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# Persisting Racial Disparities Among Chicago Children with Asthma

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## Persisting Racial Disparities Among Chicago Children with Asthma

### Background

One of the more vexing public health issues facing Chicago is the existence of significant racial/ethnic disparities in asthma. Chicago has been identified as an epicenter for asthma, with higher prevalence in minority communities on the city’s west and south sides. The 2016 Healthy Chicago Survey estimated that 216,000 adults in Chicago have asthma, with the rate among African Americans nearly 75% higher than among Whites and almost 85% greater than the rate among Hispanic adults.<sup>i</sup> The most recently available data on youth suggests that 22.3% of Chicago high school students have been diagnosed with asthma, including 15% of White students and 27% of African American students.<sup>ii</sup>

In the absence of a comprehensive source of surveillance data for childhood asthma in Chicago, less traditional public health sources have been used to better understand the scope of the problem. For this report, we examined hospital discharge data, specifically asthma-related emergency department (ED) visits. Asthma is one of the leading causes of ED visits for children ages 0-17.

To better understand the impact of asthma in Chicago, we looked at three types of indicators: (1) the number of pediatric asthma ED visits, over time, which we stratified by age group and race/ethnicity; (2) the rates of these visits per 10,000 population, also demographically stratified, and; (3) racial and ethnic disparities in these rates over time. The data revealed that between 2009 and 2015 the number of annual asthma-related ED visits among Chicago children declined, however, the racial and ethnic disparities in rates of visits showed only modest decreases.

Despite decreases in ED visits, from 2009-2015 the gap between the rates of asthma-related ED visits among African American and White children remained largely unchanged.

### Decline in the Number of Pediatric Asthma-related ED Visits

Between 2009 and 2015, there were 63,543 asthma-related ED visits among Chicago resident children (17 years of age and younger).<sup>iii</sup> During that seven-year period, the number of annual asthma-related ED visits declined by 8.8% from 9,702 to 8,848 (Figure 1). Children ages 5-17 years old had lower *rates* (per 10,000 children) but a greater *number* of ED visits than younger children in each year (Figure 2). Indeed, while the number of such visits declined among children 0-4 years of age by just over 19% between 2009 and 2015, asthma-related ED visits among older children decreased by less than 2%.

Figure 1: Asthma-related ED Visits, Children 0-17 Years, Chicago 2009-2015

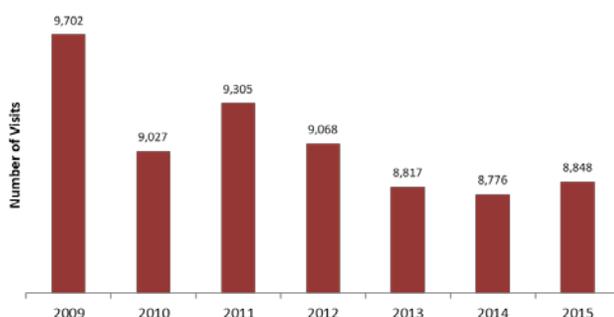
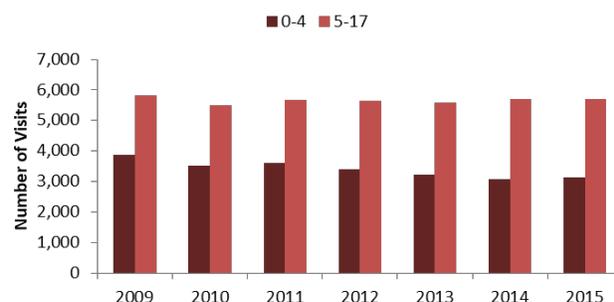


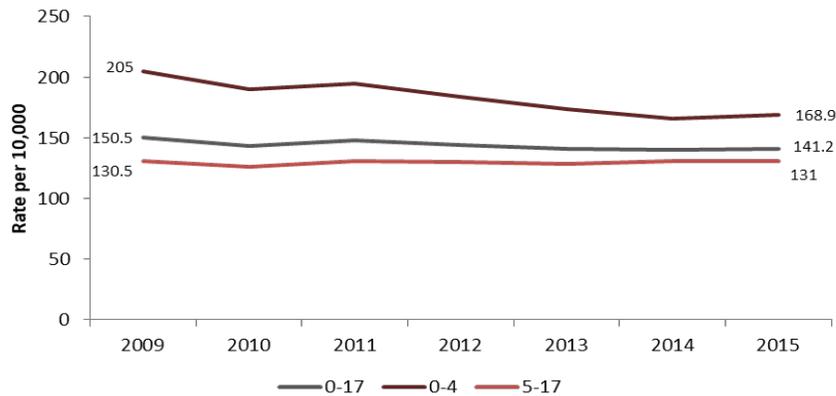
Figure 2: Pediatric Asthma-related ED Visits by Age, Chicago 2009-2015



## Declines in Rates of Asthma-related ED Visits Seen Only in Youngest Children

The age-adjusted citywide rate for asthma-related ED visits among children declined by 6.2% from 150.5 per 10,000 population in 2009 to 141.2 in 2015 (Figure 3). Rates of visits decreased at a significantly greater rate – 17.6 – among children ages 0-4, falling from 205 to 168.9 during this same period. Among children ages 5 to 17 years old, there was no decrease from 2009 to 2015.

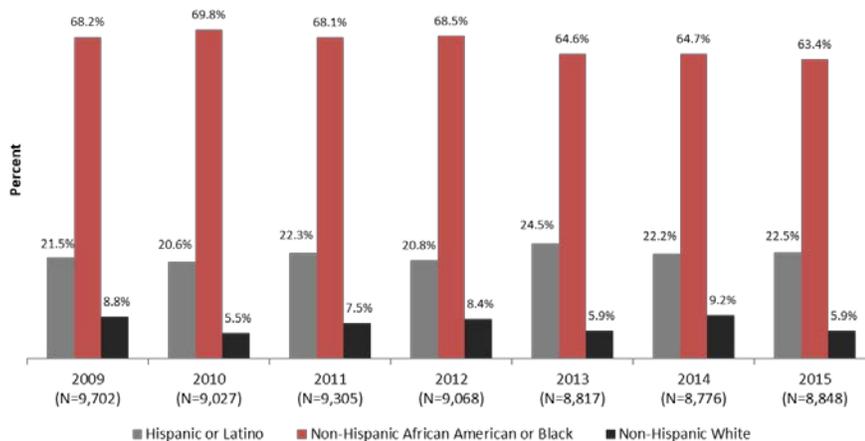
**Figure 3: Rates of Pediatric Asthma-related ED Visits by Age, Chicago 2009-2015**



## Racial Disparities in ED Visits and Rates

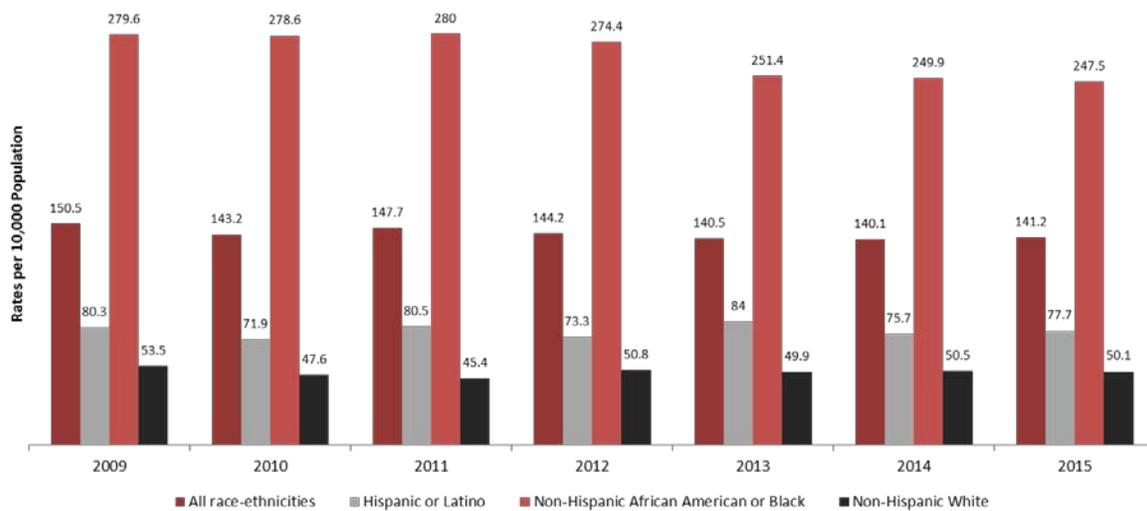
**Number of Visits:** The majority of asthma-related ED visits in each year were among African American children whose 6,619 visits in 2009 accounted for 68.2% of all visits that year (Figure 4). By 2015, the number of visits among African Americans had declined by just over 15% to 5,614, or 63.4% of all visits that year. During this same period, visits by Hispanic/Latino and White children decreased by 99 (4.7%) and 60 (10.2%) respectively.

**Figure 4: Percent Asthma-related ED Visits by Race/Ethnicity, Children 0-17 Years Chicago 2009-2015**



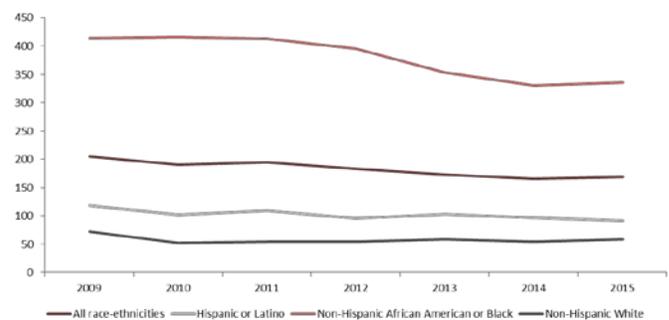
*Rates Among Children Ages 0-17 Years:* In 2009, the rate of ED visits among African American children (279.6) per 10,000 was 86% greater than the citywide rate of 150.5. By 2015, the rate of visits among African American children had declined by 11.5% to 247.5, but still remained 75% greater than the citywide rate that year. The rates of asthma-related ED visits among Hispanic/Latino and White children were well below citywide rates in each year from 2009 to 2015 (Figure 5).

**Figure 5: Age-Adjusted Rates of Asthma-related ED Visits by Race/Ethnicity, Chicago Children 0-17 Years, 2009-2015**



*Rates Among Children Ages 0-4 Years:* Between 2009 and 2015, the overall rate of asthma-related ED visits among children 0-4 years of age declined by 17.6%. By race/ethnicity, the greatest decrease occurred among young Hispanic/Latino children (22.4%), with rates among African Americans and Whites each declining by just under 19% (Figure 6). The African American rate of visits among 0-4 year olds was 335.2 in 2015, more than triple the rate among Hispanic/Latinos (91.8) and nearly six times the rate among White children (58.1).

**Figure 6: Asthma-related ED Visits by Race/Ethnicity, Chicago Children 0-4, 2009-2015**

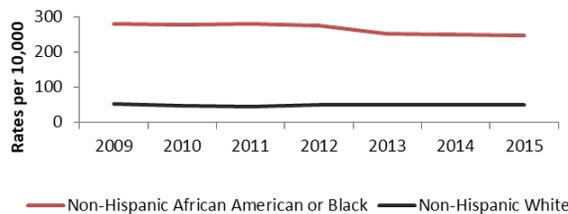


### **Despite Decline in Visits, Racial Disparities Show Only Modest Decrease**

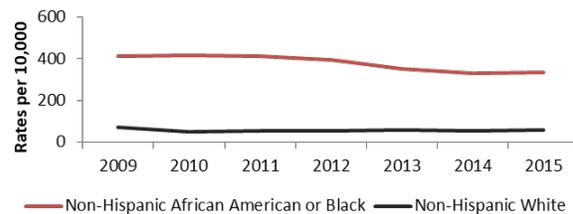
Despite a decrease of more than 1,000 asthma-related ED visits among African American children between 2009 and 2015, the racial disparities in rates of visits did not change in a significant

manner. In 2009, African Americans ages 0-17 visited the ED due to asthma at rates 5.2 times higher than White children. In 2015, asthma-related ED visits among African Americans occurred at a rate 4.9 times greater than their White counterparts, reflecting a very modest decline over the seven-year period (Figure 7). Examination of the rates among children 0-4 years old (Figure 8) reveals that in both 2009 and 2015 African Americans were 5.7 times more likely to visit the ED with asthma than their White counterparts.

**Figure 7: Rates of Asthma-related ED Visits by African American and White Children 0-17 Years, Chicago 2009-2015**



**Figure 8: Rates of Asthma-related ED Visits by African American and White Children 0-4 Years, Chicago 2009-2015**



### The Cost of Chicago’s Racial Disparities: Millions Spent in Avoidable Health Care Charges

When treated properly, asthma is a condition that most often can be managed in a primary care outpatient setting. It is estimated that nearly 20% of all ED visits by children for asthma could be eliminated with proper therapy.<sup>iv</sup> Since the average cost of an ED visit is estimated to be five times greater than a primary care visit, asthma-related ED costs are susceptible to being reduced through improvements in education, care and treatment.

Racial disparities in childhood asthma contribute to over \$6 million in avoidable health care charges annually.

According to 2013-2015 Medical Expenditure Panel data, the average charge for an asthma-related ED visit for children 0-19 was \$2,116.<sup>v</sup> Application of this figure to the 8,848 asthma-related pediatric ED visits in Chicago in 2015 suggests health care costs of more than \$18.7 million. However, had the rate of ED visits among African American and Latino children that year been equal to the rate of visits by White children ages 0-4 (58.1) and 5-17 (45.3) asthma-related ED charges could have been reduced by nearly one-third or ~\$6.1 million.

### Moving Forward

Chicago is home to a wealth of public health organizations, researchers, and clinicians who are committed to, and have been working towards, reducing racial/ethnic disparities in childhood asthma. Despite their efforts, progress has been modest and much work remains.

Respiratory Health Association offers the following recommendations moving forward.

1. Increased research is needed. This paper focuses largely on the trends in pediatric asthma-related ED visits. More research is needed to better understand these trends as well as other data which may inform efforts to reduce disparities in childhood asthma. Two areas for further exploration are the decreases in ED visits among African American youth and the potential relationship to Chicago's changing demographics, as well as the higher rates of ED visits among children younger than five years of age. Additionally, changes in ICD coding for asthma diagnoses occurred in late 2015 and efforts are needed to evaluate and understand the impact of those changes, if any, when considering trends in ED visits.
2. Expand asthma surveillance efforts. Currently there are a limited number of sources to reliably identify the number of children in Chicago who are living with asthma. Hospital discharge data, used for this report, have only recently been used for public health purposes, and while they provide some insight into the scope of the problem, more direct public health surveillance is needed.
3. Broaden community-based asthma programming. Current asthma education and service efforts are largely targeted towards those parts of Chicago with the highest rates of childhood asthma or asthma-related hospital utilization. In most cases, these are low-income, African American and Latino neighborhoods. Despite this collective work the number of children, families and schools reached still represents just a small fraction of the population affected by childhood asthma.
4. Foster collaboration among research, practice and policy partners. Chicago is host to a dedicated community of individuals and agencies working to address asthma. We can do more to unite these entities and leverage their expertise to make a greater impact in reducing racial disparities.

*Respiratory Health Association acknowledges the Chicago Department of Public Health for providing the data used for this report, and for the significant guidance and support provided by Nik Prachand and Tamara Rushovich, Office of Epidemiology.*

*For additional information about Respiratory Health Association's asthma services, including its school-based asthma management education program, Fight Asthma Now® go to [www.lungchicago.org](http://www.lungchicago.org)*

*For additional information about this report, contact [esalem@lungchicago.org](mailto:esalem@lungchicago.org)*

## ***Citations***

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- <sup>i</sup> Chicago Department of Public Health, Healthy Chicago Survey (2014-2016). Accessed from ChicagoHealthAtlas.org.
- <sup>ii</sup> Chicago Public Schools. Youth Risk Behavior Surveillance System (YRBS). 2017
- <sup>iii</sup> Illinois Department of Public Health. Discharge Data 2009- 2015, Division of Patient Safety and Quality, Obtained from the Chicago Health Atlas, March 7, 2018.
- <sup>iv</sup> PediatricAsthma.org. Challenging Assumptions: The Emergency Department Demonstration Program
- <sup>v</sup> Agency for Healthcare Research and Quality. Medical Expenditure Panel Survey. Mean charges and expenses per asthma-related emergency room visit. Personnel communication from P. Muhuri, Ph.D., Survey Statistician, April 11, 2018.
- ces – median and mean expenses per person with expense and distribution of expenses by source of payment: United States, 2014