatric discharges across 47 states. The primary outcome was death prior to discharge, and the secondary outcome was length of hospital stay. The most common race/ethnicity was White (4,668/9,816, 47.6%), followed by Hispanic (2,504/9,816, 25.5%), and then Black (1,658/9,816, 16.9%).

Overall mortality was 14.6%. However, Black children had significantly higher mortality than their White or Hispanic peers (18.4% compared with 13.4% and 13.7%, respectively). After accounting for a number of individual and hospital variables, Black children had an almost 20% greater odds of dying than White children (1.19 odds of death).

Black children's overall higher odds were driven by higher mortality rates in the West and South of the U.S.. The highest odds were observed in the West, with nearly 60% higher odds of death for Black children compared with White children (1.58 odds of death). Odds of death in

Black children were also 30% higher than White children in the South (1.30 odds of death).

Most patients (5,385/9,816, 54.9%) were publicly insured. More White children were privately insured than Black or Hispanic children (51.8% compared with 22.9% and 20.4%, respectively), and fewer White children lived in zip codes associated with the lowest incomes compared with Black and Hispanic children (24.1% compared with 52.9% and 41.5%, respectively). 'Other' insurance was associated with a 30% greater risk of death compared to public insurance (1.30 odds of [death](#)).

Black and Hispanic children had hospital stays that were on average two days longer compared with White children (10 compared with eight).

The authors say a range of factors may contribute to poorer outcomes for severe sepsis in minority patients and those of lower socioeconomic position. These may include differences in sepsis recognition leading to greater severity at presentation, approaches to treatment and access to healthcare services, and healthcare provider bias. Further studies are needed to investigate why these disparities exist and how they can be addressed.

The increased mortality observed for 'other' insurance suggests patients without insurance were included in this category; however, definitive data on which patients were uninsured was not available. The KID database records race/ethnicity as a single variable, so it was not possible to study separate effects of Hispanic ethnicity from race, such as for children of Dominican, Cuban, Mexican or Puerto Rican descent. It was also not possible to determine which patients were re-admissions and how many individual children were included in the study because the KID database does not capture identifiable information. Re-admissions could contribute to differences in outcomes if there was an association with race/ethnicity or socioeconomic position.

Writing in a linked Comment, Katherine Peeler, M.D. (who was not involved in the study), from Harvard Medical School, US, said: "The results bear witness to a reality that Black [children](#) (and their parents) in the U.S. already know: when other factors are accounted for, they are still more likely than their White counterparts to die, in this case from sepsis. [...] Mitchell and colleagues' paper provides evidence for the racial and financial disparities many clinicians already suspected. The study thus sets the stage for further research into the core question that arises as a result of its findings: why? It is imperative that further research begin to understand why such disparities exist to inform efforts to mitigate them."

More information: Hospital outcomes for children with severe sepsis in the USA by race or ethnicity and insurance status: a population-based, retrospective cohort study, [DOI: 10.1016/S2352-4642\(20\)30341-2](#) , [www.thelancet.com/journals/lan ... \(20\)30341-2/fulltext](#)

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