

# Influenza vaccine causes weaker immune response for rural children

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Researchers have found that vaccination against influenza strains seems to be more effective in a semi-urban population than in a rural population of schoolchildren in Gabon, Africa, according to an article in the Dec. 1 issue of *The Journal of Infectious Diseases*. The study suggests that infection with parasites and/or poor nutrition may have an impact on the effectiveness of influenza vaccine.

The study is one of eight that will be presented and webcast live from the National Institutes of Health on October 22, 2007 as part of the launch of the Global Theme Issue on Poverty and Human Development. The live stream is available beginning at 10 a.m. ET at:

<http://videocast.nih.gov/summary.asp?live=6239>.

Lead author E. van Riet (Department of Parasitology, Leiden University Medical Center, Leiden, The Netherlands) and a team of researchers analyzed antibody and cellular responses to influenza A and B strains in 33 children from a semi-urban school in Lambaréné in Gabon, Africa, and 22 children from a rural area nearby.

The group found that H1N1, H3N2 and B influenza virus-specific antibodies were already present in the majority of sera before vaccination indicating that influenza strains have already been circulating in Gabon. With little information available about influenza in Africa, the findings of this study indicate that the presence of the virus has probably been underestimated.

Children in the two areas differed with respect to the rates of parasitic infections (higher in rural areas), as well as nutritional status (poorer in rural areas). Following vaccination, influenza virus antibody titers increased in both the rural and the semi-urban schoolchildren, but reached significantly higher levels in the semi-urban schoolchildren. The highest titers were seen in semi-urban children not infected with helminths. Accompanying laboratory studies suggested that host immune responses to influenza might be compromised by simultaneous infections with parasites.

These studies indicate for the first time that influenza virus infections are frequent in Gabon, and suggest that many cases of febrile illness incorrectly diagnosed and mistreated as malaria may actually be due to influenza. In addition, these studies suggest that influenza vaccination will be less effective in rural children than in their semi-urban counterparts, likely because of co-infection with parasites and/or poor nutrition. Closer attention to nutrition and concomitant infections may profoundly affect responses to pandemic influenza and influenza vaccines in developing countries.

“With the current attention to the pandemic threat of avian influenza viruses, its global spread, and the preparation of preventive and curative vaccines, it is important to start asking what the immunological consequences of influenza vaccine are in African populations,” says van Riet.

The researchers noted that epidemiological data on influenza, as well as on immune responses to vaccination, will be critical for proper management of influenza epidemics in Africa. In addition, improving diagnoses of influenza, and distinguishing it from diseases with similar symptoms such as malaria, will have important implications for medication dosages.

Source: Infectious Diseases Society of America

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