Title	Human metapneumovirus and lower respiratory tract disease in children
Author(s)	Ho, HK
Citation	New England Journal of Medicine, 2004, v. 350 n. 17, p. 1788-1790
Issued Date	2004
URL	http://hdl.handle.net/10722/145841
Rights	New England Journal of Medicine. Copyright © Massachusetts Medical Society.

CORRESPONDENCE

Human Metapneumovirus and Lower Respiratory Tract Disease in Children

TO THE EDITOR: The case definition of croup given by Williams et al. in their study of metapneumovirus (Jan. 29 issue)[1] seems misleading. The authors state that croup is an "acute lower respiratory tract infection characterized by hoarseness, cough, and stridor." On the contrary, croup is classified as an acute upper-airway disease in several textbooks of pediatrics.[2-4] Recognizing croup as an important cause of acute upper-airway obstruction and its pertinent features, as distinct from life-threatening bacterial epiglottitis, is the classic point made in medical teaching worldwide.

Hok-Kung Ho, M.B., B.S.

University of Hong Kong
Hong Kong, China
a8914760@graduate.hku.hk

1. Williams JV, Harris PA, Tollefson SJ, et al. Human metapneumovirus and lower respiratory tract disease in otherwise healthy infants and children. N Engl J Med 2004;350:443-50.
2. Orenstein DM. Acute inflammatory upper airway obstruction. In: Behrman RE, Kliegman RM, Arvin AM, eds. Nelson textbook of pediatrics. 15th ed. Philadelphia: W.B. Saunders, 1996:1201-5.
3. Healy G, Avery ME. Upper airway disorders. In: Avery ME, First LR, eds. Pediatric medicine. 2nd ed. Baltimore: Williams & Wilkins, 1994:1347-56.
4. McKenzie S, Silverman M. Respiratory disorders. In: Campbell AGM, McIntosh N, eds. Forfar & Arneil's textbook of pediatrics. 5th ed. New York: Churchill Livingstone, 1998:489-583.

TO THE EDITOR: Williams et al. show that "human metapneumovirus infection is a leading cause of respiratory tract infection in the first years of life, with a spectrum of disease similar to that of respiratory syncytial virus." In a surveillance study performed from November 1, 2002, to March 31, 2003, among 1331 healthy children younger than 15 years of age who were seen for acute respiratory infection in an emergency department in Milan, Italy, we found evidence of human metapneumovirus in 41 children (3.1 percent), of respiratory syncytial virus in 117 (8.8 percent, $P<0.001$ for the comparison with human metapneumovirus), and of influenzavirus in 209 (15.7 percent; $P<0.001$ for the comparison with human metapneumovirus) (Table 1). Although the overall prevalence of human metapneumovirus in our study population appeared to be lower than the prevalence of respiratory syncytial virus and that of influenzavirus, we showed that this pathogen has multiple effects. We confirmed that infection with human metapneumovirus has clinical characteristics similar to those of infection with respiratory syncytial virus,[1,2] but its socioeconomic effect appeared to be greater than that of respiratory syncytial virus infection and similar to that of influenzavirus infection.[3,4] We would like to know whether the authors observed the same socioeconomic burden on children and their families in association with human metapneumovirus infection.

Nicola Principi, M.D.
Susanna Esposito, M.D.
Samantha Bosis, M.D.

Institute of Pediatrics
20122 Milan, Italy
nicola.principi@unimi.it

Table 1. Clinical Characteristics and Outcomes among Children Seen in the Emergency Department for Acute Respiratory Infection and Effects among Their Household Contacts, According to Viral RNA Detection.*

Characteristic	hMPV-Positive (N=41)	RSV-Positive (N=117)	Influenzavirus-Positive (N=209)
Clinical presentation — no. (%)			
Common cold	3 (7.3)	20 (17.1)	43 (20.6)
Pharyngitis	11 (26.8)	20 (17.1)	73 (34.9)
Acute otitis media	5 (12.2)	10 (8.5)	34 (16.3)
Croup	3 (7.3)	4 (3.4)	7 (3.3)
Acute bronchitis	4 (9.8)	15 (12.8)	20 (9.6)
Wheezing	10 (24.4)†	30 (25.6)†	14 (6.7)
Pneumonia	5 (12.2)	18 (15.4)	18 (8.6)
Clinical outcome			
Hospitalization — no. (%)	2 (4.9)	16 (13.7)	11 (5.3)
Lost school days — no.			
Median	10	10	12
Range	3–15	3–12	5–15
Effects among household contacts			
Similar disease — no./total no. (%)	18/149 (12.1)‡	20/420 (4.8)	74/767 (9.6)‡
Lost work days — no.			
Median	4	2.5	4
Range	2–10‡	2–7	1–10‡
Lost school days — no.			
Median	4	2	5
Range	3–15‡	2–4	1–15‡

* RSV denotes respiratory syncytial virus, and hMPV human metapneumovirus.
† P<0.001 for the comparison with influenzavirus-positive children.
‡ P<0.05 for the comparison with RSV-positive children.

1. Mejías A, Chávez-Bueno S, Ramilo O. Human metapneumovirus: a not so new virus. Pediatr Infect Dis J 2004;23:1-10.
2. Esper F, Boucher D, Weibel C, Martinello RA, Kahn JS. Human metapneumovirus infection in the United States: clinical manifestations associated with a newly emerging respiratory infection in children. Pediatrics 2003;111:1407-10.
3. Principi N, Esposito S. Are we ready for universal influenza vaccination in paediatrics? Lancet Infect Dis 2004;4:75-83.
4. Principi N, Esposito S, Marchisio P, Gasparini R, Crovari P. Socioeconomic impact of influenza on healthy children and their families. Pediatr Infect Dis J 2003;22:Suppl:S207-S210.

THE AUTHORS REPLY: In response to Dr. Ho: we agree that the croup is usually poorly defined, partly because of differences between anatomical and physiological descriptions of this illness. Two standard textbooks of pediatrics define croup, or laryngotracheobronchitis, as both a cause of "upper airway obstruction" and "lower respiratory tract" infection.[1,2] The classic pathophysiology involves subglottic tracheal edema (the "steeple sign" seen on radiographs of the airway). The World Health Organization defines lower respiratory tract infection as the presence of tachypnea, retractions, stridor, wheezing, or apnea.[3] We think that recognition of croup as a distinct clinical syndrome is more valuable than a definition based on anatomical terms and define it as such in our article. There are an estimated 65,000 annual hospitalizations for croup in children less than five years old in the United States, thus warranting such a distinction and underscoring the importance of croup as a clinical entity.[4]

In response to the interesting data presented by Dr. Principi and colleagues: information about the age distribution of the patients they describe would help in the interpretation of the data. As we state in our article, all the children we studied were less than five years old and thus not in school. We did not collect data on parents' time off from work or other socioeconomic costs associated with illnesses due to human metapneumovirus infection. However, since the mean duration of symptoms before medical attention was sought was 4.4 days, and 37 percent of the children had concomitant acute otitis media, it is likely that there is a significant socioeconomic burden associated with disease caused by human metapneumovirus, as has been described for other respiratory viruses.[4]

Finally, we would like to clarify the financial support of our research. The work was supported by grants (T-32 AI07474 and R03 AI054790 [both to Dr. Williams] and R00095 [to the General Clini-

cal Research Center]) from the National Institutes of Health and by a Vanderbilt University Discovery grant (to Dr. Crowe).

John V. Williams, M.D.
James E. Crowe, Jr., M.D.
Vanderbilt University
Nashville, TN 37232
james.crowe@vanderbilt.edu

1. Behrman RE, Kliegman RM, Arvin AM, eds. Nelson textbook of pediatrics. 15th ed. Philadelphia: W.B. Saunders, 1996.
2. Rudolph AM, ed. Rudolph's pediatrics. 20th ed. Stamford, Conn.: Appleton & Lange, 1996.
3. Emerging and communicable diseases: surveillance and control. Geneva: World Health Organization, 1997.
4. Henrickson KJ, Hoover S, Kehl KS, Hua W. National disease burden of respiratory viruses detected in children by polymerase chain reaction. Pediatr Infect Dis J 2004;23:Suppl:S11-S18.

Monkeypox in the Western Hemisphere

TO THE EDITOR: Infection control was a major issue for investigators attempting to minimize the emergence of monkeypox in the United States, as reported by Reed et al. (Jan. 22 issue).[1] On June 7, 2003, three Illinois residents with a febrile rash syndrome presented to a community hospital. Hospital staff reported the cases that evening to the Illinois Department of Public Health, which recommended diagnostic testing, collection of contact information, and admission under contact and airborne precautions.

Infection control was efficiently implemented, despite the absence of preexisting policies specific to this pathogen and uncertainty regarding best practices for the prevention of person-to-person transmission.[2] The hospital's participation in the Top Officials 2 (TOPOFF 2) bioterrorism exercise in May 2003,[3] smallpox training activities, and past management of an imported case of Lassa fever[4] enhanced the execution of infection-control protocols.

This outbreak tested a hospital's preparedness to respond to an unusual communicable agent. Had the outbreak been larger, the hospital's isolation facilities would have been insufficient. Hospitals should critically evaluate their capacity to implement rapid syndrome-based isolation precautions for emerging disease outbreaks.[5]

Gregory D. Huhn, M.D., M.P.H.T.M.
Centers for Disease Control and Prevention
Chicago, IL 60601
ghuhn@idph.state.il.us
Robert A. Chase, M.D.
Central DuPage Hospital
Winfield, IL 60190
Mark S. Dworkin, M.D., M.P.H.T.M.
Illinois Department of Public Health
Chicago, IL 60601

1. Reed KD, Melski JW, Graham MB, et al. The detection of monkeypox in humans in the Western hemisphere. N Engl J Med 2004; 350:342-50.
2. Jezek Z, Grab B, Dixon H. Stochastic model for interhuman spread of monkeypox. Am J Epidemiol 1987;126:1082-92.
3. Top Officials (TOPOFF) exercise series: TOPOFF 2: after action summary report for public release. Washington, D.C.: Department of Homeland Security, December 19, 2003. (Accessed April 1, 2004, at http://www.dhs.gov/interweb/assetlibrary/T2_Report_Final_Public.doc.)
4. Holmes GP, McCormick JB, Trock SC, et al. Lassa fever in the United States: investigation of a case and new guidelines for management. N Engl J Med 1990;323:1120-3.
5. Bioterrorism readiness plan: a template for healthcare facilities. Washington, D.C.: Association for Professionals in Infection Control and Epidemiology, Centers for Disease Control and Prevention, April 13, 1999. (Accessed April 1, 2004, at http://www.apic.org/educ/readinow.cfm.)

TO THE EDITOR: In their report on the U.S. monkeypox outbreak (72 cases), Reed et al. cite African outbreaks of 23 and 88 cases. By doing so, the authors risk minimizing the magnitude of the problem in Africa, where the disease has been endemic since the 1970s, with multiple outbreaks, including one outbreak of 419 cases in 1996–1997.[1] The large size of this African outbreak may have resulted from increased contact with animals in a population of persons displaced by civil war.[2] High rates of human exposure to monkeypox may occur in other scenarios, such as the infection of wild rodents in U.S. cities.

The animal reservoir for human monkeypox remains unknown.[3] Although prairie dogs are the probable source of transmission in most U.S. cases, there has been human transmission from other species. A rabbit (Leporidae family) that was exposed to a diseased prairie dog was implicated as the source of human infection in at least one U.S. case.[4]

Daniel B. DiGiulio, M.D.
Paul B. Eckburg, M.D.
Stanford University School of Medicine
Stanford, CA 94305
digiulio@stanford.edu

1. Human monkeypox — Kasai Oriental, Democratic Republic of Congo, February 1996–October 1997. MMWR Morb Mortal Wkly Rep 1997;46:1168-71.