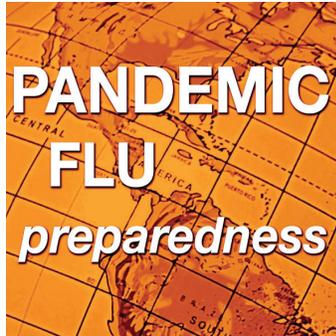




This document was originally developed in response to concerns about avian influenza, but has been expanded to address other influenza strains that have the potential to cause a pandemic outbreak.

## IMMUNIZATIONS

Seasonal influenza and pneumococcal vaccines should be given to all patients who meet criteria recommended by the Centers for Disease Control and Prevention's (CDC's) Advisory Committee on Immunization Practices (ACIP). During a pandemic, a vaccine that prevents the pandemic virus will probably become available. Guidelines for its use should be followed as they are proposed.



## SURVEILLANCE

All suspected cases of pandemic influenza should be reported promptly to local and state health departments. Clinical criteria may vary during the epidemic stages but will include fever of 100°F (37.8°C) or higher, plus at least one of the following symptoms: sore throat, cough, and dyspnea.

Epidemiologic criteria include close contact (within three feet) of another suspected or known case of pandemic influenza. Known contact with the following may add to the determination of a suspected case: sick or dying birds when considering H5N1 (avian influenza); pigs when considering H<sub>3</sub>N<sub>2</sub> variants; or live bird markets in China when considering H<sub>7</sub>N<sub>9</sub> (avian influenza A).

## REPORTING

Local and state departments of health will have a preferred method for reporting a suspected case. During pre- and early pandemic phases, telephone contact will usually be the preferred method, so 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 the 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); coughing and sneezing into the upper sleeve; using disposable tissues instead of handkerchiefs; avoiding the sharing of washcloths, drinking glasses, and toothbrushes; and washing hands frequently. If soap and water are not available, alcohol-based hand rubs are effective. In the event of an avian influenza epidemic, advice regarding hygienic methods to prevent fecal-oral spread 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, schools, spectator sports activities, church meetings, movie theaters, etc. Public health authorities may suspend many such activities during a severe epidemic.

Individuals with suspected 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.

If containment actions are taken during the emergence of pandemic influenza within a community, entry to and exit from the community may be restricted by government action.

## DIAGNOSIS

Clinical criteria may vary during pandemic stages, but include a fever of 100°F (37.8°C) or higher, plus at least one of the following: cough, sore throat, and dyspnea. For a patient who meets the clinical criteria for pandemic influenza, the physician should ask the following questions: "Have you had direct contact with poultry or pigs, or close contact with a person with suspected or confirmed pandemic flu?" "Have you had an occupational exposure to new flu viruses, perhaps through working in agriculture, health care, or laboratory sciences?"

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 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, Supplemental 5 Clinical Guidelines on the final page of this document for specific guidance on how such patients can be managed at home.)

### INDICATIONS FOR TESTING\*

Testing for a new or virulent influenza virus is recommended for a patient who:

- has an illness that requires hospitalization or is fatal; and
- has or had a documented temperature of 100°F (37.8°C) or higher; 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) Travel to a country with influenza H<sub>5</sub>N<sub>1</sub> documented in poultry, wild birds, and/or humans,<sup>†</sup> and 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 H<sub>5</sub>N<sub>1</sub>
    - Close contact (i.e., approach within approximately three feet) of a person who was hospitalized or who died due to a severe unexplained respiratory illness
  - B) Visit to a live bird market with poultry in China for H<sub>7</sub>N<sub>9</sub>
  - C) Close contact with an ill patient who was confirmed or suspected to have pandemic influenza
  - D) Occupational exposure to live influenza H<sub>5</sub>N<sub>1</sub> H<sub>7</sub>N<sub>9</sub> virus in a laboratory

Testing for pandemic influenza virus infection can be considered on a case-by-case basis, in consultation with local and state health departments, for a patient who has:

- Mild or atypical disease (hospitalized or ambulatory) who has one of the exposures listed above (i.e., criteria A, B, C, or D); or
- Severe or fatal respiratory disease for which epidemiologic information is uncertain, unavailable, or otherwise suspicious, but does not meet the criteria above. Examples include, a returned traveler from a pandemic influenza-affected country whose exposures are unclear or suspicious; a person who had contact with sick or well-appearing poultry; a person who had contact with pigs at a county fair.

\*Adapted from HHS *Pandemic Influenza Plan, Supplement 5 Clinical Guidelines*. S5-IV: Clinical Guidelines for the Pandemic Period, Box 4. Available online at [www.flu.gov/planning-preparedness/federal/hhspandemicinfluenzaplan.pdf](http://www.flu.gov/planning-preparedness/federal/hhspandemicinfluenzaplan.pdf).

† For listings of influenza H<sub>5</sub>N<sub>1</sub>-affected countries, visit the World Health Organization (WHO) website at [www.who.int/csr/disease/avian\\_influenza/en/](http://www.who.int/csr/disease/avian_influenza/en/).

### 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, complete blood count (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

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 influenza A viruses are resistant to amantadine and rimantadine.

Some state and local health departments stockpile antivirals to be used for postexposure prophylaxis and case treatment. Other public and private groups may consider stockpiling antivirals for the prophylaxis and treatment of staff and their families. Family physicians may consider keeping on hand an adequate supply of antivirals for staff coverage during the first pandemic wave of up to eight weeks, until a pandemic-specific vaccine becomes available.

### RECOMMENDED DAILY DOSAGE FOR ANTIVIRALS

#### Oseltamivir:

Treatment, Influenza A and B:

Children's dose varies by weight

Children older than 13 years and adults: 75 mg twice daily

Prophylaxis, Influenza A and B:

Children older than 13 years and adults: 75 mg daily

#### Zanamivir:

Treatment, Influenza A and B:

Children age seven years and older and adults: 10 mg (two 5 mg inhalations) twice daily

([www.cdc.gov/flu/avianflu/h7n9-antiviral-treatment.htm](http://www.cdc.gov/flu/avianflu/h7n9-antiviral-treatment.htm))

*NOTE: Some human cases of H<sub>5</sub>N<sub>1</sub> (clade 2, Indonesia and Turkey) have shown partial resistance to oseltamivir. Doubling the usual treatment dose to a maximum of 150 mg twice daily in adults is recommended for these cases.*

*Paramivir, an IV neuraminidase inhibitor, was approved by the Food and Drug Administration in December, 2014. Recommendations are 600 milligrams daily for five days for hospitalized patients unable to take oral medication (10 milligrams/kilograms for children). In oseltamivir resistant patients an investigational drug, IV zanamivir, should be considered.*

## ISOLATION/QUARANTINE

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

# 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 individuals 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 wear a mask).

## Management of other individuals in the home

- Individuals who have not been exposed to pandemic influenza, and who are not essential for patient care or support should not enter the home while individuals with pandemic influenza still have a fever.
- If unexposed persons must enter the home, they should avoid close contact with the patient.
- Individuals 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 health care providers to determine whether a pandemic influenza vaccine (if available) or antiviral prophylaxis should be considered.

## Infection control measures in the home

- All individuals 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 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 [www.flu.gov/planning-preparedness/federal/hhspandemicinfluenzaplans.pdf](http://www.flu.gov/planning-preparedness/federal/hhspandemicinfluenzaplans.pdf).



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