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The Impact of Air Pollution and Neighborhood-Level Risk Factors on Pediatric Perioperative Respiratory Adverse Events

Abstract

Perioperative respiratory adverse events (PRAE) are common in children receiving anesthesia. Despite evidence that demonstrates the adverse respiratory health effects of exposure to poor air quality on children, the perioperative patient safety implications of air quality exposure have not been studied in pediatric anesthesiology. We will conduct a single-center prospective observational study to examine the spatiotemporal effects of outdoor and indoor air pollution exposure associated with pediatric PRAE. Using outdoor air quality measures near the patient's residential address, and pre-operative indoor air quality measurements, we hypothesize that children living in neighborhoods and homes of poor air quality are more likely to have PRAE. Understanding the neighborhood, environment and location risk factors for children receiving anesthesia will allow us to have a deeper understanding of the social determinant of health factors that can contribute to disparities in health outcomes and perioperative patient safety.