

Cooperative Inner-City Asthma Study (NCICAS) and the Inner-City Asthma Study (ICAS).

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Frank S. Virant, MD
Seattle, WA

Practice Variation in Management of Childhood Asthma Is Associated With Outcome Differences

Garbutt JM, Yan Y, Strunk RC. *J Allergy Clin Immunol Pract*. 2016;4(3):474-480

PURPOSE OF THE STUDY. To determine how variation in preventive and acute care approaches to asthma in pediatric primary care practices affects patient outcomes.

STUDY POPULATION. The study included 948 children from 22 community-based primary care practices with a physician diagnosis of asthma and evidence of bothersome asthma within the past year.

METHODS. The data for this study were obtained over the year prior to participant entry into a trial. Inclusion criteria included 1 of the following indicators of bothersome asthma: (1) prescription for daily controller medicine; (2) ≥ 1 acute asthma exacerbation requiring an unscheduled office visit and a course of oral steroids, emergency department (ED) visit, or hospitalization; or (3) persistent asthma symptoms. Data on practice-level measures (≥ 1 asthma maintenance visit/year) and acute care (≥ 1 acute asthma visit/year) were collected over a 12-month period by chart review and telephone interviews with parents. Relationships between practice-level measures and individual asthma outcomes (symptom-free days, parental quality of life, emergency department visits, and hospitalizations) were evaluated using generalized estimating questions, adjusting for seasonality, specialist care, Medicaid insurance, single-family status, and race.

RESULTS. For every 10% increase in the proportion of children in the practice receiving preventive care, symptom-free days increased by 7.6 days ($P = .02$), and ED visits per child decreased by 16.5% ($P = .002$). There was no difference in hospitalizations or parental quality of life. In the adjusted analysis, only the association between preventive care and fewer ED visits persisted (12.2% reduction; $P = .03$). For every 10% increase in acute care provision, ED visits and hospitalizations decreased by 18.1% ($P = .02$) and 16.5% ($P < .001$), respectively, and this persisted in adjusted analyses (ED visits, 8.6% reduction; $P = .02$; hospitalizations, 13.9% reduction; $P = .03$).

CONCLUSIONS. This study found that practices providing more preventive and acute asthma care had improved outcomes in both impairment and risk. The outcomes suggest that practice-level interventions to increase both

preventive and acute asthma care could reduce asthma disparities.

REVIEWER COMMENTS. National asthma guidelines recommend a collaborative partnership between families and their physicians, with regular asthma maintenance care visits (at least 2 visits/year) to monitor and adjust the treatment plan as needed and to provide education and support for asthma management. This large, multicenter study of both urban and suburban primary care practices revealed a large variation in asthma care, and this variation is associated with differences in outcomes. The study highlights the fact that routine preventive care leads to improved asthma outcomes, including decreased impairment (more symptom-free days) and risk (fewer ED visits). The results suggest that focused efforts to improve practice-level preventive and acute care for childhood asthma may be effective in improving outcomes and reducing disparities.

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Edith Schussler, MD
Scott Sicherer, MD
New York, NY

Practice Patterns in Medicaid and Non-Medicaid Asthma Admissions

Silber JH, Rosenbaum PR, Wang W, et al. *Pediatrics*. 2016;138(2):e20160371

PURPOSE OF THE STUDY. To evaluate any differences in practice patterns between Medicaid and non-Medicaid patients admitted for asthma at 40 Children's Hospital Association hospitals that contribute to the Pediatric Hospital Information System database.

STUDY POPULATION. This cohort consisted of 17 739 matched pairs of children (Medicaid and non-Medicaid) admitted for asthma at the same institution between April 1, 2011, and March 31, 2014.

METHODS. A matched-cohort design was used, matching pairs of Medicaid and non-Medicaid children admitted to the same hospital for age, sex, asthma severity, and other patient factors.

RESULTS. The median cost for Medicaid patients was higher than for non-Medicaid patients (\$4263 vs \$4160; $P < .001$), but the median cost difference between matched pairs was \$84 (95% CI \$44-\$124). The costs for admissions at the 90th percentile were comparable (\$10 710 vs \$10 948; $P < .07$). Length of stay (LOS) was similar, and rates of ICU admission were comparable (10.1% vs 10.6%; $P = .12$).

CONCLUSIONS. In a closely matched cohort of children within the same hospital, Medicaid status did not significantly impact expenses, LOS, or ICU utilization.

REVIEWER COMMENTS. This was a large study encompassing >17 000 pairs of patients, and while there was a statistically significant difference between Medicaid and non-Medicaid patient hospitalization costs, the differences were insignificant from the clinical and economic perspectives. While some studies report that hospital length of stay is greater for Medicaid patients, this study did not find this to be the case, concluding that insurance status does not significantly impact expenses, length of stay, or ICU use.

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Christopher Randolph, MD
Waterbury, CT

Parental Decision-Making Associated With Pediatric Emergency Department Use for Asthma

Mudd SS, Ogborn CJ, Bollinger ME, et al. *Ann Allergy Asthma Immunol.* 2016;117(5):490–494

PURPOSE OF THE STUDY. To identify common caregiver factors contributing to emergency department (ED) utilization for asthma care among inner city children.

STUDY POPULATION. One hundred and fifty children aged 3 to 12 years were recruited during an ED visit for acute asthma care. Inclusion criteria were physician-diagnosed persistent and uncontrolled asthma, 2 or more ED visits or 1 or more hospitalizations for asthma during the past year, and living in the Baltimore metropolitan area. Children were primarily African American (95%) with male predominance (64%) and a mean age of 6.4 years (SD 2.7 years), and the majority of caregivers were single mothers (85.2%).

METHODS. After obtaining institutional review board approval, surveys were administered to caregivers during the initial ED visit to collect sociodemographic information, health characteristics including the child's asthma symptoms, inhaler use, and perceived asthma control, as well as recent health care visits for asthma. Additionally, caregivers were asked to rank 11 items regarding their decision to use the ED for their child's asthma care. Correlations among factors were identified by using cluster analysis.

RESULTS. Three clusters were identified in caregiver decision-making factors: urgency, preference for use of ED, and access to care issues. Urgency, primarily because of parental anxiety, was reported by 91% of caregivers. Urgent reasons were correlated with low controller medication use ($P < .05$). Thirty-seven percent reported preference for the ED based on trust and confidence in ED doctors, with a second ED visit within 3 months significantly more likely to occur in this cluster (odds ratio [OR] 3.7; $P \leq .5$). Access to care issues were identified as significant factors in 31% of caregivers, notably the inability to get a same-day appointment with their primary care physician (PCP). Lack of health

insurance was insignificant in caregiver decision-making, as 99% of the children reported insurance coverage.

CONCLUSIONS. The majority of caregivers indicated urgency as the most important reason in their decision to use the ED for asthma care, but preference for ED physicians and lack of same-day appointments with their PCP also played a significant role.

REVIEWER COMMENTS. Asthma disproportionately affects low-income minority children, a population with high frequency ED use for asthma care. This study highlights important caregiver factors in this population that contribute to ED utilization and points to opportunities for targeted interventions. The correlation between both low income and low controller medication use with ED visits because of caregiver anxiety demonstrates the importance of providing resources and education to improve controller medication use leading to better asthma control and decreased reliance on ED visits for nonurgent care. Additionally, improved access and positive relationships with PCPs could play an important role in reducing ED visits.

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Leah LaScala, BS
Theresa Bingemann, MD
Rochester, NY

MEDICAL THERAPIES

Has Asthma Medication Use Caught Up With the Evidence?: A 12-Year Population-Based Study of Trends

Sadatsafavi M, Tavakoli H, Lynd L, FitzGerald JM. *Chest.* 2017;151(3):612–618

PURPOSE OF THE STUDY. Both national and international guidelines on the treatment of asthma emphasize the use of controller medications in persistent asthma and discuss the role of controller versus rescue medications. This study looked at 12 years of data to study the extent and trends of inappropriate or excessive use of SABAs.

STUDY POPULATION. The study used a health database in British Columbia (population 4.67 million). They created a cohort of patients with asthma, aged 15–55 years. Asthma was defined as meeting at least 1 of 3 criteria over 12 months: (1) use of 3 asthma-related medications, (2) two outpatient visits, or (3) one hospitalization with the primary code for asthma.

METHODS. Data were collected from 2002–2013. Three metrics were defined: (1) inappropriate prescriptions of SABAs (>2 puffs of a SABA per week if no ICS was used and ≥ 9 canisters of SABA and no more than 100 μg [beclomethasone equivalent] per day of ICS), (2) excessive prescription of SABAs (filling prescriptions for ≥ 12 canisters during a year regardless of ICS use), and (3) the ratio of ICS to total asthma-related prescriptions.

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Christopher Randolph
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