

# Allergy

## RISK FACTORS, PREVENTION, AND THE HYGIENE HYPOTHESIS

### Acetaminophen Versus Ibuprofen in Young Children With Mild Persistent Asthma

Sheehan WJ, Mauger DT, Paul IM, et al. *N Engl J Med*. 2016;375(7):619–630

**PURPOSE OF THE STUDY.** With previous observational data, researchers have suggested an association between the frequent use of acetaminophen and possible asthma-related complications in children. The authors of this study specifically address this, evaluating the number of asthma exacerbations in children who received acetaminophen versus ibuprofen for fever or pain alleviation.

**STUDY POPULATION.** This study included 300 children (aged 12–59 months) with mild persistent asthma. Children were determined eligible if they met the criteria of current use of Step 2 asthma controller therapy. Children were excluded if they had any history of adverse reaction to the trial medications or if there was evidence suggestive of possible poor adherence to the trial medication regimens or study procedures.

**METHODS.** This was a prospective, randomized, double-blind, parallel-group trial in which enrolled children were assigned to receive either acetaminophen or ibuprofen as needed for management of fever, pain, or discomfort. Patients were managed over 48 weeks and received standardized asthma-controller therapies. The primary outcome was the number of asthma exacerbations that required systemic glucocorticoid treatment. A standardized list of criteria for treatment with systemic glucocorticoids was used when assessing asthma exacerbations. Prespecified secondary outcomes included: percentage of asthma-control days, average use of albuterol as a rescue, and frequency of unscheduled health care visits for asthma.

**RESULTS.** One hundred and fifty children were initially assigned to each treatment group. One hundred and sixteen patients in the acetaminophen group completed the trial compared with 110 patients in the ibuprofen group. There was no significant difference in the median number of doses of acetaminophen versus ibuprofen received ( $P = .47$ ). No significant difference in number of asthma exacerbations was observed between the 2 groups (relative rate of asthma exacerbations in the acetaminophen versus ibuprofen group: 0.94; confidence interval: 0.69–1.28;  $P = .67$ ). The acetaminophen group had 49% of participants with at least 1 asthma exacerbation compared with 47% in the ibuprofen group. Furthermore, no significant difference was noted between

the 2 groups in regard to percentage of asthma control days, use of albuterol rescue inhaler, unscheduled asthma-related health care visits, and overall adverse events.

**CONCLUSIONS.** In young children with mild persistent asthma, the use of acetaminophen for as-needed pain or fever management was not shown to be associated with a higher incidence of asthma exacerbations or overall worse asthma control compared with the use of as-needed ibuprofen.

**REVIEWER COMMENTS.** This topic has been debated for some time on the basis of several observational studies revealing an association between impaired asthma control and use of acetaminophen in children and adults. However, in other studies, researchers have suggested that the association is confounded simply by the fact that children with asthma who have more frequent symptomatic respiratory tract infections will often take acetaminophen for management of fever and malaise. The authors of this study explored this concept and observed that greater use of antipyretic or analgesic medications was associated with concurrent respiratory illnesses, and respiratory illnesses were associated with asthma exacerbations that required systemic glucocorticoids. Overall, there was no difference in rate of asthma-related complications in patients given acetaminophen versus ibuprofen.

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### Areas With High Rates of Police-Reported Violent Crime Have Higher Rates of Childhood Asthma Morbidity

Beck AF, Huang B, Ryan PH, Sandel MT, Chen C, Kahn RS. *J Pediatr*. 2016;173:175–82

**PURPOSE OF THE STUDY.** To assess the association between population-level violent (and all) crime rates and population-level childhood asthma utilization and patient-level risk of asthma reutilization after hospitalization.

**STUDY POPULATION.** Four thousand six hundred and thirty-eight children aged 2 to 17 years who visited the emergency department (ED) or were hospitalized for asthma at Cincinnati Children's Hospital Medical Center between January 1, 2011, and December 31, 2013.

**METHODS.** In this retrospective cohort study, we identified subjects by using diagnosis code 493.XX and classified them demographically by using electronic medical record information. Street addresses were geocoded and linked to 2010 census tracts. The population- and patient-level asthma utilization rates were calculated by dividing the number of asthma ED and hospitalizations per tract by number of children aged 2 to 17 years within that tract. This

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