

Black Kids From Poorer Neighborhoods Hit Hardest by DKA Readmissions

— But even those in areas with better resources faced disparities versus other children

by [Michal Ruprecht](#), Editorial Intern, MedPage Today
May 5, 2022



Black children with type 1 diabetes (T1D) were at greater risk for recurring diabetic ketoacidosis (DKA) than their peers, regardless of whether they lived in better or worse neighborhoods, according to a cross-sectional study.

For children with DKA falling into the "very low" Child Opportunity Index (COI) 2.0 category -- a measure of neighborhood resources and other health-influencing conditions -- a significantly higher risk for readmission within 1 year was seen among Black children compared with their white and Hispanic counterparts (24.9% vs

17.4% and 17.1%, respectively), reported Kelly R. Bergmann, DO, MS, of Children's Minnesota in Minneapolis, and colleagues.

And as described in *JAMA Network Open*, these racial disparities continued to persist even when examining DKA readmission rates at 1 year among kids living in neighborhoods with the greatest access to resources: 21.2% for Black children versus 13.0% and 15.9% for white and Hispanic kids, respectively.

Nonetheless, children from every racial group in the very low COI category had a significantly higher chance of being readmitted within a year compared to kids in very high COI communities (19.2% vs 13.8%). This suggests that regardless of race, young T1D patients in low COI neighborhoods may not have access to resources post-discharge.

"Our study revealed significant disparities in DKA health outcomes associated with neighborhood opportunity," Bergmann's group wrote. "Readmissions were higher in patients with low COI categories, adding strain to already disadvantaged populations."

"The results of our study may be useful both for clinicians and health care systems as they seek ways to reduce health disparities and advocate for patients and families as well as for policy makers and community leaders who seek to enact change on a population level," they added.

While diabetes-related acute kidney injury (AKI) was not linked with different COI scores, the group found that it was associated with race and ethnicity. A total of 6.8% of Black children had AKI compared with 4.8% and 4.2% of white and Hispanic children, respectively.

"Our finding that race and ethnicity constituted a significant factor associated with AKI across all levels of COI is novel, and future research should focus on racial and ethnic disparities in AKI among children with DKA," Bergmann's group noted.

The researchers also measured occurrence of cerebral edema, but this outcome didn't differ between COI scores or race.

Bergmann's group used clinical data from the Pediatric Health Information System, which included 46,496 patients under the age of 21 from 49 hospitals. The median age was 13 years and 53.5% were girls. The majority of individuals were white, 23.2% were Black, and 13.7% were Hispanic.

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A total of 72,726 DKA encounters were included in the analysis based on ICD codes.

Developed in 2020, COI is a novel measure of neighborhood conditions and resources in the U.S., where low values indicate worse communities. The score is an aggregate of 29 determinants of health across three categories -- education, health and environmental, and socioeconomic opportunities -- that may impact a child's health and development, including access to healthy food, proximity to parks, and high school graduation rates. COI


is particularly relevant for this study population, as children living with T1D must calculate insulin dosing, manage diabetes technology like insulin pumps, and make healthy dietary choices. Previous studies have also linked COI with other pediatric health outcomes, including [appendicitis](#).

The authors noted that hospital admissions are "commonly used as a quality indicator, in part because they may be avoidable with appropriate care during the index hospitalization and sufficient ambulatory care after discharge." However, they pointed out that while the use of readmissions as an indicator of quality is "controversial," the researchers said that the burden to both families and the healthcare system is "undeniable."

"It has been estimated that 30-day pediatric readmissions account for \$678 million dollars of all annual health care costs," they wrote. "For children with T1D, the median charge for a DKA readmission is greater than \$12,000, and pediatric intensive care unit charges are even higher."

Some limitations of the study included an inability to account for comorbid mental health conditions or use of diabetes technology, which may influence DKA readmissions.



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Disclosures

Bergmann reported no disclosures. One co-author disclosed relationships with Ascendis Pharma, Novo Nordisk, Soleno Therapeutics, Lumos Pharma, Saniona AB, Rhythm Pharmaceuticals, Endo Pharmaceuticals, and Pfizer.

Primary Source

JAMA Network Open

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