

# Pediatric asthma study demonstrates use of health information exchange data to signal childhood disease

January 12 2022

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Childhood asthma is a common cause of emergency department visits, hospital admissions and deaths, especially among boys. A new study

from Regenstrief Institute and Indiana University School of Medicine researchers has determined that data from a large regional health information exchange (HIE) can effectively measure epidemiological trends for pediatric asthma and could enable public health researchers and officials to follow and respond to disease trends in near real time.

While the number of hospital admissions in Indiana by children with asthma decreased over the 10 years of the study, 2010–2019, the researchers found that [pediatric asthma](#) death rates increased during the time period. White children with asthma had a significantly higher hospital admission rate compared to other racial groups, but there was no difference in mortality rate among white, Black and Asian children with asthma.

"We wanted to see if the data collected by our health information exchange, could provide a timely and complete picture of pediatric asthma trends in an entire state [Indiana]," said study first author Colin Rogerson, M.D., a Regenstrief Institute research scientist and IU School of Medicine assistant professor of pediatrics. "We found that analyzing health information exchange data clearly revealed hospitalization and death trends associated with pediatric asthma without the often multi-year delay and other confounding issues, such as the increasingly common avoidance of answering of phone calls from unknown numbers, associated with gathering information the traditional way via telephone surveys.

"This new method of using [clinical data](#) from a health information exchange to monitor disease trends, including outcomes, can enable more rapid response from public health and the clinicians to whom they provide guidance," said Dr. Rogerson. "For example, in 2019, increased lung injuries related to vaping were seen in children and teens with asthma. Applying near real-time surveillance utilizing health information exchange data could potentially help public health identify populations

of concern and target outreach efforts. The methodology also could highlight emergence of a potential new illness."

Although asthma has been recognized since at least the time of the ancient Greeks, approximately 2,500 years ago, this study is among the first to employ health information exchange data to examine disease trends in children and adolescents. Dr. Rogerson, who is a pediatric intensive care physician and informatician, notes that the methodology of this new study, which relies on data provided by clinicians rather than patients or parents with varying levels of health literacy, could be used for many conditions other than asthma including pediatric epilepsy and trauma.

The retrospective study reviewed electronic health record data from the Indiana Network for Patient Care (INPC), a regional health information exchange. INPC, developed by Regenstrief Institute and managed by the Indiana Health Information Exchange, is the nation's largest inter-organizational clinical data repository and houses more than 14 billion pieces of patient data from 95 percent of the state. The researchers analyzed hospital visits, [hospital admissions](#) and deaths for 50,393 asthma patients ages 2 to 18 years.

The methodology described in the study enables review of data from all patients with pediatric asthma or a specific subset—16 year olds, for example. Data also can be segmented by other factors such as geographic location or co-morbidities, which can be compared, contrasted and reviewed for disease trends. This information is of potential interest to parents, healthcare systems as well as public health departments.

"Ten year trends in hospital encounters for pediatric [asthma](#): an Indiana experience" is published in the *Journal of Asthma*.

Now that the use of [health information](#) exchange data to signal disease

trends has been demonstrated, Dr. Rogerson and colleagues are exploring whether [health information exchange](#) data can also be used to track treatment trends.

**More information:** Colin Rogerson et al, Ten year trends in hospital encounters for pediatric asthma: an Indiana experience, *Journal of Asthma* (2021). [DOI: 10.1080/02770903.2021.2010750](https://doi.org/10.1080/02770903.2021.2010750)

Provided by Regenstrief Institute

Citation: Pediatric asthma study demonstrates use of health information exchange data to signal childhood disease (2022, January 12) retrieved 4 June 2024 from <https://medicalxpress.com/news/2022-01-pediatric-asthma-health-exchange-childhood.html>

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