

Commissioner's Column
Avian Influenza Update

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Avian influenza is an infection primarily of birds, such as chickens, turkeys, and migratory waterfowl, caused by type A influenza viruses. It is distinguished from pandemic influenza which is a worldwide epidemic of influenza in humans characterized by person-to-person spread with high rates of illness and death.

Influenza A virus has been responsible for all major influenza pandemics during the past century. Subtyping of influenza viruses is based on two surface glycoproteins, hemagglutinin (HA) and neuraminidase (NA). There are 16 different HA antigens and nine different NA antigens. Human influenza disease has been associated with three subtypes of HA (H1, H2, and H3) and two subtypes of NA (N1 and N2). Although the HA subtypes H5, H7, and H9 are typically found in avian species, they have been recently identified as the cause of human disease.

Viral strains in domestic birds are classified into two categories based on disease severity: highly pathogenic avian influenza (HPAI), which is associated with mortality of nearly 100% in infected flocks, and low-pathogenic avian influenza (LPAI) which has the potential to evolve into HPAI strains. All currently identified HPAI strains have been of the H5 and H7 subtypes. Both HPAI and LPAI have been associated with human infections.

The current outbreak of avian influenza among poultry and other birds in Asia, Europe, and Africa is due to a H5N1 strain. There is potential risk for the H5N1 strain to recombine with human influenza virus strains or otherwise develop the ability to be easily transmitted from person to person and become a human pandemic strain similar to the H1N1 strain causing the 1918 pandemic for the following reasons:

- HPAI (H5N1) is widespread and persistent in poultry;
- H5N1 has caused disease in humans and is associated with considerable morbidity and mortality;
- A few cases of limited person-to-person transmission have been reported;
- HPAI (H5N1) is a novel influenza strain for humans; thus humans have no immunity.

Human disease caused by H5N1 was first identified in 1997 in Hong Kong. Since H5N1 reemerged in December 2003, it has rapidly spread throughout Asia, to Europe and parts of Africa and is responsible for over 150 million bird deaths. Laboratory confirmed cases of human disease caused by HPAI strain of H5N1 have been identified in Cambodia, China, Indonesia, Iraq, Thailand, Turkey, and Vietnam. Between December 2003 and March 13, 2006, there were 177 laboratory confirmed human cases of H5N1 influenza, 98 of which were fatal (55% case fatality rate). No cases of animal, bird, or human infection with HPAI (H5N1) have been identified in the western hemisphere. All but a few of the human cases have been associated with close and direct contact with infected poultry.

As national, state, and local public health institutions in the United States prepare for a possible influenza pandemic, efforts have focused on:

- Enhanced surveillance and early identification of human cases;
- Mobilization and coordination of emergency and community services;
- Education of the public and health care professionals;
- Infection control measures;
- Procurement and use of antivirals and vaccines (if available).

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Medical providers play a critical role in the early detection of human avian influenza cases, prevention of further transmission, and community education. Medical providers should consider H5N1 influenza in the differential diagnosis and notify the Westchester County Department of Health immediately at 914-813-5000, 24 hours a day, 7 days a week of any patient who:

- Is hospitalized with severe influenza-like illness, including pneumonia or ARDS
AND
- Has either traveled to an affected area within 10 days of onset (even if no direct contact with poultry or suspect or confirmed human cases) or has an occupational risk
OR
- Has a fever (temperature > 38° C or 100.4° F) and
- Has one or more of the following: sore throat, cough, or dyspnea
AND
- Has one of the following within 10 days prior to onset: direct contact with ill poultry in an affected area, close contact with a suspected or confirmed human case of novel influenza, or occupational risk.

The Westchester County Health Department will provide information regarding clinical diagnostic testing and arrange for the testing of such specimens. Appropriate diagnostic specimens include naso- or oropharyngeal swabs or aspirates collected within 72 hours of symptom onset and with Dacron or rayon swabs with a plastic or wire shaft, placed into viral transport medium and refrigerated following collection.

Patients suspected of having avian influenza should be maintained on droplet and standard precautions. Additional information regarding infection control guidelines are available at the New York State Web site referenced below.

Medical providers can promote the following measures to patients to reduce influenza transmission:

- **Hand hygiene** - perform hand hygiene after touching blood, body fluids, secretions, excretions, and contaminated items. Hand hygiene includes both hand washing with soap and water or the use of at least 60% alcohol-based products that contain an emollient and do not require the use of water.
- **Respiratory hygiene/cough etiquette** - cover the nose and mouth when coughing or sneezing. Use tissues to contain respiratory secretions. Dispose of tissues in the nearest waste receptacle after use. Perform hand hygiene after contact with respiratory secretions and contaminated objects/materials.

There is currently no commercially available vaccine against the H5N1 virus. Of the two classes of antiviral drugs available for the treatment of influenza, adamantanes (amantadine and rimantadine) and neuraminidase inhibitors (oseltamivir and zanamavir), only the latter appears to have activity against H5N1 influenza but further studies are required to demonstrate clinical efficacy. There is thus no role for the routine use or prescription of these antiviral agents for personal stockpiling and the Westchester County Health Department strongly discourages this practice.

Whether influenza A pandemic will occur in the near future is uncertain. Preparation and an effective response will require contributions from, and collaboration and cooperation among, all members of society. Everyone has an important role.

References:

www.health.state.ny.us/diseases/communicable/influenza/pandemic/docs/pandemic_influenza_plan.pdf

www.cdc.gov/flu/avian/index.htm

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