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JOURNAL articles

Chen C. Kenyon, et al., Variability in Diagnosed Asthma in Young Children in a Large Pediatric Primary Care Network, (2020) *Academic Pediatrics*, DOI: [10.1016/j.acap.2020.02.003](https://doi.org/10.1016/j.acap.2020.02.003)

Objectives: Our objectives were to (1) quantify the frequency of wheezing episodes and asthma diagnosis in young children in a large pediatric primary care network and (2) assess the variability in practice-level asthma diagnosis, accounting for common asthma risk factors and comorbidities. We hypothesized that significant variability in practice-level asthma diagnosis rates would remain after adjusting for associated predictors. **Methods:** We generated a retrospective longitudinal birth cohort of children who visited one of 31 pediatric primary care practices within the first 6 months of life from 1/2005-12/2016. Children were observed for up to 8 years or until the end of the observation window. We used multivariable discrete time survival models to evaluate predictors of asthma diagnosis by 3-month age intervals. We compared unadjusted and adjusted proportions of children diagnosed with asthma by practice. **Results: Of the 161,502 children in the cohort, 34,578 children (21%) received at least one asthma diagnosis. In multivariable modeling, male gender, minority race/ethnicity, gestational age <34 weeks, allergic rhinitis, food allergy, and prior wheezing episodes were associated with asthma diagnosis.** After adjusting for variation in these predictors across practices, the cumulative incidence of asthma diagnosis by practice by age 6 years ranged from 11-47% (interquartile range (IQR): 24-29%). **Conclusions:** Across pediatric primary care practices, adjusted incidence of asthma diagnosis by age 6 years ranged widely, though variation gauged by the IQR was more modest. Potential sources of practice-level variation, such as differing

diagnosis thresholds and labeling of different wheezing phenotypes as "asthma", should be further investigated.

Phillippe Bareille, et al., A Randomized, Double-Blind, Placebo-Controlled, Parallel-Group Study of Once-Daily Inhaled Fluticasone Furoate on the Hypothalamic-Pituitary-Adrenocortical Axis of Children With Asthma, (2020) *Allergy and Asthma Clinical Immunology*, 16, 11, DOI: [10.1186/s13223-020-0406-6](https://doi.org/10.1186/s13223-020-0406-6)

Background: To evaluate the effects of fluticasone furoate on the hypothalamic-pituitary-adrenocortical axis, and the safety and tolerability of fluticasone furoate treatment in children with asthma. **Methods:** This was a randomized, double-blind, placebo-controlled, multicenter, stratified, parallel-group, non-inferiority study of fluticasone furoate 50 µg inhalation powder administered once daily. The study enrolled children (aged 5-11 years inclusive) with a documented diagnosis of asthma for ≥ 6 months and a Childhood Asthma Control Test score of > 19 . After a 7-14-day run-in period, eligible subjects were stratified by age and randomized to fluticasone furoate 50 µg once daily or placebo once daily via ELLIPTA for 6 weeks. The primary endpoint was the change from baseline (expressed as a ratio) in 0-24-h weighted mean serum cortisol at the end of the treatment period. **Results:** Fifty-six randomized subjects received fluticasone furoate 50 µg once daily and 55 received placebo. The primary analysis was performed in the serum cortisol population (n = 104) and demonstrated that **fluticasone furoate 50 µg once daily was non-inferior to placebo** (ratio = 0.93; 95% confidence interval 0.8096, 1.0620), as the lower limit of the 95% confidence interval for the geometric mean treatment ratio of fluticasone furoate 50 µg once daily versus placebo was greater than 0.80. Findings from the intent-to-treat population (n = 111) were similar. **Conclusions:** Six weeks of treatment with inhaled fluticasone furoate 50 µg once daily had no clinically relevant effect on the hypothalamic-pituitary-adrenocortical axis function of children, as measured by 24-h serum cortisol profiles. **The primary analysis showed that fluticasone furoate 50 µg once daily was non-inferior to placebo. Fluticasone furoate 50 µg once daily was well tolerated and no new safety concerns emerged during the study.**

Mersine A. Bryan, et al., Vaccination Status and Adherence to Quality Measures for Acute Respiratory Tract Illnesses, (2020) *Hospital Pediatrics*, DOI: [10.1542/hpeds.2019-0245](https://doi.org/10.1542/hpeds.2019-0245)

Objectives: To assess the relationship between vaccination status and clinician adherence to quality measures for children with acute respiratory tract illnesses. **Methods:** We conducted a multicenter prospective cohort study of children aged 0 to 16 years who presented with 1 of 4 acute respiratory tract illness diagnoses (community-acquired pneumonia, croup, asthma, and bronchiolitis) between July 2014 and June 2016. **The predictor variable was provider-documented up-to-date (UTD) vaccination status.** Our primary outcome was clinician adherence to quality measures by using the validated Pediatric Respiratory Illness Measurement System (PRIMES). Across all conditions, we examined overall PRIMES composite scores and overuse (including indicators for care that should not be provided, eg, C-reactive protein testing in community-acquired pneumonia) and underuse (including indicators for care that should be provided, eg, dexamethasone in croup) composite subscores. We examined differences in length of stay, costs, and readmissions by vaccination status using adjusted linear and logistic regression models. **Results: Of the 2302 participants included in the analysis, 92% were**

documented as UTD. The adjusted mean difference in overall PRIMES scores by UTD status was not significant (adjusted mean difference -0.3; 95% confidence interval: -1.9 to 1.3), whereas the adjusted mean difference was significant for both overuse (-4.6; 95% confidence interval: -7.5 to -1.6) and underuse (2.8; 95% confidence interval: 0.9 to 4.8) composite subscores. **There were no significant adjusted differences in mean length of stay, cost, and readmissions by vaccination status. Conclusions: We identified lower adherence to overuse quality indicators and higher adherence to underuse quality indicators for children not UTD, which suggests that clinicians "do more" for hospitalized children who are not UTD.**

Krysten L. Arekapudi, Casey Norris, and Stephen Updegrave, Improving Self-Efficacy of Student Asthma Management in Elementary and Preschool Staff, (2020) *Journal of School Nursing*, 1059840520904760, DOI: [10.1177/1059840520904760](https://doi.org/10.1177/1059840520904760)

Asthma is a leading cause of chronic illness among school-aged children and adolescents. Current trends have led to school faculty and staff becoming increasingly responsible for managing student asthma, often without optimal training or resources. The purpose of this project was to establish whether facilitated access to personalized student asthma action plans (AAPs), education, proper use, and school nurse support improved reported self-efficacy regarding student asthma exacerbation prevention and management in elementary and preschool faculty and staff. Thirty-five participants from an urban, underserved Connecticut school were surveyed to determine perceived self-efficacy regarding student asthma exacerbation prevention and management. AAPs were then placed with students' asthma inhalers, and all participants were instructed on their use. Three months later, participants were resurveyed. **A statistically significant difference after both the initial education and 3-month survey was identified. Providing elementary and preschool faculty and staff with facilitated access to student action plans and education on their use can improve perceived self-efficacy regarding student asthma exacerbation prevention and management.**

Kim D. Lu, et al., Low Fitness and Increased Sedentary Time Are Associated With Worse asthma-The National Youth Fitness Survey, (2020) *Pediatric Pulmonology*, DOI: [10.1002/ppul.24678](https://doi.org/10.1002/ppul.24678)

Background: Asthma is the most common chronic illness in children and is independently impacted by obesity and by fitness. The National Youth Fitness Survey collected data on aerobic fitness, body composition, and health outcomes in children 6 to 11 years old. The goal of this study is to test hypotheses regarding relationships between asthma, aerobic fitness, and sedentary time in this uniquely studied cohort of young children. **Methods:** A total of 665 children (6-11 years old; 49% male) were included in analyses. We explored relationships between asthma outcomes and aerobic fitness (measured by endurance time), self-reported sedentary time, and body mass index categories. Fitness was categorized as unfit (lowest 25% of endurance times) or fit. Multivariate logistic regression models were created for asthma outcomes and adjusted for race, age, sex, poverty status, and overweight/obesity. **Results:** Among the participants, 17.9% had a previous history of asthma and 11.4% had current asthma. Additionally, 37.3% of participants were overweight or obese. Low fitness was significantly associated with increased odds of past asthma, current asthma, asthma attacks, wheeze with exercise, and wheeze with activity limitations in multivariate models. Increased sedentary time was significantly associated

with increased odds of previous asthma, current asthma, asthma attacks, and wheeze with activity limitations. **Conclusion: Decreased aerobic fitness and increased sedentary time were associated with worse asthma outcomes in this group of children (6-11 years old).** This data suggest that fitness and sedentary time, both modifiable factors, each have an independent effect on asthma and should be included in assessments and management of asthma health.

Katie M. Lebold, David B. Jacoby, and Matthew G. Drake, Inflammatory Mechanisms Linking Maternal and Childhood Asthma, (2020) *Journal of Leukocyte Biology*, DOI: [10.1002/JLB.3MR1219-338R](https://doi.org/10.1002/JLB.3MR1219-338R)

Asthma is a chronic inflammatory airway disease characterized by airway hyperresponsiveness, inflammation, and remodeling. Asthma often develops during childhood and causes lifelong decrements in lung function and quality of life. Risk factors for childhood asthma are numerous and include genetic, epigenetic, developmental, and environmental factors. Uncontrolled maternal asthma during pregnancy exposes the developing fetus to inflammatory insults, which further increase the risk of childhood asthma independent of genetic predisposition. This review focuses on the role of maternal asthma in the development of asthma in offspring. **We will present maternal asthma as a targetable and modifiable risk factor for childhood asthma and discuss the mechanisms by which maternal inflammation increases childhood asthma risk.** Topics include how exposure to maternal asthma in utero shapes structural lung development with a special emphasis on airway nerves, how maternal type-2 cytokines such as IL-5 activate the fetal immune system, and how changes in lung and immune cell development inform responses to aero-allergens later in life. Finally, we highlight emerging evidence that maternal asthma establishes a unique "asthma signature" in the airways of children, leading to novel mechanisms of airway hyperreactivity and inflammatory cell responses.

In the NEWS

Niall McCarthy, [Report: Air Pollution From Burning Fossil Fuels Cost The Global Economy \\$3 Trillion In 2018 \[Infographic\]](#), *Forbes*, Feb 12, 2020

Union of Concerned Scientists, [Science Group Sounds the Alarm: Attacks on Science Put a Generation of Children at Risk](#), Feb 11, 2020

Rebecca Tan, [She was spotted smoking in 'smoke-free' rental housing. Now, she may be kicked out](#), *Washington Post*, Feb 10, 2020.

Jessica Hamzelou, [Overactive Immune Cells in Babies May Lead To Childhood Asthma](#), *New Scientist*, Feb 5, 2020