# Yale Investigators Discover Novel Coronavirus

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A novel human coronavirus discovered by molecular testing in Connecticut may account for about 9% of respiratory tract infections in infants and young children.

The initial discovery is similar to that of a coronavirus identified by investigators in the Netherlands in 2004 (Proc. Natl. Acad. Sci. USA 2004;101:6212-6 and Nat. Med. 2004;10:368-73).

"Whether this virus is associated with other clinical syndromes remains to be determined," wrote the investigators, led by Frank Esper, M.D., of the department of pediatrics at Yale University, New Haven.

**Further studies are needed to determine the precise role played by the New Haven coronavirus in the pathogenesis of Kawasaki disease.**

"Population-based studies are required to define the burden of disease caused by this novel HCoV, and such studies could provide information on causality," they said.

For the study, he and his associates developed PCR probes to target regions of the replicase 1a gene that are conserved among genetically diverse animal and human coronaviruses (J. Infect. Dis. 2005;191:492-8).

They obtained specimens from the respiratory tracts of 895 children in the New Haven area who were less than 5 years old and who tested negative for common respiratory infections via direct fluorescent antibody assay.

In the process, the investigators identified genomic sequences of a novel HCoV they called the New Haven coronavirus (HCoV-NH).

Of the 895 children 79 (8.8%) tested positive for HCoV-NH. Clinical data were available for 76 of the 79 children.

Of these, 9 (11.8%) had evidence of a recent infection with another respiratory virus.

According to the investigators, the most common clinical findings among the 67 children infected only with HCoV-NH were cough (64.2%), rhinorrhea (61.2%), tachypnea (58.2%), fever (47.8%), abnormal breathing sounds (44.8%), and hypoxia (37.3%).

A comparison of the HCoV-NH with the HCoV identified in the studies from the Netherlands "revealed that these viruses are closely related and likely represent the same species," the investigators observed.

They went on to conclude that the present study demonstrates "the power of the tools of molecular biology to define and characterize potential infectious agents associated with human disease."

In a related analysis, Dr. Esper and his associates conducted a case-control trial after one of the study participants—a 6-year-old infant with Kawasaki disease—tested positive for HCoV-NH. They studied respiratory specimens from 11 children with Kawasaki disease and 22 age-matched controls (J. Infect. Dis. 2005;191:499-502).

Of the 11 children with Kawasaki disease, nearly three-fourths (72.7%) tested positive for HCoV-NH compared with 1 child (4.5%) in the control group. That translated into a 16-fold risk of HCoV-NH infection among children with Kawasaki disease.

"Further studies—such as prospective cohort studies, seroepidemiological investigations, and investigations of inflamed tissue for the presence of the virus—are required to determine the precise role played by HCoV-NH in the pathogenesis of Kawasaki disease and to determine whether other infectious agents can also trigger this syndrome," the investigators concluded. ■

## VERBATIM

*'Up to 40% of the pediatric population suffers from allergic rhinitis, and allergies are responsible for more than 2 million missed school days per year.'*

Dr. Michael Blaiss, p. 44