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JOURNAL articles

Kenyon, C.C., et al. Tailored medication adherence incentives for high-risk children with asthma: a pilot study. *Journal of Asthma*. Aug 2019: 1-7. [doi: 10.1080/02770903.2019.1648503](https://doi.org/10.1080/02770903.2019.1648503)

Objective: While reminder-based electronic monitoring systems have shown promise in enhancing inhaled corticosteroid (ICS) adherence in select populations, more engaging strategies may be needed in families of children with high-risk asthma. This study assesses the acceptability and feasibility of gain-framed ICS adherence incentives in families of urban, minority children with frequent asthma hospitalization. **Methods:** We enrolled children aged 5-11 years with multiple yearly asthma hospitalizations in a 2-month, mixed methods, ICS adherence incentive pilot study. All participants received inhaler sensors and a smartphone app to track ICS use. During month 1, families received daily adherence reminders and weekly feedback, and children earned up to \$1/day for complete adherence. No reminders, feedback, or incentives were provided in month 2. We assessed feasibility and acceptability using caregiver surveys and semi-structured interviews and ICS adherence using electronic monitoring data. **Results:** Of the 29 families approached, 20 enrolled (69%). Participants were primarily Black (95%), publicly insured (75%), and averaged 2.9 asthma hospitalizations in the prior year.

Fifteen of the 16 caregivers (94%) surveyed at month 2 liked the idea of receiving adherence incentives. Mean adherence was significantly higher in month 1 compared with month 2 (80% vs. 33%, mean difference = 47%; 95% CI [33, 61], $p < 0.001$). Caregivers reported that their competing priorities often limited adherence, while incentives helped motivate child adherence. Conclusions: ICS adherence incentives were acceptable and feasible in a high-risk cohort of children with asthma. Future studies should assess the efficacy of adherence incentives in enhancing ICS adherence in high-risk children.

Carter-Pokras, O.D., et al. Utilizing Student Health and Academic Data: A County-Level Demonstration Project. *Health Promotion Practice*. Aug 2019: 1524839919862796. doi: [10.1177/1524839919862796](https://doi.org/10.1177/1524839919862796).

Students with chronic health conditions miss more school days than their peers and are at increased risk for performing worse on standardized tests and not completing a high school degree. University-based researchers, state government leaders, and a local county school system collaborated to use existing health and academic data to (1) evaluate the strength of the relationship between health status and school performance (absenteeism, grades) and (2) describe the health status of students who are chronically absent. Analyses included descriptive statistics, chi-square tests, negative binomial regression models, and estimated marginal means. The most common health conditions among the 3,663 kindergarten through Grade 12 students were ADD (attention deficit disorder)/ADHD (attention deficit hyperactivity disorder), asthma, migraine headaches, mental health conditions, and eczema/psoriasis/skin disorders. After controlling for covariates, having asthma or a mental health diagnosis was positively associated with absences; and having an ADD/ADHD or mental health diagnosis was negatively associated with GPA (grade point average). Chronically absent students had significantly lower GPAs, and a higher number of health conditions than other students. The success of this demonstration project encourages strengthening existing collaborations and establishing new multidisciplinary partnerships to analyze existing data sources to learn more about the relationship between student health and academic achievement. Moreover, connecting health status to academic achievement might be a chief tactic for advocating for additional resources to improve the care and management of chronic disease conditions among students.

Belice, P.J., et al. The Impact of Caregiver Health Literacy on Healthcare Outcomes for Low Income Minority Children with Asthma. *Journal of Asthma*. Aug 2019: 1-7. doi: [10.1080/02770903.2019.1648507](https://doi.org/10.1080/02770903.2019.1648507)

Objectives: The aim of this exploratory study was to assess the impact of caregiver health literacy (HL) on health care outcomes for their child with asthma. Methods: Caregiver dyads across two different healthcare delivery systems completed a battery of validated asthma outcome instruments, including the Newest Vital Sign™ as a measure of HL for the caregivers of children ages 7-18 y. Utilization history was obtained through the electronic medical record. Descriptive analysis with bivariate associations was conducted. Results: There was no direct relationship between HL and asthma outcomes in the 34 Hispanic and African American caregiver-child dyads. However, caregiver health literacy was significantly related to language ($p = 0.02$). African American English-speaking caregivers, seen in an urban emergency

department, demonstrated adequate health literacy. Hispanic Spanish-speaking caregivers, seeking care in a mobile asthma van, showed limited health literacy. There was no significant association between caregivers' HL and routine asthma care visits when language and child age were controlled. Conclusions: Assessing patient factors can identify persons at risk who need additional support to negotiate the healthcare system when providing care for a child with asthma.

Garcia, E., et al. Effects of policy-driven hypothetical air pollutant interventions on childhood asthma incidence in southern California. *Proceedings of the National Academy of Sciences of the United States of America*. Aug 2019; 116(32): 15883-15888. doi: [10.1073/pnas.1815678116](https://doi.org/10.1073/pnas.1815678116)

Childhood asthma is a major public health concern and has significant adverse impacts on the lives of the children and their families, and on society. There is an emerging link between air pollution, which is ubiquitous in our environment, particularly in urban centers, and incident childhood asthma. Here, using data from 3 successive cohorts recruited from the same 9 communities in southern California over a span of 20 y (1993 to 2014), we estimated asthma incidence using G-computation under hypothetical air pollution exposure scenarios targeting nitrogen dioxide (NO₂) and particulate matter <2.5 μm (PM_{2.5}) in separate interventions. We reported comparisons of asthma incidence under each hypothetical air pollution intervention with incidence under the observed natural course of exposure; results that may be more tangible for policymakers compared with risk ratios. Model results indicated that childhood asthma incidence rates would have been statistically significantly higher had the observed reduction in ambient NO₂ in southern California not occurred in the 1990s and early 2000s, and asthma incidence rates would have been significantly lower had NO₂ been lower than what it was observed to be. For example, compliance with a hypothetical standard of 20 ppb NO₂ was estimated to result in 20% lower childhood asthma incidence (95% CI, -27% to -11%) compared with the exposure that actually occurred. The findings for hypothetical PM_{2.5} interventions, although statistically significant, were smaller in magnitude compared with results for the hypothetical NO₂ interventions. Our results suggest a large potential public health benefit of air pollutant reduction in reduced incidence of childhood asthma.

Chen, E., et al. Neighborhood Social Conditions, Family Relationships, and Childhood Asthma. *Pediatrics*. Aug 2019; 144(2): pii: e20183300. doi: [10.1542/peds.2018-3300](https://doi.org/10.1542/peds.2018-3300).

BACKGROUND AND OBJECTIVES: Poor neighborhood conditions have established associations with poorer child health, but little is known about protective factors that mitigate the effects of difficult neighborhood conditions. In this study, we tested if positive family relationships can buffer youth who live in dangerous and/or disorderly neighborhoods from poor asthma outcomes. **METHODS:** A total of 308 youths (aged 9-17) who were physician-diagnosed with asthma and referred from community pediatricians and/or family practitioners participated in this cross-sectional study. Neighborhood conditions around families' home addresses were coded by using Google Street View images. Family relationship quality was determined via youth interviews. Clinical asthma outcomes (asthma symptoms, activity limitations, and forced expiratory volume in 1 second percentile), asthma management behaviors (family response to

asthma symptoms and integration of asthma into daily life), and asthma-relevant immunologic processes (lymphocyte T helper 1 and T helper 2 cytokine production and sensitivity to glucocorticoid inhibition) were assessed via questionnaires, interviews, spirometry, and blood draws. **RESULTS:** Significant interactions were found between neighborhood conditions and family relationship quality ($\beta = |.11-.15|$; $P < .05$). When neighborhood danger and/or disorder was low, family relationships were not associated with asthma. When neighborhood danger and/or disorder was high, better family relationship quality was associated with fewer asthma symptoms, fewer activity limitations, and higher forced expiratory volume in 1 second percentile. Similar patterns emerged for asthma management behaviors. With immunologic measures, greater neighborhood danger and/or disorder was associated with greater T helper 1 and T helper 2 cytokine production and reduced glucocorticoid sensitivity. **CONCLUSIONS:** When youth live in dangerous and/or disorderly neighborhoods, high family relationship quality can buffer youth from poor asthma outcomes. Although families may not be able to change their neighborhoods, they may nonetheless be able to facilitate better asthma outcomes in their children through strong family relationships.

Pate, C.A., et al. Cost barriers to asthma care by health insurance type among children with asthma. *Journal of Asthma*. Jul 2019: 1-7. doi: [10.1080/02770903.2019.1640730](https://doi.org/10.1080/02770903.2019.1640730).

Objective: Children with asthma have ongoing health care needs and health insurance is a vital part of their health care access. Health care coverage may be associated with various cost barriers to asthma care. We examined cost barriers to receiving asthma care by health insurance type and coverage continuity among children with asthma using the 2012-2014 Child Asthma Call-back Survey (ACBS). Methods: The study sample included 3788 children under age 18 years with current asthma who had responses to the ACBS by adult proxy. Associations between cost barriers to asthma care and treatment were analyzed by demographic, health insurance coverage, and urban residence variables using multivariable logistic regression models. Results: Among insured children, more blacks reported a cost barrier to seeing a doctor (10.6% [5.9, 18.3]) compared with whites (2.9% [2.1, 4.0]) ($p = 0.03$). Adjusting for demographic factors (sex, age, and race), uninsured and having partial year coverage were associated with cost barrier to seeing a doctor (adjusted prevalence ratio aPR = 8.07 [4.78, 13.61] and aPR = 6.58 [3.78, 11.45], respectively) and affording medication (aPR = 8.35 [5.23, 13.34] and aPR = 4.93 [2.96, 8.19], respectively), compared with children who had full year coverage. Public insurance was associated with cost barrier to seeing a doctor (aPR = 4.43 [2.57, 7.62]), compared with private insurance. Conclusions: Having no health insurance, partial year coverage, and public insurance were associated with cost barriers to asthma care. Improving health insurance coverage may help strengthen access to and reduce cost barriers to asthma care.

In the NEWS

Ford, Megan. [Nurse helps develop app to 'empower' children to manage asthma](#). *Nursing Times*. Aug 19, 2019.

Schroeder, Kaitlin. [Asthma program helps keep Dayton kids in classroom](#). *Dayton Daily News*. Aug 19, 2019.

Laguipo, Angela B.B. ['As-needed' treatment OK for children with mild asthma](#). *News – Medical*. Aug 19, 2019.

Undark Magazine. [Detroit's Other Problem? Pollen](#). *The Daily Beast*. Aug 16, 2019.

Acosta, Sarah. [City program working to decrease number of child ER visits due to asthma](#). *KSAT News (San Antonio)*. Aug 13, 2019.

Moloney, Síle. [Fighting Pediatric Asthma With a Personal Touch in the Bronx](#). *Norwood News*. July 31, 2019.

Wheeling, Kate. [How Much Has California's War on Air Pollution Reduced Asthma Rates?](#) *Pacific Standard*. July 22, 2019.