

sensitive molecular methods for virus detection, and the results suggest that bacteria might contribute to wheezing episodes in children at high risk. Interventional strategies geared toward these microorganisms might be useful to further our understanding of wheezing and asthma development in these children. Given the paucity of information on evidence-based strategies in young children for treating wheezing episodes, clinical trials for evaluating antimicrobial agents and other interventions for wheezing episodes should be considered and are currently being evaluated among large clinical trial networks.

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Causal Direction Between Respiratory Syncytial Virus Bronchiolitis and Asthma Studied in Monozygotic Twins

Poorisrisak P, Halkjaer LB, Thomsen SF, et al. *Chest*. 2010;138(2):338-344

PURPOSE OF THE STUDY. To compare the long-term outcome of asthma, allergy, and pulmonary function in monozygotic twin pairs discordant for severe respiratory syncytial virus (RSV) disease.

STUDY POPULATION. There were 37 monozygotic twin pairs discordant for RSV hospitalization at a mean age of 10.6 months evaluated in the study. The twins were born between January 1, 1994, and December 31, 2003, and enrolled through the Danish Twin Registry.

METHODS. Hospitalization was used as a marker of disease severity. Participants were studied at a mean age of 7.6 years. The study included clinical examinations, lung-function testing, fractional exhaled nitric-oxide levels, determination of an asthma diagnosis, use of asthma medication, and results of skin-prick tests to common inhalant allergens.

RESULTS. The prevalence of asthma among the twins was 18%. The twins did not differ with respect to current asthma, use of inhaled corticosteroids or β_2 agonists, atopic dermatitis, fractional exhaled nitric oxide, baseline lung function, bronchial responsiveness, or sensitization ($P > .1$ for all comparisons).

CONCLUSIONS. There was no significant difference within cohabiting monozygotic twin pairs discordant for hospitalization for RSV bronchiolitis in infancy on the development of asthma and allergy, which argues against a specific viral effect.

REVIEWER COMMENTS. This study examined the question of which came first: not the chicken or the egg but whether severe RSV bronchiolitis causes wheezing or whether

someone with a predisposition to asthma suffers a more severe response to RSV. This study's results argue against a specific effect of severe RSV infection in the development of asthma and allergy. Another recent study report based on 8280 twin pairs showed that a model in which asthma "causes" RSV hospitalization fit significantly better than a model in which RSV hospitalization "causes" asthma. We guess the chicken came first.

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Allergic Sensitization Is Associated With Rhinovirus-, but not Other Virus-, Induced Wheezing in Children

Jarti T, Kuusipalo H, Vuorinen T, et al. *Pediatr Allergy Immunol*. 2010;21(7):1008-1014

PURPOSE OF THE STUDY. Building on recent studies that have suggested a link between early wheezing caused by rhinovirus and the development of asthma, these researchers sought to characterize the relationship of respiratory viral infections with atopy in hospitalized wheezing children.

STUDY POPULATION. The authors studied a subgroup from among a previously described cohort of 293 hospitalized wheezing Finnish children aged 3 months to 16 years who had comprehensive virology performed ($N = 247$; median age: 1.6 years). Subjects with recent oral corticosteroid use, chronic disease, or ICU treatment were excluded.

METHODS. Respiratory viral infections were evaluated through a nasopharyngeal aspirate and blood sample at baseline and after 2 to 3 weeks. A combination of viral culture, antigen detection, immunoglobulin G (IgG) and IgM measurement, and polymerase chain reaction was used to evaluate for respiratory syncytial virus, human rhinovirus, enteroviruses, human bocavirus, and a broad panel of additional respiratory viruses. Atopy was assessed through serum-specific IgE testing to several common food allergens, cat, dog, horse, birch, mugwort, timothy grass, mold, and dust mite.

RESULTS. Allergen-specific IgE sensitization was closely related to sole rhinovirus infection (odds ratio: 3.5; $P = .0002$). In contrast, sole respiratory syncytial virus infection was negatively associated with sensitization (odds ratio: 0.087; $P = .027$). No significant associations with atopy were found with the remaining viruses or with those with multiple concurrent viral infections.

CONCLUSIONS. Acute wheezing in early childhood caused by human rhinovirus is associated with an increased risk

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