



# ECHO

Environmental influences  
on Child Health Outcomes

A program supported by the NIH

## Study Summary

### ***Age is a factor in whether children get infected with the common cold***

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#### Who sponsored this study?

This research was supported by the Environmental influences on Child Health Outcomes (ECHO) program, Office of The Director, National Institutes of Health. Additional support came from contributing studies by the NIH, the Sigrid Juselius Foundation (Helsinki, Finland) and the National Health Medical Research Council (Australia).

#### Why was this study needed?

Rhinovirus is a leading cause of the common cold and wheezing illnesses in young children and in children with asthma. There are three species of rhinoviruses (A, B, and C), and C viruses are often more likely to cause wheezing illnesses, especially in young children. The main objectives of this study were to identify age and other personal risk factors for rhinovirus illnesses, and to determine whether certain rhinoviruses are more frequent and more likely to cause wheezing illnesses.

#### Who was involved?

More than 4,000 children were enrolled in 14 independent studies across the United States, Finland, and Australia from 2000 to 2019. Study participants had illnesses of varying severity and varied in age from zero to 19 years.

#### What happened during the study?

Each of the 14 sites collected nasal samples and studied them for rhinovirus species and type. The investigators then tested whether characteristics such as age, gender, and race influenced which viruses were seen. Investigators also identified which viruses are most common and which are most likely to cause illnesses.

#### What were the study results?

As children age, they are less likely to be infected with the rhinovirus C species. This may be because the immune system gets stronger against infection with rhinovirus C species compared to other species. Other personal factors related to more frequent infections are wheezing respiratory illnesses and a genetic difference in a protein used by the viruses to enter cells.

Footnote: Results reported here are for a single study. Other or future studies may provide new information or different results. You should not make changes to your health care without first consulting your healthcare professional.

## Impact

Infections with rhinoviruses, generally known as common colds, are the most common cause of wheezing illnesses in preschoolers and children with asthma. Unfortunately, there are no treatments for these respiratory viruses. The results of the study identify children most likely to develop more severe illnesses with rhinovirus C based on young age and genetics. This new information on at-risk populations and the viruses most likely to cause illnesses can help scientists create a vaccine specifically for the rhinovirus C species.

## What happens next?

Future research will focus on studying the strength and length of time people can be immune to rhinovirus C. This will help determine why these viruses are able to produce such a strong immune response, and why rhinovirus C infections decrease with age. This information may help researchers design a practical vaccine against rhinovirus C that could be used to protect high-risk children.

## Additional details

The authors thank the many investigators, children and families who conducted and participated in this multinational collaborative study.

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