

# Vaccination key to preventing childhood pneumonia in sub-Saharan Africa

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Researchers at the University of Warwick, and the Kenya Medical Research Institute, Kilifi, Kenya, have found that respiratory syncytial virus (RSV) appears to be the predominant virus detected among infants and children hospitalized in Kenya with severe pneumonia, according to a study in the May 26 issue of *JAMA*. The contribution to this severe disease by an individual pathogen stresses the need for effective infant vaccination.

The leading cause of childhood death in sub-Saharan Africa is pneumonia. "The main means for controlling disease and death due to pneumonia are infant vaccination and case management. Thus, establishing the contribution to severe disease of individual pathogens and [vaccine](#) efficacy in infancy are essential to reducing the burden of disease," say James A. Berkley, F.R.C.P.C.H., of the Kenya Medical Research Institute, Kilifi, Kenya, and Dr James Nokes of the University of Warwick's Department of Biological Sciences.

The University of Warwick and the Kenya Medical Research Institute researchers conducted a study to examine the viral causes of severe pneumonia among [infants](#) and children at a rural Kenyan district hospital using comprehensive and sensitive molecular diagnostic techniques. Participants were children aged 1 day to 12 years who were (1) admitted to Kilifi District Hospital meeting [World Health Organization](#) clinical criteria for severe or very severe pneumonia; (2) presented to the hospital with mild upper [respiratory tract infection](#) but were not admitted; or (3) were well infants and children attending for

immunization. Nasal wash samples were obtained from the children and analyzed for the presence of respiratory viruses.

From January 1, 2007, through December 31, 2007, there were 922 eligible infants and children with severe or very severe pneumonia admitted, and viral screening was conducted on 759 patients (82 percent). Median (midpoint) age was 9.0 months. One or more respiratory viruses were detected in 425 participants in the case group (56 percent). The researchers found that RSV was the most commonly detected virus, present in 260 admissions overall (34 percent), and in 192 of 453 infants (42 percent).

Other respiratory viruses were detected in 219 admissions (29 percent), the most common being Human coronavirus 229E (6.7 percent), influenza type A (5.8 percent), Parainfluenza type 3 (3.8 percent), Human adenovirus (3.8 percent), and Human metapneumovirus (3.0 percent).

The authors write that detection of RSV was associated with admission with severe disease (34 percent) when compared with well control participants (5 percent), and that these findings offer support that RSV vaccination may offer considerable public health benefit. "There was no evidence of an association between viruses other than RSV and severe disease, (22 percent in those admitted with severe or very severe pneumonia and 23 percent in control participants)."

"In summary, our study of the occurrence of respiratory viruses in children admitted with clinical syndromes of severe or very severe pneumonia to a rural district hospital in coastal Kenya has identified more than 50 percent of case participants with a detectable virus in whom RSV was clearly predominant. We estimate that the prevention of RSV-associated severe pneumonia might reduce all-cause clinically severe or very severe pneumonia admissions to the Kilifi District

Hospital by one-third. This contrasts with no evidence to suggest a marked effect on such admissions would occur from the prevention of any other [respiratory virus](#), with the possible exception of FLUAV [influenza A]. Further molecular-based studies of respiratory virus etiology of severe pneumonia over longer periods and in multiple settings in sub-Saharan Africa are needed," the authors conclude.

**More information:** JAMA. 2010;303[20]:2051-2057

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