

**Incidence and Subtypes of Human Metapneumovirus among Selected Rural
and Urban Populations of Kenya, 2006 - 2009**

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ABSTRACT

Human metapneumovirus (hMPV) discovered recently is a member of the family *Paramyxoviridae* viruses which are responsible for acute respiratory tract infections (ARTI) in young children, elderly patients, and immuno-compromised hosts. Studies conducted in various populations have suggested a prevalence of hMPV infection estimated at 5-15%. Epidemiological data and genetic diversity on the virus are documented elsewhere, but not in developing countries especially Africa. In developing countries, the public health importance of viral etiologies is underestimated and the disease burden is not well documented. This study investigated the incidence rates of hMPV infections among two selected populations in Kenya; Lwak, a rural community and Kibera, an urban informal settlement, each with an estimated population of 27,000. Nasopharyngeal and oropharyngeal swabs were collected from patients with acute respiratory tract infections in these study sites and screened for hMPV by real time reverse transcription polymerase chain reaction. The study identified the most affected age as children less than 5 years old with incidence rates of 7.59 per 1000 person years in males below 12 months in Kibera. Overall, incidence rates per 1000 person-years for hMPV in the different study sites were 1.12 for Kibera and 0.57 for Lwak. Using the young adults (18 – 34 years old) as reference; children 12 – 23 months from Lwak were 12 times (R.R = 11.9, p-value < 0.001) more likely to be infected by hMPV.

Children < 12 months from Kibera were 18 times (R.R = 18.0, p-value < 0.001) more likely to be infected by hMPV. Adjusted incidence rates by percentage of cases with acute respiratory tract infection (ARTI) whose sample were taken and those who visit the field clinic indicate that children < 12 months from Lwak had the highest adjusted incidence rate of 29.5 per 1000

person-years of observation. Subtypes of hMPV circulating in the two study populations were also characterized. Of the four subtypes of hMPV, the common subtype of hMPV circulating was B2 (10/17, 59%), followed by A2 (5/17, 29%) and B1 (2/17, 12%). Subtype A1 was not detected among the 17 hMPV isolates. The common clinical symptoms observed among hMPV-infected cases included cough, fever, runny nose, sneezing, temperature $\geq 38^{\circ}\text{C}$ and Oxygen Saturation ≤ 90 . In conclusion, hMPV is present in the selected Kenyan populations, contributing to morbidity as high as 0.86 per 1000 persons in all ages at both the selected urban and rural settings. Most of the major subtypes of hMPV are circulating in the selected study populations.