CONCLUSIONS. This study demonstrates that, for urban children with asthma, the effect of endotoxin exposure on disease morbidity is influenced by levels of exposure to indoor nicotine and NO2. Airborne endotoxin seems to be protective against acute asthma visits and oral corticosteroid bursts in the setting of very low or no air nicotine exposure, whereas it is associated with worse asthma morbidity in the setting of high indoor air nicotine exposure. In contrast, airborne endotoxin is associated with increased asthma morbidity in the setting of low NO2 exposure and seems to be protective against asthma-related morbidity in the setting of high NO2 exposure.

REVIEWER COMMENTS. This study strengthens the idea that multiple components of the air we breathe can have complementing and/or opposing effects on asthma morbidity. This study reiterates the concept that airway hyperreactivity is multifactorial. Due to the high prevalence of concomitant indoor endotoxin exposure and secondhand smoke exposure, the association noted between airborne nicotine and endotoxin exposure may help explain the disproportionate asthma-related morbidity observed in urban populations. The findings support the importance of the interplay of indoor exposures and their effects on asthma. Effective approaches to environmental control, including smoking cessation or home smoking bans, may mitigate the harmful effects of endotoxin on asthma. Further studies are needed to support these conclusions.

Cotinine in Children Admitted for Asthma and Readmission

PURPOSE OF THE STUDY. The goal of this study was to explore the relationship between tobacco smoke exposure (caregiver reported versus serum or salivary biomarkers) and rates of readmission for children hospitalized for asthma.

STUDY POPULATION. This prospective cohort included 774 children aged 1 to 16 years admitted to the hospital for asthma or bronchodilator-responsive wheezing. Of these, 619 children had complete tobacco exposure information.

METHODS. The primary outcome was ≥1 asthma or wheezed-related readmission within 1 year of enrollment in the study. Those results were then stratified based on reported tobacco exposure and measurement of serum and salivary cotinine levels.

RESULTS. Overall, 17% of children were readmitted to the hospital for asthma within 1 year. Tobacco exposure rates were 35.1%, 56.1%, and 79.6% according to report, serum, and saliva measures, respectively. Caregiver report of tobacco exposure was not associated with increased odds of readmission (odds ratio: 1.18 [confidence interval: 0.79-1.89]). In contrast, detectable serum or salivary cotinine was associated with increased odds of readmission (odds ratios of 1.59 [confidence interval: 1.02-2.48] and 2.35 [confidence interval: 1.22-4.55], respectively). Among children in whom caregivers reported no tobacco exposure, 39.1% had detectable serum cotinine levels and 69.9% had detectable salivary cotinine levels. Of those children with reported tobacco exposure, 87.6% had detectable levels of serum cotinine and 97.7% had detectable levels of salivary cotinine. In this study, passive smoke exposure was common and varied significantly with sociodemographic status. African-American children had the highest rates of serum (61.1%) and salivary (86.8%) cotinine. Detection of passive smoke exposure by using biomarkers was inversely proportional to house income: 71.9% of children in households reporting annual income of less than $15,000 had detectable serum cotinine levels versus 11.4% of children with household income of greater than $90,000.

CONCLUSIONS. In this cohort, detectable serum and salivary cotinine levels were common among children admitted for asthma and were associated with readmission, whereas caregiver-reported tobacco exposure was not.

REVIEWER COMMENTS. The results of this study suggest that cotinine levels could be used when an asthmatic child is seen in the emergency department or hospital to help predict risk for future hospitalizations. As it turns out, the level of detection was lower for salivary cotinine than for serum cotinine, which is consistent with previous studies showing increased sensitivity of salivary cotinine levels. Obtaining a salivary cotinine measurement as a proxy for tobacco smoke exposure could be used to target specific interventions (eg, parental counseling and contacting the primary care physician before the asthmatic child is discharged from the emergency department or hospital).

Maternal Second-Hand Smoke Exposure in Pregnancy Is Associated With Childhood Asthma Development

PURPOSE OF THE STUDY. The goal of this study was to determine longitudinal associations between maternal secondhand smoke exposure during pregnancy and the development of childhood asthma.
Cotinine in Children Admitted for Asthma and Readmission
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