



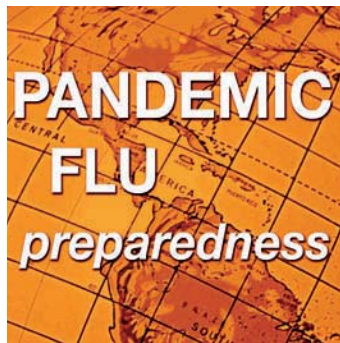
Pandemic Influenza – Clinical Considerations

This document was originally developed in response to concerns about avian influenza but has been expanded to recognize other influenza strains that have the potential to cause a pandemic outbreak. For additional information specifically about avian influenza, visit the CDC's Avian Influenza (Bird Flu) Web site at <http://www.cdc.gov/flu/avian/index.htm>.

IMMUNIZATIONS

Seasonal influenza and pneumococcal vaccines should be given to all patients who meet criteria recommended by the CDC's Advisory Committee on Immunization Practices (ACIP). During a pandemic,

a vaccine that may prevent the pandemic virus will probably become available. Guidelines for its use should be followed as they are proposed.



SURVEILLANCE

All suspect cases of pandemic influenza need to be reported promptly to the local/state health department. Clinical criteria may vary during the epidemic stages but will include fever of 100.4°F (38°C) or higher plus at least one of the following: sore throat, cough and dyspnea. Epidemiologic criteria will include close contact (within three feet) with another suspect or known case of pandemic influenza. Known contact with sick or dying birds may add to the determination of a suspect case when considering avian flu.

REPORTING

The local/state department of health will have a preferred method to be used to report a suspect case. During pre- and early pandemic phases, telephone contact will usually be the preferred method so that advice can be given regarding the appropriate laboratory tests, referral, treatment and isolation. During an epidemic, advice will vary based on the evolution of the epidemic, current best practices and availability of resources.

PREVENTION

Advice and education concerning methods of preventing the spread of a viral disease transmitted through droplets from nose, throat and lungs should be shared with office staff and patients. This will include covering the mouth with a disposable tissue when coughing and sneezing (tissues should be discarded after each use) or coughing and sneezing into the upper sleeve; using disposable tissues instead of handkerchiefs; avoiding the sharing of washcloths, cups, drinking glasses and toothbrushes; and washing hands frequently. If soap and water are not available, antiseptic hand lotions are effective. In the event of an avian influenza epidemic, advice regarding hygienic methods to prevent fecal-oral spread also may be appropriate.

During the active phase of an epidemic, various social distancing strategies may be implemented. People may be advised to avoid crowded settings, public transportation vehicles, and public activities such as schools, spectator sports activities, church meetings, movie theaters, etc. Public health authorities may suspend many such activities during an epidemic.

Suspect cases will probably be asked to remain in their homes and not travel within the community for specified periods of time depending on the results of laboratory tests.

DIAGNOSIS

Clinical criteria may vary during pandemic stages, but will include fever of 100.4°F (38°C) or higher plus at least one of the following: cough, sore throat and dyspnea. A patient who meets the clinical criteria for pandemic influenza should prompt the physician to ask the following questions: "Have you traveled to an area affected by avian outbreaks in poultry?" "Have you had direct contact with poultry or close contact with persons with suspected or confirmed pandemic flu?" "Have you had an occupational exposure to new flu viruses, perhaps through working in the fields of agriculture, health care or laboratory sciences?"

continued

In special situations, the clinician might suspect pandemic influenza even in the presence of atypical symptoms. Young children, elderly patients and patients in long-term care facilities who have underlying chronic illnesses may not have typical clinical features such as fever. Conjunctivitis has been reported in past avian influenza disease; in young children, gastrointestinal symptoms such as diarrhea may be present. In avian influenza cases, patients have presented with encephalitis-like signs.

Seriously ill patients should be hospitalized, and hospital precautions related to transmission of the infection should be followed. However, most patients with suspected or confirmed pandemic influenza should be able to remain at home. (See text adapted from *HHS Pandemic Influenza Plan, Supplement 5 Clinical Guidelines* on final page of this document for specific guidance on how such patients can be managed at home.)

INDICATIONS FOR TESTING*

Testing for avian influenza A (H₅N₁) virus infection is recommended for a patient who has an illness that:

- requires hospitalization or is fatal; and
- has or had a documented temperature of $\geq 100.4^{\circ}\text{F}$ ($\geq 38^{\circ}\text{C}$); and
- has radiographically confirmed pneumonia, acute respiratory distress syndrome or other severe respiratory illness for which an alternate diagnosis has not been established; and
- has at least one of the following potential exposures within 10 days of symptom onset:
 - A) History of travel to a country with influenza H₅N₁ documented in poultry, wild birds, and/or humans,[†] and had at least one of the following potential exposures during travel:
 - direct contact with (i.e., touching) sick or dead domestic poultry;
 - direct contact with surfaces contaminated with poultry feces;
 - consumption of raw or incompletely cooked poultry or poultry products;
 - direct contact with sick or dead wild birds suspected or confirmed to have influenza H₅N₁;
 - close contact (approach within one meter [approximately three feet]) of a person who was hospitalized or who died due to a severe unexplained respiratory illness;

- B) Close contact of an ill patient who was confirmed or suspected to have influenza H₅N₁;
- C) Worked with live influenza H₅N₁ virus in a laboratory.

Testing for avian influenza A (H₅N₁) virus infection can be considered on a case-by-case basis, in consultation with local and state health departments, for a patient with:

- mild or atypical disease[‡] (hospitalized or ambulatory) who has one of the exposures listed above (criteria A, B, or C); or
- severe or fatal respiratory disease whose epidemiological information is uncertain, unavailable, or otherwise suspicious but does not meet the criteria above (examples include: a returned traveler from an influenza H₅N₁-affected country whose exposures are unclear or suspicious, a person who had contact with sick or well-appearing poultry, etc.)

[†] For listings of influenza H₅N₁-affected countries, visit the CDC Web site at <http://www.cdc.gov/flu/avian/outbreaks/current.htm>, the World Organisation for Animal Health Web site at http://www.oie.int/eng/en_index.htm and the WHO Web site at http://www.who.int/csr/disease/avian_influenza/en/.

[‡] For example, a patient with respiratory illness and fever who does not require hospitalization, or a patient with significant neurologic or gastrointestinal symptoms in the absence of respiratory disease.

* Source: *CDC Health Update: Updated Interim Guidance for Laboratory Testing of Persons with Suspected Infection with Avian Influenza A (H5N1) Virus in the United States*, June 07, 2006. Available online at <http://www2a.cdc.gov/han/ArchiveSys/ViewMsgV.asp?AlertNum=00246>.

VIRAL TESTING

Diagnostic testing for an influenza virus includes the collection of an oropharyngeal swab and lower respiratory specimens such as tracheal aspirates or bronchoalveolar lavage. Nasal or nasopharyngeal swab specimens are also acceptable. Use only sterile Dacron or rayon swabs with plastic shafts for sampling. These specimens should be placed into viral transport media and refrigerated until they can be transported to a laboratory. Specimens should be surrounded with cold packs during transportation to maintain them at 39.2°F (4°C).

Among the most common assays used to detect influenza are viral isolates, reverse-transcription polymerase chain reaction (RT-PCR), immunofluorescence assay (IFA), rapid antigens and serologies. During interpandemic and alert

periods, only laboratories with a biosafety level (BSL) 3 biocontainment designation should be used for viral isolation. During the pandemic period when the virus is more common, a BSL 2 laboratory can be used. BSL 2 laboratories should be used for all other diagnostic tests.

OTHER LABORATORY TESTS

Depending on the clinical presentation and the patient's underlying medical conditions, additional testing may include: pulse oximetry, chest X-ray, CBC with differential, blood culture, antibiotic susceptibility testing, tests for other viruses, rapid testing for *Mycoplasma pneumoniae* and *Chlamydia* species, and a chemistry panel if organ failure is suspected.

TREATMENT

Use of antivirals: As of early 2006, recommended treatment includes the use of oseltamivir (Tamiflu) or zanamivir (Relenza) as early as possible in the course of disease, ideally within 48 hours of the first symptoms. The neuraminidase inhibitors are recommended because most avian influenza A (H₅N₁) viruses are resistant to amantadine and rimantadine.

State and local health departments will consider providing postexposure antiviral prophylaxis. In special circumstances, health departments will consider "targeted antiviral prophylaxis" for small clusters of infection. This approach would only be used at the initial introduction of the virus in a small community. During a pandemic, the demand for antivirals is expected to surpass the amount available. Therefore, priority groups for receiving treatment are being formulated.

ISOLATION/QUARANTINE

Both isolation and quarantine restrict the movement of individuals. Isolation is the restriction of movement of persons having or suspected of having a communicable disease in order to minimize contact with susceptible persons. Quarantine is the restriction of movement of persons known or suspected to have been in contact with contagious persons who, therefore, may themselves become contagious in the future.

Voluntary isolation and quarantine are often successful; however, involuntary restrictions may be required in certain situations. State-specific public health laws usually include involuntary quarantine laws. If there is a danger of a nationwide epidemic, a federal law may be put in force.

When isolation and quarantine laws are activated, a plan that includes such components as surveillance, monitoring, social support, release authority, appeal processes and communication is also required. These matters should be the concern of the legal and public health systems applying the law.

Physicians will, however, be involved because they are required to report the diagnosis of individuals with suspected or confirmed illness, determine appropriate incubation times, and help identify patients' contacts. Physicians and their staff also provide the most effective communication and education to their patients concerning the need for isolation and quarantine.

RECOMMENDED DAILY DOSAGE FOR ANTIVIRALS*

Oseltamivir:

Treatment, Influenza A and B:

Children's dose varies by weight

Children over 13 years and adults: 75 mg twice daily

Prophylaxis, Influenza A and B:

Children over 13 years and adults: 75 mg daily

Zanamivir:

Treatment, Influenza A and B:

Children over 7 years and adults: 10 mg twice daily

* Source: *HHS Pandemic Influenza Plan*, U.S. Department of Health and Human Services, November 2005. Available online at <http://www.hhs.gov/pandemicflu/plan/pdf/HHSPandemicInfluenzaPlan.pdf>

Home Care Infection Control Guidance for Pandemic Influenza Patients and Household Members*

Most patients with pandemic influenza will be able to remain at home during the course of their illness and can be cared for by family members or others who live in the household. Anyone who has been in the household with an influenza patient during the incubation period is at risk for developing influenza. A key objective in this setting is to limit transmission of pandemic influenza within and outside the home.

Management of influenza patients in the home

- Physically separate the patient with influenza from non-ill persons living in the home as much as possible.
- Patients should not leave the home during the period when they are most likely to be infectious to others (i.e., five days after onset of symptoms). When movement outside the home is necessary (e.g., for medical care), the patient should follow respiratory hygiene/cough etiquette (i.e., cover the mouth and nose when coughing and sneezing) and should wear a mask.

Management of other persons in the home

- Persons who have not been exposed to pandemic influenza and who are not essential for patient care or support should not enter the home while persons are still having a fever due to pandemic influenza.
- If unexposed persons must enter the home, they should avoid close contact with the patient.
- Persons living in the home with the patient with pandemic influenza should limit contact with the patient to the extent possible; consider designating one person as the primary care provider.
- Household members should be vigilant for the development of influenza symptoms. Consult with healthcare providers to determine whether a pandemic influenza vaccine, if available, or antiviral prophylaxis should be considered.

Infection control measures in the home

- All persons in the household should carefully follow recommendations for hand hygiene (i.e., hand washing with soap and water or use of an alcohol-based hand rub) after contact with an influenza patient or the environment in which they are receiving care.
- Although no studies have assessed the use of masks at home to decrease the spread of infection, use of a surgical mask by the patient or caregiver during interactions may be beneficial.
- Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.
- Laundry may be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry. Care should be used when handling soiled laundry (i.e., avoid “hugging” the laundry) to avoid self-contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed of with other household waste. Consider placing a bag for this purpose at the bedside.
- Environmental surfaces in the home should be cleaned using normal procedures.

* Adapted from *HHS Pandemic Influenza Plan, Supplement 5 Clinical Guidelines*. S5-IV: Clinical Guidelines for the Pandemic Period, Box 4. Available online at <http://www.hhs.gov/pandemicflu/plan/sup5.html#box4>



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