

Seasonal & Pandemic Influenza 2007

Poster Section: Surveillance and Diagnostics, with an Update on Rapid Diagnostics

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Poster Title: Epidemic Intelligence Perspectives on the Surveillance and Epidemiology of H5N1 in Birds and Humans

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The global human disease threat from the H5N1 avian influenza virus ("bird flu") is increasing. WHO reported more confirmed human deaths from the H5N1 virus during 2006 than during the previous three years (2003, 2004, 2005) combined, while the number of countries with confirmed human bird flu cases increased during 2006 from only 4 countries in Asia to at least 10 countries in Asia, Africa, and the Middle East (China, Vietnam, Thailand, Cambodia, Indonesia, Turkey, Iraq, Azerbaijan, Egypt, Djibouti). Nonfatal human H5N1 infections have been confirmed in at least 3 countries not included on official WHO listings: Korea (2003/2004/2006), Japan (2004), Jordan (2006).

There is evidence of several incremental changes in the virulence and epidemiological characteristics of the H5N1 virus in poultry, animals, and humans since this virus first emerged in 1996. Morbidity and mortality from the H5N1 virus among children and adolescents appears to have increased significantly in recent years; rates of morbidity and mortality from H5N1 are now disproportionately higher among children and young adults, which appears to represent a significant change in the epidemiology of the H5N1 since the time of the initial 1997 outbreaks in Hong Kong. The highest case-fatality rates for H5N1 are now being recorded among children and adolescents in the 10- to 19-year age group, and adolescents in the 10- to 15-year age range appear to be at especially high risk of mortality from H5N1. Rates of H5N1 infection are higher among females than males in the 10- to 29-year age groups. Children appear to exhibit higher frequencies of atypical, nonrespiratory disease systems. Community-level serological studies are needed to determine the frequency of asymptomatic and atypical human H5N1 infection syndromes.

Although a significant percentage of the confirmed human H5N1 cases are from disease clusters involving 2 or more individuals from a single family, possible human-to-human (H2H) transmission of the H5N1 virus cannot be conclusively demonstrated in most instances, because of potential concurrent exposure to infected birds among family members affected in most human bird flu clusters. Nonetheless, human-to-human (H2H) transmission of the avian influenza H5N1 virus was confirmed from the first known human outbreak in Hong Kong during 1997, and evident cases of H2H bird flu transmission have now been documented in China, Vietnam, Thailand, and Indonesia. The observed frequency of family bird flu disease clusters may be an indication that genetic traits within families are a significant determinant of human susceptibility to infection by the H5N1 virus.