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CITY OF ST. LOUIS
DEPARTMENT OF HEALTH
NOVEL STRAIN AND PANDEMIC INFLUENZA PLAN

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I. Executive Summary

Rationale

An influenza pandemic has the potential to cause more death and illness than any other public health threat. If a pandemic influenza virus with similar virulence to the 1918 strain emerged today, in the absence of intervention, it is estimated that 1.9 million Americans could die and almost 10 million could be hospitalized over the course of the pandemic, which may evolve over a year or more. Although the timing, nature and severity of the next pandemic cannot be predicted with any certainty, preparedness planning is imperative to lessen the impact of a pandemic. The unique characteristics and events of a pandemic will strain local, state, and federal resources. It is unlikely that there will be sufficient personnel, equipment, and supplies to respond adequately to multiple areas of the country for a sustained period of time. Therefore, minimizing social and economic disruption will require a coordinated response. Governments, communities, and other public and private sector stakeholders will need to anticipate and prepare for a pandemic by defining roles and responsibilities and developing continuity of operations plans.

The Pandemic Influenza Threat

A pandemic occurs when a novel influenza virus emerges that can infect and be efficiently transmitted among individuals because of a lack of pre-existing immunity in the population. The extent and severity of a pandemic depends on the specific characteristics of the virus. Although a novel influenza virus could emerge from anywhere in the world at any time, scientists are particularly concerned about the avian influenza (H5N1) currently circulating in Asia and parts of Europe. Although the timing, nature and severity of the next pandemic cannot be predicted with any certainty, preparedness planning is imperative to lessen the impact of a pandemic.

Outbreaks of influenza H5N1 have occurred among poultry in several countries in Asia since 1997. The H5N1 avian influenza virus is widespread in the region and has become endemic in migratory birds and several other animal species. The avian influenza A (H5N1) epizootic (animal outbreak) in Asia has expanded to wild birds and/or poultry in parts of Europe, the Near East and Africa. As of

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June 2006, cases of human H5N1 infection have been reported in China, Egypt, Indonesia, Vietnam, Azerbaijan, Cambodia and Djibouti. While most of the reported cases seem to have occurred from direct contact with infected poultry or contaminated surfaces, the source of infection has not been documented in every instance. Rare instances of probable human-to-human transmission associated with H5N1 viruses have occurred, most recently in a family cluster in Indonesia. So far, however, the spread of H5N1 virus from person to person has been rare, inefficient and unsustainable. The total number of confirmed human cases of H5N1 reported as of June 7, 2006 has reached 225. The case fatality rate for these reported cases continues to be approximately 50 percent. As of this date, H5N1 has not been identified among animals or humans in the United States. We are currently in a Pandemic Alert Phase 3, defined by WHO as “human infections with a new subtype but no human-to human spread or at most rare instances of spread to a close contact.”

Pandemic Planning Assumptions

As a result of the widespread emergence and spread of the H5N1 virus among birds, public health experts and government officials are escalating and intensifying their pandemic preparedness planning. Uncertainty about the magnitude of the next pandemic mandates planning for a severe pandemic such as occurred in 1918.

Characteristics of an influenza pandemic that must be considered in strategic planning include:

- The ability of the virus to spread rapidly worldwide;
- The fact that people may be asymptomatic while infectious;
- Simultaneous or near-simultaneous outbreaks in communities across the U.S., thereby limiting the ability of any jurisdiction to provide support and assistance to other areas;
- Enormous demands on the healthcare system;
- Delays and shortages in the availability of vaccines and antiviral drugs; and
- Potential disruption of national and community infrastructures including transportation, commerce, utilities and public safety due to widespread illness and death among workers and their families and concern about on-going exposure to the virus.

Sustained human-to-human transmission anywhere in the world will be the triggering event to initiate a pandemic response by the United States.

The City of St. Louis must be prepared to meet this emerging threat. While some factors cannot be foreseen and others may change, there is no substitute for planning. This document begins to address the planning task. It is a “living” document and will be changing as new information is obtained, new linkages made, and new challenges found. Much of the information in this document is

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adapted from the United States Department of Health and Human Services
Pandemic Influenza Plan, 2005.

INFLUENZA: INFORMATION AND DEFINITIONS

Influenza

- Influenza is an acute viral disease of the respiratory tract characterized by fever, headache, muscle pain, severe exhaustion, runny nose, sore throat, and cough. Middle ear infection, nausea, and vomiting are also commonly reported among children.
- For surveillance purposes, influenza-like illness (ILI) is defined as respiratory illness with temperature greater than 38°C (100.4 F) plus either sore throat or cough.

Seasonal or Interpandemic Influenza

- Seasonal influenza occurs each winter, primarily causing self-limiting disease for 2 to 7 days in most infected individuals. Influenza complications—especially viral and bacterial pneumonias—can cause severe illness or death in infants, the elderly, the immunocompromised, and those with certain chronic medical conditions.
- As seasonal influenza viruses replicate and evolve, they develop small changes in their characteristics that allow them to evade existing immunity to influenza in the human population. Influenza vaccines must therefore be reformulated each year to provide protection against currently circulating strains of influenza A and B.

Pandemic Influenza

- Pandemic influenza is an uncommon type of influenza A that causes greater illness and death than seasonal influenza. An influenza pandemic occurs when a new influenza A virus (a “pandemic influenza virus”) emerges in the human population, causes serious illness, and then spreads easily from person to person worldwide. Influenza pandemics occurred three times during the twentieth century—in 1918, 1957, and 1968.

Novel Strains of Influenza

- Novel strains of influenza are newly identified influenza viruses that require close monitoring to determine whether they (or their genetic offshoots) are capable of pandemic spread. They may include avian or animal influenza strains

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that can infect humans (like avian influenza A [H5N1]), or new, or re-emergent, human viruses that cause cases or clusters of human disease.

World Health Organization Pandemic Influenza Phases

Interpandemic period

Phase 1. No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.

Phase 2. No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease. if it occurs.

Pandemic alert period

Phase 3. Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact

Phase 4. Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that delay spread to gain time to implement the virus is not well adapted to humans.

Phase 5. Larger cluster(s) but human-to-human spread still localized suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).

Pandemic period

Phase 6. Pandemic: increased and sustained transmission in general population.

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Abbreviations and Acronyms

ACF	Administration for Children and Families
ACIP	Advisory Committee on Immunization Practices
ASH	Assistant Secretary for Health
ASPA	Assistant Secretary for Public Affairs
ASPHEP	Assistant Secretary for Public Health Emergency Preparedness
ASTHO	Association of State and Territorial Health Officials
CDC	Centers for Disease Control and Prevention
CONOPS	Concept of Operations
DHS	Department of Homeland Security
DoD	Department of Defense
EOC	Emergency Operations Center
ESF	Emergency Support Function
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FMCS	Federal Medical Contingency Stations
HA	hemagglutinin (a protein on the surface of the influenza virus)
HHS	Department of Health and Human Services
HRSA	Health Resources and Services Administration
HSPD	Homeland Security Presidential Directive
ICS	Incident Command System
IIMG	Interagency Incident Management Group
ILI	influenza-like-illness
IOM	Institute of Medicine
NA	neuraminidase (a protein on the surface of the influenza virus)
NI	neuraminidase inhibitors
NIC	National Influenza Center
NIH	National Institutes of Health
NDMS	National Disaster Medical System
NIMS	National Incident Management System
NRP	National Response Plan
NVAC	National Vaccine Advisory Committee

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NVPO/HHS.....National Vaccine Program Office, Department of Health and Human Services
OPHEP/HHS.....Office of Public Health Emergency Preparedness, Department of Health and Human Services
OGHA/HHSOffice of Global Health Affairs, Department of Health and Human Services
OIGA/HHSOffice of Intergovernmental Affairs, Department of Health and Human Services
PHS.....Public Health Service
PPE.....Personal Protective Equipment
R&D.....Research and Development
SARS.....Severe Acute Respiratory Syndrome
USAID.....U.S. Agency for International Development
USDA.....U.S. Department of Agriculture
VRBPACVaccine and Related Biological Products Advisory Committee
WHO.....World Health Organization

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III. LABORATORY DIAGNOSTICS

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LABORATORY DIAGNOSTICS

RATIONALE

During the earliest stages of a pandemic, public health, hospital, and clinical laboratories might receive a large and potentially overwhelming volume of clinical specimens. Pre-pandemic planning is therefore essential to ensure the timeliness of diagnostic testing and the availability of diagnostic supplies and reagents, address staffing issues, and disseminate protocols for safe handling and shipping of specimens. Once a pandemic is underway, the need for laboratory confirmation of clinical diagnoses may decrease as the virus becomes widespread.

OVERVIEW

This section provides recommendations to state and local public health partners and other laboratories on the use of diagnostic tests to detect, characterize, and monitor novel subtypes of influenza, including avian influenza A (H5N1) and other viruses with pandemic potential. The recommendations for the Inter-pandemic and Pandemic Alert Periods focus on laboratory testing in support of seasonal influenza surveillance, laboratory-based detection of novel influenza subtypes, and preparedness planning to support the laboratory component of the response to a pandemic (e.g., detection and characterization of viruses, case reporting, specimen management, surge capacity). The recommendations for the Pandemic Period focus on the provision of laboratory support for disease surveillance and to assist clinicians and hospitals. The recommendations also cover occupational health issues for laboratory workers.

SUMMARY OF ROLES AND RESPONSIBILITIES FOR PUBLIC HEALTH AND CLINICAL LABORATORIES IN LABORATORY DIAGNOSTICS

- I. INTERPANDEMIC AND PANDEMIC ALERT PERIODS
 - A. Clinical and hospital laboratories:

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1. Work with state and local health departments to address laboratory surge capacity issues and train personnel in management of respiratory specimens during an influenza pandemic.
 2. Send clearly labeled specimens from patients with suspected novel influenza to state or local health departments. The local health department will offer assistance on transportation of specimens to the state laboratory for testing.
 3. Hospital labs should NOT attempt to isolate influenza viruses from patients with suspected novel influenza virus infection. Specimens should be sent to appropriate state laboratory.
 4. Institute surveillance for influenza-like illnesses (ILI) among laboratory personnel working with novel influenza viruses.
- B. State and local public health laboratories:
1. Work with federal partners to enhance laboratory-based monitoring of seasonal influenza virus subtypes, as described in section Recommendations for the pandemic period.
 2. State laboratories will conduct testing for novel subtypes of influenza viruses only if BSL-3 biocontainment conditions with enhancements are available.
 3. Institute surveillance for ILI among laboratory personnel.
 4. Conduct preparedness planning to support the response to an influenza pandemic.
- II. PANDEMIC PERIOD
- A. Clinical and hospital laboratories:
1. Scale up to manage increased numbers of requests for influenza testing.
 2. Send selected specimens from possible pandemic influenza patients to state or local health departments. All specimens are to be sent to state laboratory. The local health department will offer assistance in transporting specimens to state laboratory.
- B. State and local public health laboratories:
1. Scale up to manage increased numbers of requests for influenza testing.
 2. Work with federal partners to provide healthcare providers and clinical laboratories with guidelines on all aspects of specimen management and diagnostic testing. The local health department will offer assistance on the transportation of specimens to state laboratory for any necessary testing.

RECOMMENDATIONS FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS

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- I. Laboratory support for seasonal influenza surveillance
 - A. State and local public health laboratories and clinical laboratories (including hospital and private commercial laboratories) should continue to participate in laboratory-based surveillance for new subtypes of influenza through the U.S.-based laboratories in the World Health Organization (WHO) Global Influenza Surveillance Network and the National Respiratory and Enteric Virus Surveillance System (NREVSS). Additional information on seasonal influenza surveillance (including surveillance for influenza mortality and pediatric hospitalizations) is provided in section Recommendations for the pandemic period.
- II. Laboratory testing for novel influenza subtypes
 - A. During the Pandemic Alert Period, state and local health departments, hospitals, and clinicians should enhance surveillance to identify patients who may present with possible cases of novel influenza (see section Laboratory support for seasonal influenza surveillance²). Health Alert Network (HAN) messages will be issued, as needed, to provide updates and guidance as new situations arise. (See section Interim recommendations: Enhanced U.S. surveillance and diagnostic evaluation to identify cases of human infection with avian influenza A (H5N1))
 - B. State and local public health laboratories should be prepared to process and, in some instances, test—if they have the capability (see below)—specimens from suspected cases of infection with:
 1. Avian influenza A (H5N1) and other avian influenza viruses
 2. Other animal influenza viruses (e.g., swine influenza viruses)
 3. New or re-emergent human influenza viruses (e.g., H2) with pandemic potential.
 - C. Clinicians should contact their state or local health departments if they suspect a human case of infection with any novel influenza A virus.
 - D. State and local health departments, in turn, should contact CDC via the CDC Emergency Response Hotline: 770-488-7100.
 - E. Guidelines on when to send specimens or isolates of suspected novel avian or human strains to CDC for reference testing are provided in section Reference testing guidelines for potential pandemic strains of influenza.
- III. Testing for human cases of avian influenza:
 - A. Currently, avian influenza strains implicated in human disease (in addition to influenza A [H5N1]) include the highly pathogenic avian influenza (HPAI) strain H7N7 and the low pathogenic avian influenza (LPAI) strains H9N2, H7N2, and H7N3
 - B. As of October 2005, no laboratory-confirmed cases of human infection with influenza A (H5N1) had been reported in the United

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- States. However, CDC has confirmed two non-fatal cases of avian A (H7N2) influenza in Virginia and New York
- C. As new U.S. cases of human infection with avian influenza viruses are reported, they will be posted at:
www.aphis.usda.gov/vs/birdbiosecurity/hpai.html and at:
www.cdc.gov/flu.
 - D. If an avian influenza strain—or a human virus variant that evolves from it—causes an influenza pandemic, it might become necessary to re-evaluate biocontainment requirements and select agent registration requirements for laboratory testing. CDC and the Laboratory Response Network (LRN) will assist USDA, as requested, in making such a decision.
 - E. Clinical laboratories that receive diagnostic specimens from patients with suspected novel influenza (based on clinical and epidemiologic data) should contact their state or local health departments.
 - F. If new or re-emergent human influenza strains with pandemic potential are suspected, laboratories should conduct RT-PCR only under BSL-2 containment conditions and viral culture only under BSL-3 conditions with enhancements.
- IV. Laboratory planning to support the response to an influenza pandemic
- A. Advance planning is essential to anticipate adequate laboratory capacity to support medical and public health partners during an influenza pandemic. Some aspects of this planning, such as surge capacity planning, can be coordinated with bioterrorism preparedness planning.
- V. Detection and characterization of novel influenza strains:
- A. As of October 2005, about 48 state and large local public health laboratories have received training in RT-PCR protocols for molecular detection of H1, H3, H5, and H7 subtypes. These laboratories should incorporate RT-PCR testing into their standard influenza laboratory activities. Real-time RT-PCR protocols are available through the website of the Association of Public Health Laboratories (APHL) and will be updated as required to monitor the appearance and evolution of novel influenza viruses. A positive RT-PCR test result for a novel influenza strain should be considered presumptive, pending testing by a second reference laboratory.
 - B. State and local public health laboratories should provide hospitals and healthcare providers with information on how to contact the laboratory when a novel influenza subtype is suspected and how to handle, label, and ship clinical specimens for diagnostic evaluation. This information is provided in this document in sections Recommendations for the interpandemic and pandemic alert periods, specimen collection, and shipping instructions.

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- C. State and local public health laboratories should contact laboratories in their jurisdictions that conduct RT-PCR influenza testing or that have BSL-3 containment facilities to remind them to notify the state health department if they receive specimens from suspected cases of novel influenza.
- VI. Laboratory reporting
- A. State and local health departments that report laboratory-confirmed seasonal influenza cases to CDC use a variety of reporting mechanisms, including faxes, the Public Health Information System (PHLIS), and a web-based NREVSS data-entry system. Cases of novel influenza should be reported to CDC by the same mechanisms.
 - B. Laboratory surge capacity planning;
Health departments should assess projected statewide needs for scaled-up diagnostic activity during the early stages of a pandemic, in terms of laboratory staffing, training, reporting, and supplies, and should develop strategies to address them.
 - C. Staffing and training
Laboratories should plan for increased staffing needs. Some strategies include:
Cross-training personnel during the regular influenza season in the use of rapid diagnostic tests and RT-PCR protocols and in reporting results through existing surveillance systems.
Arranging to recruit and train temporary staff for employment during a pandemic
 - D. Supplies and equipment
Laboratories are likely to require additional diagnostic supplies and equipment to process large numbers of samples during the initial stages of a pandemic. Some preparedness strategies include:
 1. Establishing the current level of diagnostic supplies, including personal protective equipment for laboratorians (e.g., gloves, masks)
 2. Assessing anticipated equipment and supply needs, and determining a trigger point for ordering extra resources.
Laboratories should also consider the need for back-up sources of supplies if most laboratories in a state or large city rely on the same manufacturer for particular supplies or equipment.
 3. Determining how consumption of supplies will be tracked during a pandemic
- VII. Specimen Handling
- A. State and local health departments should inform and educate public health staff (including laboratorians), local physicians, and hospital workers on safe and effective methods for specimen collection and management, making use of the guidelines in sections Specimen collection and shipping instructions Guidelines for Collecting and Shipping Specimens for Influenza Diagnostics.

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Safety issues related to specimen handling are also addressed in these sections. Procedures for specimen collection, handling, and shipping during a pandemic will be the same as those used for seasonal disease surveillance. However, laboratory staff should anticipate shipping a much larger number of specimens in a very short time, especially during the early stages of a pandemic. Once the pandemic is underway and healthcare providers rely on clinical criteria and rapid test kits, more diagnostic activities may be conducted locally and fewer shipments may be needed.

- B. Partnerships with healthcare providers and clinical laboratories
Good working relationships between healthcare providers and public health laboratories will facilitate diagnostic activities during a pandemic. Public health laboratories should continue to build partnerships with healthcare providers in their jurisdictions, including physicians who participate in the Sentinel Provider Network (SPN) during the regular influenza season. Public health laboratories should build partnerships with clinical laboratories and provide them with updated information and (if feasible) training in influenza diagnostics.

RECOMMENDATIONS FOR THE PANDEMIC PERIOD

- I. Laboratory support for disease surveillance
 - A. Public health, hospital, and clinical laboratories will support surveillance for pandemic influenza through the same mechanisms that support laboratory-based surveillance for seasonal influenza.
 - B. CDC and the LRN will work with state and local health departments to make diagnostic testing for the pandemic virus readily available, both at CDC and at state and local public health laboratories that have implemented RT-PCR protocols.
 - 1. As soon as a pandemic strain has been identified, CDC's Influenza Laboratory will develop, produce, and disseminate RT-PCR and IFA reagents, as needed. As necessary, CDC and APHL will also update the RT-PCR protocol currently available to public health laboratories through the APHL website.
 - 2. As the pandemic continues, CDC will advise states on when confirmatory testing (i.e., subtyping) is required. Although confirmatory testing will be required when the pandemic begins, the level of testing will decrease as the virus becomes widespread.
 - 3. CDC will advise states on the percentage of isolates per week or month that they should send to CDC as part of efforts to monitor changes in the antigenicity and antiviral susceptibility of the pandemic virus. Throughout the pandemic, CDC will provide updated instructions on the

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collection of clinical and epidemiologic data that should accompany isolates. CDC could ask some state public health laboratories to perform virus isolation or RT-PCR subtyping before sending specimens to CDC.

4. CDC may work with the U.S.-based WHO collaborating laboratories, NREVSS laboratories, and/or Emerging Infectious Program sites (www.cdc.gov/ncidod/osr/site/eip/index.htm) to conduct special studies or establish additional laboratory-based surveillance systems to answer critical questions related to vaccine development or other aspects of the public health response. For example, CDC and state and local partners could conduct sero-surveys to determine the number of persons who develop antibodies to the pandemic virus over time.

C. Laboratory Support for clinicians

1. When a pandemic begins, public health and clinical laboratories will scale up to manage increased numbers of requests for influenza testing. As part of this effort, CDC will work with state and local public health laboratories and the LRN to provide clinical laboratories with guidelines for safe handling, processing, and rapid diagnostic testing of clinical specimens from patients who meet the case definition for pandemic influenza. If private laboratories perform RT-PCR testing during the early phase of an influenza pandemic, the results should be confirmed in consultation with the state public health laboratory.
2. State and local health laboratories should provide local healthcare providers with:
3. Specimen submission forms that specify the clinical and epidemiologic data that should accompany clinical specimens sent to state public health laboratories. (During the early stages of a pandemic, clinicians should include information on patients' symptoms and risk factors, if known.)
4. Rapid communication of test results and reminders that a negative test result (especially by rapid diagnostic testing) might not rule out influenza and should not affect patient management or infection control decisions.
5. Guidance on the use of commercially available rapid diagnostic tests for the detection of influenza A. These tests may be used by physicians to supplement clinical diagnoses of pandemic influenza. Because the sensitivity of rapid diagnostic kits might not be optimal, physicians should take their positive and negative predictive values into consideration when interpreting test results (Appendix 6).

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6. Guidance on which specimens to send to state public health laboratories as the pandemic continues.
- D. Biocontainment procedures
1. During an influenza pandemic, laboratory procedures should be conducted under appropriate biosafety conditions: Commercial antigen detection testing for influenza should be conducted using BSL-2 work practices.
 2. Public health laboratories may conduct RT-PCR testing using BSL-2 work practices and virus isolation using BSL-3 practices with enhancements.
- E. Occupational Health issues for laboratory workers
1. To protect the health of laboratory workers during a pandemic, public health, clinical, and hospital laboratories should maintain the safety practices used during the Inter-pandemic and Pandemic Alert Periods. These include:
 - a. Conducting laboratory procedures under appropriate biocontainment conditions
 - b. Encouraging routine vaccination of all eligible laboratory personnel who are exposed to specimens from patients with respiratory infections.

LABORATORY SUPPORT FOR SEASONAL INFLUENZA SURVEILLANCE

U.S. Collaborating Laboratories of the WHO Global Influenza Surveillance Network All state and several large local public health laboratories, as well as about 25 tertiary-care hospital and academic center laboratories, participate as U.S. collaborating laboratories in the WHO Global Influenza Surveillance Network, which collects worldwide data on circulating strains of influenza viruses. These data are used to develop recommendations for the formulation of each year's influenza vaccines, as well as to detect new human influenza viruses that might have pandemic potential. CDC's Influenza Laboratory serves as the WHO Collaborating Center for Surveillance, Epidemiology, and Control of Influenza, along with the WHO Collaborating Centers for Reference and Research on Influenza in Australia, Japan, and the United Kingdom.

The U.S.-based WHO collaborating laboratories provide CDC with weekly reports of laboratory-confirmed cases of influenza A and B viruses, by age group. These laboratories typically use virus isolation followed by antigenic testing with IFA staining or HAI—or by molecular testing with RT-PCR—to identify known subtypes of human influenza viruses. If unusual subtypes are detected, or if the specimens cannot be subtyped using available techniques, the specimens are sent to CDC for further testing.

NREVSS Collaborating Laboratories The National Respiratory and Enteric Virus Surveillance System (NREVSS; <http://www.cdc.gov/ncidod/dvrd/revb/nrevss/>) includes more than 90 laboratories throughout the country, including many hospital laboratories, some state public health laboratories, and a few private commercial laboratories. About 40 of the NREVSS laboratories are also WHO

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collaborating laboratories. Like the WHO collaborating laboratories, NREVSS laboratories provide CDC with weekly reports of laboratory confirmed cases of influenza A and B viruses. These laboratories typically test respiratory specimens with commercially available rapid diagnostic tests. Several NREVSS laboratories also perform virus isolation followed by rapid diagnostic tests or antigenic typing by IFA. If untypable viruses or unusual subtypes are detected, the specimens are sent to the state public health laboratory or to CDC for further testing.

INTERIM RECOMMENDATIONS: ENHANCED U.S. SURVEILLANCE AND DIAGNOSTIC EVALUATION TO IDENTIFY CASES OF HUMAN INFECTION WITH AVIAN INFLUENZA A (H5N1)

NOTE: This guidance pertains to the avian influenza A (H5N1) situation in October 2005. CDC will provide updated guidance for avian influenza A (H5N1) and for new situations, as needed, through the Health Alert Network (HAN). Enhanced surveillance efforts by state and local health departments, hospitals, and clinicians are needed to identify patients at increased risk for influenza A (H5N1). Interim recommendations include the following:

Testing for avian influenza A (H5N1) is recommended for:

A patient who has an illness that:

- * requires hospitalization or is fatal; AND
- * has or had a documented temperature of $\geq 38^{\circ}\text{C}$ ($\geq 100.4^{\circ}\text{F}$); AND
- * has radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), 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 (e.g., 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 1 meter [approx. 3 feet]) of a person who was hospitalized or died due to a severe unexplained respiratory illness;

B) Close contact (approach within 1 meter [approx. 3 feet]) of an ill patient who was confirmed or suspected to have 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:

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- A patient with mild or atypical disease‡ (hospitalized or ambulatory) who has one of the exposures listed above (criteria A, B, or C); OR
- A patient with 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.)

Clinicians should contact their local or state health department as soon as possible to report any suspected human case of influenza H5N1 in the United States.

Specimen Collection and Testing Guidelines

- * Oropharyngeal swab specimens and lower respiratory tract specimens (e.g., bronchoalveolar lavage or tracheal aspirates) are preferred because they appear to contain the highest quantity of virus for influenza H5N1 detection, as determined on the basis of available data. Nasal or nasopharyngeal swab specimens are acceptable, but may contain less virus and therefore not be optimal specimens for virus detection.
- * Detection of influenza H5N1 is more likely from specimens collected within the first 3 days of illness onset. If possible, serial specimens should be obtained over several days from the same patient.
- * Bronchoalveolar lavage is considered to be a high-risk aerosol-generating procedure. Therefore, infection control precautions should include the use of gloves, gown, goggles or face shield, and a fit-tested respirator with an N-95 or higher rated filter. A loose-fitting powered air-purifying respirator (PAPR) may be used if fit-testing is not possible (for example, if the person has a beard). Detailed guidance on infection control precautions for health care workers caring for suspected influenza H5N1 patients is available.]]
- * Swabs used for specimen collection should have a Dacron tip and an aluminum or plastic shaft. Swabs with calcium alginate or cotton tips and wooden shafts are not recommended.§ Specimens should be placed at 4°C immediately after collection.
- * For reverse-transcriptase polymerase chain reaction (RT-PCR) analysis, nucleic acid extraction lysis buffer can be added to specimens (for virus inactivation and RNA stabilization), after which specimens can be stored and shipped at 4°C. Otherwise, specimens should be frozen at or below -70°C and shipped on dry ice. For viral isolation, specimens can be stored and shipped at 4°C. If specimens are not expected to be inoculated into culture within 2 days,

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they should be frozen at or below -70°C and shipped on dry ice. Avoid repeated freeze/thaw cycles.

* Influenza H5N1-specific RT-PCR testing conducted under Biosafety Level 2 conditions is the preferred method for diagnosis. All state public health laboratories, several local public health laboratories, and CDC are able to perform influenza H5N1 RT-PCR testing, and are the recommended sites for initial diagnosis.

* Viral culture should NOT be attempted on specimens from patients suspected to have influenza H5N1, unless conducted under Biosafety Level 3 conditions with enhancements.

* Commercial rapid influenza antigen testing in the evaluation of suspected influenza H5N1 cases should be interpreted with caution. Clinicians should be aware that these tests have relatively low sensitivities, and a negative result would not exclude a diagnosis of influenza H5N1. In addition, a positive result does not distinguish between seasonal and avian influenza A viruses.

* Serologic testing for influenza H5N1-specific antibody, using appropriately timed specimens, can be considered if other influenza H5N1 diagnostic testing methods are unsuccessful (for example, due to delays in respiratory specimen collection). Paired serum specimens from the same patient are required for influenza H5N1 diagnosis: one sample should be tested within the first week of illness, and a second sample should be tested 2-4 weeks later. A demonstrated rise in the H5N1-specific antibody level is required for a diagnosis of H5N1 infection. Currently, the microneutralization assay, which requires live virus, is the recommended test for measuring H5N1-specific antibody. Any work with live wild-type highly pathogenic influenza H5N1 viruses must be conducted in a USDA-approved Biosafety Level 3 enhanced containment facility. Visit <http://www.cdc.gov/flu/h2n2bsl3.htm> for more information about procedures and facilities recommended for manipulating highly pathogenic avian influenza viruses.

Laboratory testing results positive for influenza A (H5N1) in the United States should be confirmed at CDC, which has been designated as a WHO H5 Reference Laboratory. Before sending specimens, state and local health departments should contact CDC's on-call epidemiologist at (404) 639-3747 or (404) 639-3591 (Monday – Friday, 8:30 AM - 5:00 PM) or (770) 488-7100 (all other times).

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Pandemic Influenza Plan

REFERENCE TESTING GUIDELINES FOR POTENTIAL PANDEMIC STRAINS OF INFLUENZA

State/local laboratories should send specimens to CDC if:

1. A sample tested by the state or local laboratory is positive for H5 or another novel subtype; Note: A laboratory should test for influenza A (H5) only if it is able to do so by PCR or has a BSL-3-enhanced facility for influenza A(H5) viral culture.

Or

2. A sample from a patient who meets the clinical and epidemiologic criteria for possible infection with a potentially pandemic virus is positive for influenza A by RT-PCR or rapid antigen detection,* is negative for influenza A(H1) and
3. A(H3), and the referring jurisdiction is not equipped to test for specific strains;

Or

1. The referring jurisdiction is not equipped to test samples for novel influenza viruses by RT-PCR and is requesting testing at CDC.

Shipping procedures for potential pandemic strains of influenza are provided in section shipping instructions. *Because the sensitivity of commercially available rapid diagnostic tests for influenza may not always be optimal, CDC will also accept specimens taken from persons who meet the clinical and epidemiological criteria even if they test negative by influenza rapid diagnostic testing—if PCR assays are not available at the state laboratory.

LABORATORY BIOSAFETY GUIDELINES FOR HANDLING AND PROCESSING SPECIMENS OR ISOLATES OF NOVEL INFLUENZA STRAINS

Key Messages

1. Commercial antigen detection testing for influenza may be conducted under BSL-2 containment conditions if a Class II biological safety cabinet is used.
2. Clinical specimens from suspected novel influenza cases may be tested by RT-PCR using standard BSL-2 work practices in a Class II biological safety cabinet for initial processing of patient specimens.
3. If a specimen is confirmed positive for influenza A (H5N1) by RT-PCR, additional testing should be performed only under BSL-3 conditions with enhancements. CDC's Influenza Branch should be informed immediately by contacting the CDC Director's Emergency Operations Center (DEOC) at 770-488-7100.
4. A detailed description of recommended facilities, practices, and protective equipment for the various laboratory biosafety levels can be found in the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories (BMBL) manual at www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.html

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5. BSL-3 with enhancements and Animal Biosafety Level 3 include: all BSL-3 practices, procedures, and facilities, plus the use of negative-pressure, HEPA-filtered respirators or positive air-purifying respirators, and clothing change and personal showering protocols. Additional practices and/or restrictions may be added as conditions of USDA-APHIS permits. Registration of personnel and facilities with the Select Agent Program is required for work with highly pathogenic avian influenza (HPAI) viruses, which are classified as agricultural select agents.
6. State and local public health laboratories may test clinical specimens from suspected novel influenza cases by RT-PCR using standard BSL-2 work practices in a Class II biological safety cabinet. Commercial rapid antigen detection testing may also be conducted under BSL-2 biocontainment conditions.
7. Highly pathogenic avian influenza A (H5) and A (H7) viruses are classified as select agents. USDA regulations require that these viruses (as well as exotic low pathogenic avian influenza viruses) be handled under BSL-3 laboratory containment conditions, with enhancements (i.e., controlled-access double-door entry with change room and shower, use of respirators, decontamination of all wastes, and showering of all personnel). Laboratories that work with these viruses must be certified by USDA.
8. Laboratories should not perform virus isolation on respiratory specimens from patients who may be infected with an avian influenza virus unless stringent BSL-3 enhanced containment conditions can be met and diagnostic work can be kept separate from studies with other human influenza A viruses (i.e., H1 or H3). Therefore, respiratory virus cultures should not be performed in most clinical laboratories. Cultures for patients suspected of having influenza A (H5N1) infection should be sent only to state laboratories with appropriate BSL-3 with enhancement containment facilities or to CDC.

HHS Pandemic Influenza Plan

GUIDELINES FOR COLLECTING AND SHIPPING SPECIMENS FOR INFLUENZA DIAGNOSTICS

Key Messages

1. Appropriate specimens for influenza testing vary by type of test
 - Before collecting specimens, review the infection control precautions are described below:

I. RESPIRATORY SPECIMENS

Eight types of respiratory specimens may be collected for viral and/or bacterial diagnostics:

1) nasopharyngeal wash/aspirates, 2) nasopharyngeal swabs, 3) oropharyngeal swabs, 4) bronchoalveolar lavage, 5) tracheal aspirate, 6) pleural fluid tap, 7) sputum, and 8) autopsy specimens. Nasopharyngeal wash/aspirates are the specimen of choice for detection of most respiratory viruses and are the preferred specimen type for children aged <2 years.

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Respiratory specimens for detection of most respiratory pathogens, and influenza in particular, are optimally collected within the first 3 days of the onset of illness. Before collecting specimens, review the infection control.

A. Collecting specimens from the upper respiratory tract

1. Nasopharyngeal wash/aspirate

- Have the patient sit with head tilted slightly backward.
- Instill 1 ml–1.5 ml of nonbacteriostatic saline (pH 7.0) into one nostril. Flush a plastic catheter or tubing with 2 ml–3 ml of saline. Insert the tubing into the nostril parallel to the palate. Aspirate nasopharyngeal secretions. Repeat this procedure for the other nostril.
- Collect the specimens in sterile vials. Label each specimen container with the patient's ID number and the date collected.
- If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, pack in dry ice (see shipping instructions below).

2. Nasopharyngeal or oropharyngeal swabs

- Use only sterile dacron or rayon swabs with plastic shafts. Do not use calcium alginate swabs or swabs with wooden sticks, as they may contain substances that inactivate some viruses and inhibit PCR testing.
- To obtain a nasopharyngeal swab, insert a swab into the nostril parallel to the palate. Leave the swab in place for a few seconds to absorb secretions. Swab both nostrils.
- To obtain an oropharyngeal swab, swab the posterior pharynx and tonsillar areas, avoiding the tongue.
- Place the swabs immediately into sterile vials containing 2 ml of viral transport media. Break the applicator sticks off near the tip to permit tightening of the cap. Label each specimen container with the patient's ID number and the date the sample was collected.
- If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, pack in dry ice (see shipping instructions below).

3. Collecting specimens from the lower respiratory tract

Bronchoalveolar lavage, tracheal aspirate, or pleural fluid tap

- During bronchoalveolar lavage or tracheal aspirate, use a double-tube system to maximum shielding from oropharyngeal secretions.
- Centrifuge half of the specimen, and fix the cell pellet in formalin. Place the remaining unspun fluid in sterile vials with external caps and internal O-ring seals. If there is no internal

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O-ring seal, then seal tightly with the available cap and secure with Parafilm®. Label each specimen container with the patient's ID number and the date the sample was collected.

- If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, ship fixed cells at room temperature and unfixed cells frozen (see shipping instructions below).

4. Sputum

- Educate the patient about the difference between sputum and oral secretions.

- Have the patient rinse the mouth with water and then expectorate deep cough sputum directly into a sterile screw-cap sputum collection cup or sterile dry container.

- If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, pack in dry ice (see shipping instructions below).

5. Blood components

Both acute and convalescent serum specimens should be collected for antibody testing. Collect convalescent serum specimens 2–4 weeks after the onset of illness. To collect serum for antibody testing:

- Collect 5 ml–10 ml of whole blood in a serum separator tube. Allow the blood to clot, centrifuge briefly, and collect all resulting sera in vials with external caps and internal O-ring seals. If there is no internal O-ring seal, then seal tightly with the available cap and secure with Parafilm®.

- The minimum amount of serum preferred for each test is 200 microliters, which can easily be obtained from 5 ml of whole blood. A minimum of 1 cc of whole blood is needed for testing of pediatric patients. If possible, collect 1 cc in an EDTA tube and in a clotting tube. If only 1cc can be obtained, use a clotting tube.

- Label each specimen container with the patient's ID number and the date the specimen was collected.

- If unfrozen and transported domestically, ship with cold packs to keep the sample at 4°C. If frozen or transported internationally, ship on dry ice.

6. Autopsy specimens

CDC can perform immunohistochemical (IHC) staining for influenza A (H5) viruses on autopsy specimens. Viral antigens may be focal and sparsely distributed in patients with influenza, and are most frequently detected in respiratory epithelium of large airways. Larger airways (particularly primary and segmental bronchi) have the highest yield for detection of influenza viruses

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by IHC staining. Collection of the appropriate tissues ensures the best chance of detecting the virus by (IHC) stains.

- If influenza is suspected, a minimum total of 8 blocks or fixed-tissue specimens representing samples from each of the following sites should be obtained and submitted for evaluation:

- Central (hilar) lung with segmental bronchi
- Right and left primary bronchi
- Trachea (proximal and distal)
- Representative pulmonary parenchyma from right and left lung

In addition, representative tissues from major organs should be submitted for evaluation. In particular, for patients with suspected myocarditis or encephalitis, specimens should include myocardium (right and left ventricle) and CNS (cerebral cortex, basal ganglia, pons, medulla, and cerebellum). Specimens should be included from any other organ showing significant gross or microscopic pathology.

- Specimens may be submitted as:

- Fixed, unprocessed tissue in 10% neutral buffered formalin, or

- Tissue blocks containing formalin-fixed, paraffin-embedded specimens, or

- Unstained sections cut at 3 microns placed on charged glass slides (10 slides per specimen)

- Specimens should be sent at room temperature (NOT FROZEN).

- Fresh-frozen unfixed tissue specimens may be submitted for RT-PCR.

- Include a copy of the autopsy report (preliminary, or final if available), and a cover letter outlining a brief clinical history and the submitter's full name, title, complete mailing address, phone, and fax numbers, in the event that CDC pathologists require further information. Referring pathologists may direct specific questions to CDC pathologists. The contact number for the Infectious Disease Pathology Activity is 404-639-3133, or the pathologists can be contacted 24 hours a day, 7 days a week through the CDC Emergency Response Hotline at 770-488-7100.

SHIPPING INSTRUCTIONS

- State and local health departments should call the CDC Emergency Response Hotline (770-488-7100) before sending specimens for influenza A reference testing. This number is available 24 hours a day, 7 days a

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week. Hotline staff will notify a member of the Influenza Branch who will contact the health department to answer questions and provide guidance. In some cases, the state health department may arrange for a clinical laboratory to send samples directly to CDC.

- Specimens should be sent by Priority Overnight Shipping for receipt within 24 hours. Samples (such as fresh-frozen autopsy samples for RT-PCR or other clinical materials) may be frozen at -70 if the package cannot be shipped within a specified time (e.g., if the specimen is collected on a Friday but cannot be shipped until Monday).
- When sending clinical specimens, include the specimen inventory sheet (see below), include the assigned CDC case ID number, and note “Influenza surveillance” on all materials and specimens sent. Include the CDC case ID number on all materials forwarded to CDC. Protocols for standard interstate shipment of etiologic agents should be followed, and are available at <http://www.cdc.gov/od/ohs/biosfty/shipregs.htm>. All shipments must comply with current DOT/IATA shipping regulations.

INFLUENZA TRANSMISSION AND INFECTION CONTROL

RATIONALE

The primary strategies for preventing pandemic influenza are the same as those for seasonal influenza: vaccination, early detection and treatment with antiviral medications (as discussed elsewhere in this plan), and the use of infection control measures to prevent transmission during patient care. However, when a pandemic begins, a vaccine may not yet be widely available, and the supply of antiviral drugs may be limited. The ability to limit transmission in healthcare settings will, therefore, rely heavily on the appropriate and thorough application of infection control measures. While it is commonly accepted that influenza transmission requires close contact—via exposure to large droplets (droplet transmission), direct contact (contact transmission), or near-range exposure to aerosols (airborne transmission)—the relative clinical importance of each of these modes of transmission is not known.

The infection control guidance provided in this supplement is based on our knowledge of routes of influenza transmission, the pathogenesis of influenza, and the effects of influenza control measures used during past pandemics and interpandemic periods. Given some uncertainty about the characteristics of a new pandemic strain, all aspects of preparedness planning for pandemic influenza must allow for flexibility and real-time decision-making that take new information into account as the situation unfolds. The specific characteristics of a new pandemic virus—virulence, transmissibility, initial geographic distribution, clinical manifestation, risk to different age groups and subpopulations, and drug susceptibility—will remain unknown until the pandemic gets underway. If the new virus is unusual in any of these respects, HHS and its partners will provide updated infection control guidance.

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Modes of transmission

Despite the prevalence of influenza year after year, most information on the modes of influenza transmission from person to person is indirect and largely obtained through observations during outbreaks in healthcare facilities and other settings (e.g., cruise ships, airplanes, schools, and colleges); the amount of direct scientific information is very limited. However, the epidemiologic pattern observed is generally consistent with spread through close contact (i.e., exposure to large respiratory droplets, direct contact, or near-range exposure to aerosols). While some observational and animal studies support airborne transmission through small particle aerosols, there is little evidence of airborne transmission over long distances or prolonged periods of time (as is seen with *M. tuberculosis*). The relative contributions and clinical importance of the different modes of influenza transmission are currently unknown.

Droplet transmission

(www.cdc.gov/ncidod/hip/ISOLAT/std_prec_excerpt.htm)

Droplet transmission involves contact of the conjunctivae or the mucous membranes of the nose or mouth of a susceptible person with large-particle droplets containing microorganisms generated from a person who has a clinical disease or who is a carrier of the microorganism. Droplets are generated from the source person primarily during coughing, sneezing, or talking and during the performance of certain procedures such as suctioning and bronchoscopy. Transmission via large-particle droplets requires close contact between source and recipient persons, because droplets do not remain suspended in the air and generally travel only short distances (about 3 feet) through the air. Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission.

Based on epidemiologic patterns of disease transmission, large droplet transmission has been considered a major route of influenza transmission. However, data directly demonstrating large droplet transmission of influenza in human outbreaks is indirect and limited.

Contact transmission

(www.cdc.gov/ncidod/hip/ISOLAT/contact_prec_excerpt.htm)

Direct-contact transmission involves skin-to-skin contact and physical transfer of microorganisms to a susceptible host from an infected or colonized person, such as occurs when personnel turn patients, bathe patients, or perform other patient-care activities that require physical contact. Direct-contact transmission also can occur between two persons (e.g., by hand contact), with one serving as the source of infectious microorganisms and the other as a susceptible host. Indirect-contact transmission involves contact of a

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susceptible host with a contaminated intermediate object, usually inanimate, in the patient's environment.

Contact transmission of influenza may occur through either direct skin-to-skin contact or through indirect contact with virus in the environment. Transmission via contaminated hands and fomites has been suggested as a contributing factor in some studies. However, there is insufficient data to determine the proportion of influenza transmission that is attributable to direct or indirect contact.

Airborne transmission

(www.cdc.gov/ncidod/hip/ISOLAT/airborne_prec_excerpt.htm)

Airborne transmission occurs by dissemination of either airborne droplet nuclei or small particles in the respirable size range containing the infectious agent. Microorganisms carried in this manner—such as *M. tuberculosis*—may be dispersed over long distances by air currents and may be inhaled by susceptible individuals who have not had face-to-face contact with (or been in the same room with) the infectious individual. Organisms transmitted in this manner must be capable of sustaining infectivity, despite desiccation and environmental variation that generally limit survival in the airborne state. Preventing the spread of agents that are transmitted by the airborne route requires the use of special air handling and ventilation systems (e.g., negative pressure rooms).

The relative contribution of airborne transmission to influenza outbreaks is uncertain. Evidence is limited and is principally derived from laboratory studies in animals and some observational studies of influenza outbreaks in humans, particularly on cruise ships and airplanes, where other mechanisms of transmission were also present. Additional information suggesting airborne transmission was reported in a Veterans Administration Hospital study that found lower rates of influenza in wards exposed to ultraviolet radiation (which inactivates influenza viruses) than in wards without UV radiation. Another study indicated that humidity can play a role in the infectivity of aerosolized influenza, although the influence of humidity on the formation of droplet nuclei was not evaluated.

Small-particle aerosols. There is no evidence that influenza transmission can occur across long distances (e.g., through ventilation systems) or through prolonged residence in air, as seen with airborne diseases such as tuberculosis. However, transmission may occur at shorter distances through inhalation of small-particle aerosols (droplet nuclei), particularly in shared air spaces with poor air circulation. An experimental study involving human volunteers found that illness could be induced with substantially lower virus titers when influenza virus was administered as a small droplet aerosol rather than as nasal droplets, suggesting that infection is most efficiently induced when virus is deposited in the lower rather than the upper respiratory tract. While this study supports the possibility of droplet nuclei transmission of influenza, the proportion of infections

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acquired through droplet nuclei—as compared with large droplet or contact spread—is unknown.

It is likely that some aerosol-generating procedures (e.g., endotracheal intubation, suctioning, nebulizer treatment, bronchoscopy) could increase the potential for dissemination of droplet nuclei in the immediate vicinity of the patient. (Although transmission of SARS-CoV was reported in a Canadian hospital during an aerosol-generating procedure [intubation], it occurred in a situation involving environmental contamination with respiratory secretions.) Although this mode of transmission has not been evaluated for influenza, additional precautions for healthcare personnel who perform aerosol-generating procedures on influenza patients may be warranted.

Pathogenesis of influenza and implications for infection control

The cellular pathogenesis of human influenza indicates that infection principally takes place within the respiratory tract. While conjunctivitis is a common manifestation of systemic influenza infection, the ocular route of inoculation and infection has not been demonstrated for human influenza viruses. This may not be true with certain avian species of influenza (e.g., H7N7) that have been associated primarily with conjunctivitis in humans.¹ This information suggests that preventing direct and indirect inoculation of the respiratory tract is of utmost importance for preventing person-to-person transmission when caring for infectious patients.

Basic infection control principles for preventing the spread of pandemic influenza in healthcare settings

The following infection control principles apply in any setting where persons with pandemic influenza might seek and receive healthcare services (e.g. hospitals, emergency departments, out-patient facilities, residential care facilities, homes). Details of how these principles may be applied in each healthcare setting follow.

- Limit contact between infected and non-infected persons²
- Isolate infected persons (i.e., confine patients to a defined area as appropriate for the healthcare setting).
- Limit contact between nonessential personnel and other persons (e.g., social visitors) and patients who are ill with pandemic influenza.
- Promote spatial separation in common areas (i.e., sit or stand as far away as possible—at least 3 feet—from potentially infectious persons) to limit contact between symptomatic and non-symptomatic persons.
- Protect persons caring for influenza patients in healthcare settings from contact with the pandemic influenza virus.

Persons who must be in contact should:

- Wear a surgical or procedure mask³ for close contact with infectious patients.

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- Use contact and airborne precautions, including the use of N95 respirators, when appropriate
 - Wear gloves (gown if necessary) for contact with respiratory secretions.
 - Perform hand hygiene after contact with infectious patients.
 - Contain infectious respiratory secretions:
 - Instruct persons who have “flu-like” symptoms (see below) to use respiratory hygiene/cough etiquette (See Box 2).
 - Promote use of masks by symptomatic persons in common areas (e.g., waiting rooms in physician offices or emergency departments) or when being transported (e.g., in emergency vehicles). Surgical masks come in two basic types: one type is affixed to the head with two ties, conforms to the face with the aid of a flexible adjustment for the nose bridge, and may be flat/pleated or duck-billed in shape; the second type of surgical mask is pre-molded, adheres to the head with a single elastic and has a flexible adjustment for the nose bridge. Procedure masks are flat/pleated and affix to the head with ear loops. All masks have some degree of fluid resistance but those approved as surgical masks must meet specified standards for protection from penetration of blood and body fluids.
- 4 Coughing persons may wear either a surgical or procedure mask. However, only procedure masks come in both adult and pediatric sizes.

Symptoms of influenza include fever, headache, myalgia, prostration, coryza, sore throat, and cough. Otitis media, nausea, and vomiting are also commonly reported among children. Typical influenza (or “flu-like”) symptoms, such as fever, may not always be present in elderly patients, young children, patients in long-term care facilities, or persons with underlying chronic illnesses.

Management of infectious patients

Respiratory hygiene/cough etiquette

Respiratory hygiene/cough etiquette has been promoted as a strategy to contain respiratory viruses at the source and to limit their spread in areas where infectious patients might be awaiting medical care (e.g., physician offices, emergency departments)

The impact of covering sneezes and coughs and/or placing a mask on a coughing patient on the containment of respiratory secretions or on the transmission of respiratory infections has not been systematically studied. In theory, however, any measure that limits the dispersal of respiratory droplets should reduce the opportunity for transmission. Masking may be difficult in some settings, e.g., pediatrics, in which case the emphasis will be on cough hygiene.

The elements of respiratory hygiene/cough etiquette include:

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- Education of healthcare facility staff, patients, and visitors on the importance of containing respiratory secretions to help prevent the transmission of influenza and other respiratory viruses
- Posted signs in languages appropriate to the populations served with instructions to patients and accompanying family members or friends to immediately report symptoms of a respiratory infection as directed
- Source control measures (e.g., covering the mouth/nose with a tissue when coughing and disposing of used tissues; using masks on the coughing person when they can be tolerated and are appropriate)
- Hand hygiene after contact with respiratory secretions, and
- Spatial separation, ideally >3 feet, of persons with respiratory infections in common waiting areas when possible.

Infection control practices for healthcare personnel

Infection control practices for pandemic influenza are the same as for other human influenza viruses and primarily involve the application of standard and droplet precautions during patient care in healthcare settings (e.g., hospitals, nursing homes, outpatient offices, emergency transport vehicles). This guidance also applies to healthcare personnel going into the homes of patients. During a pandemic, conditions that could affect infection control may include shortages of antiviral drugs, decreased efficacy of the vaccine, increased virulence of the influenza strain, shortages of single-patient rooms, and shortages of personal protective equipment. These issues may necessitate changes in the standard recommended infection control practices for influenza. CDC will provide updated infection control guidance as circumstances dictate. Additional guidance is provided for family members providing home care and for use in public settings (e.g., schools, workplace) where people with pandemic influenza may be encountered.

Personal protective equipment

PPE for standard and droplet precautions

PPE is used to prevent direct contact with the pandemic influenza virus. PPE that may be used to provide care includes surgical or procedure masks, as recommended for droplet precautions, and gloves and gowns, as recommended for standard precautions

Additional precautions may be indicated during the performance of aerosol-generating procedures (see below).

Information on the selection and use of PPE is provided at www.cdc.gov/ncidod/hip/isolat/isolat.htm/.

• Masks (surgical or procedure)

- Wear a mask when entering a patient's room. A mask should be worn once and then discarded. If pandemic influenza patients are cohorted in a common area or in several rooms on a nursing unit, and multiple patients must be visited over a short time, it may be practical to wear one mask for the duration of the activity;

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however, other PPE (e.g., gloves, gown) must be removed between patients and hand hygiene performed.

- Change masks when they become moist.
- Do not leave masks dangling around the neck.
- Upon touching or discarding a used mask, perform hand hygiene.

• **Gloves**

- A single pair of patient care gloves should be worn for contact with blood and body fluids, including during hand contact with respiratory secretions (e.g., providing oral care, handling soiled tissues). Gloves made of latex, vinyl, nitrile, or other synthetic materials are appropriate for this purpose; if possible, latex-free gloves should be available for healthcare workers who have latex allergy.
- Gloves should fit comfortably on the wearer's hands.
- Remove and dispose of gloves after use on a patient; do not wash gloves for subsequent reuse.
- Perform hand hygiene after glove removal.
- If gloves are in short supply (i.e., the demand during a pandemic could exceed the supply), priorities for glove use might need to be established. In this circumstance, reserve gloves for situations where there is a likelihood of extensive patient or environmental contact with blood or body fluids, including during suctioning.
- Use other barriers (e.g., disposable paper towels, paper napkins) when there is only limited contact with a patient's respiratory secretions (e.g., to handle used tissues). Hand hygiene should be strongly reinforced in this situation.

• **Gowns**

- Wear an isolation gown, if soiling of personal clothes or uniform with a patient's blood or body fluids, including respiratory secretions, is anticipated. **Most patient interactions do not necessitate the use of gowns.** However, procedures such as intubation and activities that involve holding the patient close (e.g., in pediatric settings) are examples of when a gown may be needed when caring for pandemic influenza patients.
- A disposable gown made of synthetic fiber or a washable cloth gown may be used.
- Ensure that gowns are of the appropriate size to fully cover the area to be protected.
- Gowns should be worn only once and then placed in a waste or laundry receptacle, as appropriate, and hand hygiene performed.
- If gowns are in short supply (i.e., the demand during a pandemic could exceed the supply) priorities for their use may need to be established. In this circumstance, reinforcing the situations in which they are needed can reduce the volume used. Alternatively, other coverings (e.g., patient gowns) could be used. It is doubtful that disposable aprons would provide the desired protection in the circumstances where gowns are needed to prevent contact with influenza virus,

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and therefore should be avoided. There are no data upon which to base a recommendation for reusing an isolation gown on the same patient. To avoid possible contamination, it is prudent to limit this practice.

- **Goggles or face shield**

In general, wearing goggles or a face shield for routine contact with patients with pandemic influenza is not necessary.

If sprays or splatter of infectious material is likely, goggles or a face shield should be worn as recommended for standard precautions. Additional information related to the use of eye protection for infection control can be found at <http://www.cdc.gov/niosh/topics/eye/eye-infectious.html>.

PPE for special circumstances

- **PPE for aerosol-generating procedures**

During procedures that may generate increased small-particle aerosols of respiratory secretions (e.g., endotracheal intubation, nebulizer treatment, bronchoscopy, suctioning), healthcare personnel should wear gloves, gown, face/eye protection, and a N95 respirator or other appropriate particulate respirator. Respirators should be used within the context of a respiratory protection program that includes fit-testing, medical clearance, and training. If possible, and

when practical, use of an airborne isolation room may be considered when conducting aerosol-generating procedures.

- **PPE for managing pandemic influenza with increased transmissibility**

The addition of airborne precautions, including respiratory protection (an N95 filtering face piece respirator or other appropriate particulate respirator), may be considered for strains of influenza exhibiting increased transmissibility, during initial stages of an outbreak of an emerging or novel strain of influenza, and as determined by other factors such

as vaccination/immune status of personnel and availability of antivirals. As the epidemiologic characteristics of the pandemic virus are more clearly defined, CDC will provide updated infection control guidance, as needed.

- **Precautions for early stages of a pandemic**

Early in a pandemic, it may not be clear that a patient with severe respiratory illness has pandemic influenza. Therefore precautions consistent with all possible etiologies, including a newly emerging infectious agent, should be implemented.

This may involve the combined use of airborne and contact precautions, in addition to standard precautions, until a diagnosis is established.

Caring for patients with pandemic influenza

Healthcare personnel should be particularly vigilant to avoid:

- Touching their eyes, nose or mouth with contaminated hands (gloved or ungloved). Careful placement of PPE before patient contact will help avoid the need to make PPE adjustments and risk self-contamination during use. Careful

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removal of PPE is also important. (See also: <http://www.cdc.gov/ncidod/hip/ppe/default.htm>.)

- Contaminating environmental surfaces that are not directly related to patient care (e.g., door knobs, light switches)

Hand hygiene

Hand hygiene has frequently been cited as the single most important practice to reduce the transmission of infectious agents in healthcare settings (see <http://www.cdc.gov/handhygiene/pressrelease.htm>) and is an essential element of standard

precautions. The term “hand hygiene” includes both handwashing with either plain or antimicrobial soap and water and use of alcohol-based products (gels, rinses, foams) containing an emollient that do not require the use of water.

- If hands are visibly soiled or contaminated with respiratory secretions, wash hands with soap (either non-antimicrobial or antimicrobial) and water.
- In the absence of visible soiling of hands, approved alcohol-based products for hand disinfection are preferred over antimicrobial or plain soap and water because of their superior microbiocidal activity, reduced drying of the skin, and convenience.
- Always perform hand hygiene between patient contacts and after removing PPE.
- Ensure that resources to facilitate handwashing (i.e., sinks with warm and cold running water, plain or antimicrobial soap, disposable paper towels) and hand disinfection (i.e., alcohol-based products) are readily accessible in areas in which patient care is provided. For additional guidance on hand hygiene see <http://www.cdc.gov/handhygiene/>.

Disposal of solid waste

Standard precautions are recommended for disposal of solid waste (medical and non-medical) that might be contaminated with a pandemic influenza virus:

- Contain and dispose of contaminated medical waste in accordance with facility-specific procedures and/or local or state regulations for handling and disposal of medical waste, including used needles and other sharps, and non-medical waste.
- Discard as routine waste used patient-care supplies that are not likely to be contaminated (e.g., paper wrappers).
- Wear disposable gloves when handling waste. Perform hand hygiene after removal of gloves.

Linen and laundry

Standard precautions are recommended for linen and laundry that might be contaminated with respiratory secretions from patients with pandemic influenza:

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- Place soiled linen directly into a laundry bag in the patient's room. Contain linen in a manner that prevents the linen bag from opening or bursting during transport and while in the soiled linen holding area.
- Wear gloves and gown when directly handling soiled linen and laundry (e.g., bedding, towels, personal clothing) as per standard precautions. Do not shake or otherwise handle soiled linen and laundry in a manner that might create an opportunity for disease transmission or contamination of the environment.
- Wear gloves for transporting bagged linen and laundry.
- Perform hand hygiene after removing gloves that have been in contact with soiled linen and laundry.
- Wash and dry linen according to routine standards and procedures (www.cdc.gov/ncidod/hip/enviro/guide.htm).

Dishes and eating utensils

Standard precautions are recommended for handling dishes and eating utensils used by a patient with known or possible pandemic influenza:

- Wash reusable dishes and utensils in a dishwasher with recommended water temperature (www.cdc.gov/ncidod/hip/enviro/guide.htm).
- Disposable dishes and utensils (e.g., used in an alternative care site set-up for large numbers of patients) should be discarded with other general waste.
- Wear gloves when handling patient trays, dishes, and utensils.

Patient-care equipment

Follow standard practices for handling and reprocessing used patient-care equipment, including medical devices:

- Wear gloves when handling and transporting used patient-care equipment.
- Wipe heavily soiled equipment with an EPA-approved hospital disinfectant before removing it from the patient's room. Follow current recommendations for cleaning and disinfection or sterilization of reusable patient-care equipment.
- Wipe external surfaces of portable equipment for performing x-rays and other procedures in the patient's room with an EPA-approved hospital disinfectant upon removal from the patient's room.

Environmental cleaning and disinfection

Cleaning and disinfection of environmental surfaces are important components of routine infection control in healthcare facilities. Environmental cleaning and disinfection for pandemic influenza follow the same general principles used in healthcare settings.

Cleaning and disinfection of patient-occupied rooms

(See: www.cdc.gov/ncidod/hip/enviro/Enviro_guide_03.pdf)

- Wear gloves in accordance with facility policies for environmental cleaning and wear a surgical or procedure mask in accordance with droplet precautions. Gowns are not necessary for routine cleaning of an influenza patient's room.

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- Keep areas around the patient free of unnecessary supplies and equipment to facilitate daily cleaning.
- Use any EPA-registered hospital detergent-disinfectant. Follow manufacturer's recommendations for use-dilution (i.e., concentration), contact time, and care in handling.
- Follow facility procedures for regular cleaning of patient-occupied rooms. Give special attention to frequently touched surfaces (e.g., bedrails, bedside and over-bed tables, TV controls, call buttons, telephones, lavatory surfaces including safety/pull-up bars, doorknobs, commodes, ventilator surfaces) in addition to floors and other horizontal surfaces.
- Clean and disinfect spills of blood and body fluids in accordance with current recommendations for Isolation Precautions (www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm).

Cleaning and disinfection after patient discharge or transfer

- Follow standard facility procedures for post-discharge cleaning of an isolation room.
- Clean and disinfect all surfaces that were in contact with the patient or might have become contaminated during patient care. No special treatment is necessary for window curtains, ceilings, and walls unless there is evidence of visible soiling.
- Do not spray (i.e., fog) occupied or unoccupied rooms with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit.

Postmortem care

Follow standard facility practices for care of the deceased. Practices should include standard precautions for contact with blood and body fluids.

Laboratory specimens and practices

Follow standard facility and laboratory practices for the collection, handling, and processing of laboratory specimens.

Occupational health issues

Healthcare personnel are at risk for pandemic influenza through community and healthcare-related exposures. Once pandemic influenza has reached a community, healthcare facilities must implement systems to monitor for illness in the facility workforce and manage those who are symptomatic or ill.

- Implement a system to educate personnel about occupational health issues related to pandemic influenza.
- Screen all personnel for influenza-like symptoms before they come on duty. Symptomatic personnel should be sent home until they are physically ready to return to duty.

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- Healthcare personnel who have recovered from pandemic influenza, and should develop antibody against future infection with the same virus, and therefore should be prioritized for the care of patients with active pandemic influenza and its complications. These workers would also be well suited to care for patients who are at risk for serious complications from influenza (e.g., transplant patients and neonates).
- Personnel who are at high risk for complications of pandemic influenza (e.g., pregnant women, immunocompromised persons) should be informed about their medical risk and offered an alternate work assignment, away from influenza patient care, or considered for administrative leave until pandemic influenza has abated in the community.

Reducing exposure of persons at high risk for complications of influenza

Persons who are well, but at high risk for influenza or its complications (e.g., persons with underlying diseases), should be instructed to avoid unnecessary contact with healthcare facilities caring for pandemic influenza patients (i.e., do not visit patients, postpone nonessential medical care).

NOTE: Specific information about infection control in a variety of settings is available in the HHS document Pandemic Influenza Plan.

Because this is a Public Health Document, only care of patients at home and School and Workplace Infection Control will be discussed here.

Care of pandemic influenza patients in the home

Most patients with pandemic influenza will be able to remain at home during the course of their illness and can be cared for by other family members or others who live in the household. Anyone residing in a household with an influenza patient during the incubation period and illness is at risk for developing influenza. A key objective in this setting is to limit transmission of pandemic influenza within and outside the home. When care is provided by a household member, basic infection control precautions should be emphasized (e.g., segregating the ill patient, hand hygiene). Infection within the household may be minimized if a primary caregiver is designated, ideally someone who does not have an underlying condition that places them at increased risk of severe influenza disease. Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit.

Management of influenza patients

- 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., 5 days after onset of symptoms). When movement outside the home is necessary (e.g., for medical care), the patient should follow

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cough etiquette (i.e., cover the mouth and nose when coughing and sneezing) and wear procedure or surgical masks if available.

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 actively ill with pandemic influenza.
- If unexposed persons must enter the home, they should avoid close contact with the patient.
- Persons living in the home with the pandemic influenza patient should limit contact with the patient to the extent possible; consider designating one person as the primary care provider.
- Household members should monitor closely for the development of influenza symptoms and contact a telephone hotline or medical care provider if symptoms occur.

Infection control measures in the home

- All persons in the household should carefully follow recommendations for hand hygiene (i.e., handwashing with soap and water or use of an alcohol-based hand rub) after contact with an influenza patient or the environment in which care is provided.
- Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit. The wearing of gloves and gowns is not recommended for household members providing care in the home.
- 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 can 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 contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed with other household waste. Consider placing a bag for this purpose at the bedside.
- Normal cleaning of environmental surfaces in the home should be followed.

Care of pandemic influenza patients at alternative sites

If an influenza pandemic results in severe illness that overwhelms the capacity of existing healthcare resources, it may become necessary to provide care at alternative sites (e.g., schools, auditoriums, conference centers, hotels). Existing “all-hazard” plans have likely identified designated sites for this purpose. The same principles of infection control apply in these settings as in other healthcare settings. Careful planning is necessary to ensure that resources are available and procedures are in place to adhere to the key principles of infection control.

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RECOMMENDATIONS FOR INFECTION CONTROL IN SCHOOLS AND WORKPLACES

- In schools and workplaces, infection control for pandemic influenza should focus on:
 - Keeping sick students, faculty, and workers away while they are infectious.
 - Promoting respiratory hygiene/cough etiquette and hand hygiene as for any respiratory infection. The benefit of wearing masks in these settings has not been established.
 - School administrators and employers should ensure that materials for respiratory hygiene/cough etiquette (i.e., tissues and receptacles for their disposal) and hand hygiene are available. Educational messages and infection control guidance for pandemic influenza are available for distribution. (CDC will develop educational materials appropriate to various audiences.)

RECOMMENDATIONS FOR INFECTION CONTROL IN COMMUNITY SETTINGS

Infection control in the community should focus on “social distancing” and promoting respiratory hygiene/cough etiquette and hand hygiene to decrease exposure to others. This could include the use of masks by persons with respiratory symptoms, if feasible. Although the use of masks in community settings has not been demonstrated to be a public health measure to decrease infections during a community outbreak, persons may choose to wear a mask as part of individual protection strategies that include cough etiquette, hand hygiene, and avoiding public gatherings. Mask use may also be important for persons who are at high risk for complications of influenza. Public education should be provided on how to use masks appropriately. Persons at high risk for complications of influenza should try to avoid public gatherings (e.g., movies, religious services, public meetings) when pandemic influenza is in the community. They should also avoid going to other public areas (e.g., food stores, pharmacies); the use of other persons for shopping or home delivery service is encouraged.

VACCINE DISTRIBUTION AND USE

RATIONALE

The initial response to an influenza pandemic will include medical care, community containment and personal protective measures, and targeted use of antiviral drugs. Before a vaccine containing the circulating pandemic virus strain becomes available, pre-pandemic vaccine from stockpiles (if available for the pandemic subtype or partially cross-protective to the

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circulating virus) may be considered for persons in designated priority groups. Once a vaccine against the circulating pandemic virus strain becomes available, its distribution and delivery will be a major focus of pandemic response efforts.

OVERVIEW

This unit describes the plan for the City of St. Louis local pandemic influenza vaccination program. The recommendations for the Interpandemic and Pandemic Alert Periods focus on planning for vaccine distribution, vaccination of priority groups, monitoring of adverse events, tracking of vaccine supply and administration, vaccine coverage and effectiveness studies, communications, legal preparedness, and training. The recommendations for the Pandemic Period focus on working with healthcare partners to implement plans for vaccination against pandemic influenza and initiate monitoring activities.

RECOMMENDATIONS FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS

Vaccination against seasonal influenza virus strains

During the Interpandemic Period, the City of St. Louis Department of Health working with healthcare partners to enhance levels of 1) seasonal influenza vaccination in groups at risk for severe influenza and in healthcare workers, and 2) pneumococcal polysaccharide vaccination among those for whom it is recommended.

The success of the pandemic influenza vaccination program will be determined in large part by the strength of state and local vaccination programs during the Interpandemic Period. Higher annual vaccination rates will foster increased familiarity with and public confidence in influenza vaccines, increased manufacturing capacity for influenza vaccines, and strengthened distribution channels.

Increased use of pneumococcal polysaccharide vaccine may decrease rates of secondary bacterial infections during a pandemic. Because large-scale pneumococcal vaccination might not be feasible once a pandemic occurs, the Interpandemic Period and Pandemic Alert is the ideal time to deliver this preventive measure. Pneumococcal vaccine is indicated for most persons for whom influenza vaccine is recommended. For specific guidelines on the prevention of pneumococcal disease, please see the Recommendations of the Advisory Committee on Immunization Practices (ACIP) (<http://www.cdc.gov/mmwr/pdf/rr/rr4608.pdf>).

Preparedness planning for vaccination against a pandemic influenza virus

A limited amount of avian influenza A (H5N1) vaccine is being stockpiled and will be considered for early use in the event of an H5N1 pandemic. Development of

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vaccines against other strains with pandemic potential is also being considered. A monovalent vaccine directed against the circulating pandemic virus strain of influenza should begin to be available within 4-6 months after identification of the new pandemic virus strain. The number of persons who may be protected by vaccination depends on the manufacturing capacity, the amount of antigen per dose needed for a protective immune response, and the number of doses required. Although annual influenza vaccine is immunogenic in older children and adults with a single 15 microgram (μg) dose, a higher antigen concentration and/or two doses may be needed for pandemic vaccine where persons have no previous exposure to the influenza subtype and lack any immunity. Preliminary results from a recent clinical trial of an H5N1 vaccine in healthy adults suggested that two doses of 90 μg were required. Additional clinical trials are ongoing to evaluate possible ways to improve the immune response to lower the amounts of vaccine antigen needed for protection.

Initial pandemic vaccine stocks will be used to vaccinate designated priority groups. After vaccination of these priority groups, vaccination of all those who desire it will be phased in depending on available supplies. In working with healthcare partners to develop state-based plans for distributing vaccines, state and local health departments might use existing state-based plans for emergency mass distribution of medical supplies as the basis for developing local pandemic vaccination plans (e.g., smallpox and bioterrorism response plans).

Vaccination of priority groups

A list of priority groups for receiving vaccination and the rationale for prioritization is provided in the Health and Human Services Pandemic Flu Plan, November 2005. The City Of St. Louis Department of Health will established priorities according to guidelines current at the time. During a pandemic, changes may be made based on the characteristics of the causative virus (e.g., transmissibility, virulence, initial geographic distribution, age-specific attack rates, complication rates) and on vaccine effectiveness.

To prepare for vaccination of priority groups, City of St. Louis Department of Health will:

- Identify a process for reviewing national recommendations for pandemic influenza vaccination and developing modifications or refinements in priority groups, depending on local circumstances.
- Develop specific definitions for priority groups (e.g., public safety workers, essential service providers) identifying occupational categories and sub-categories, as needed, within each broad priority.
- Estimate the size of relevant priority groups.

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- Develop a plan on how persons in priority groups would be identified at vaccination clinics and how vaccine would most efficiently be provided to those groups.
- Educate professional organizations and other stakeholders about the need for priority groups and the rationale for the groups currently recommended.

Vaccine distribution

The City of St. Louis Department of Health will:

- Use existing planned mass prophylaxis sites for vaccination clinics when possible
- Use existing mass prophylaxis plan (Annex H of All-Hazards Plan) adapted for vaccination clinics
- Identify organizations that will provide vaccination to persons in priority groups (e.g., Visiting Nurse Association, hospitals, occupational health clinics, private clinics identified by the employer or union of an occupational group)
- Identify contacts in and obtain written commitments from each clinic or facility responsible for vaccinating a priority group
- Work with these contacts to develop strategies for rapid distribution and administration of vaccines, taking into account vaccine security issues, cold chain requirements, and transport and storage issues
- Estimate the size of the priority groups that will be vaccinated based on extrapolation from national data or on local data, where available
- enter into memoranda of agreement with organizations that agree to provide vaccinators or other staff for Department of Health vaccination clinics
- Develop procedures for collecting, removing, and disposing of used syringes, needles, and other vaccination supplies
- Develop a plan for training vaccinators and other staff responsible for mass vaccination
- Develop strategies for vaccinating hard-to-reach populations

City of St. Louis Department of Health will also specifically address the delivery of pandemic vaccine to medically underserved populations to improve equity in access within priority groups and, later, the general population.

If vaccinations are provided by private-sector organizations or providers at offices, clinics, or other sites, the City of St. Louis Department of Health should:

- Develop mechanisms to allocate vaccine based on projected need.
- Develop mechanisms to collect unused vaccine (if any) from healthcare providers who have met their priority vaccination goals and distribute the vaccine to those who have not.
- Provide vaccination information to healthcare providers. This may best be accomplished by developing a communications plan for private-sector vaccine use.
- Monitor that vaccine administration follows existing plans on priority groups.

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Second-dose vaccination

A vaccine against pandemic influenza will likely require two doses, administered at least a month apart, to provide a level of immunity comparable to that obtained with seasonal influenza vaccines. Recommendations on the number of required doses and the timing of the second dose will be issued once immunogenicity trials have been completed.

If two doses are required to achieve immunity, it will be necessary to ensure that vaccinated persons return for the second dose. State and local planners should do the following:

- Arrange for information about the need for a second dose to be provided at the time of vaccination.
- Ensure that planning for vaccine procurement and distribution to clinics and other facilities accounts for the need to use portions of future shipments for second doses, thus reducing the number of available first doses.
- Consider implementing a call-back system or immunization registry that would accomplish the goals of pandemic vaccination.

Contingency planning for Investigational New Drug use

City of St. Louis Department of Health will need to be prepared to distribute unlicensed vaccines (if needed) under FDA's Investigational New Drug (IND) provisions. Unlicensed vaccines might be needed, for example, if pandemic spread is rapid and standard vaccine efficacy and safety tests are not completed in time to play a role in the response.

IND provisions require strict inventory control and record-keeping, completion of a signed consent form from each vaccinee, and mandatory reporting of specified types of adverse events. IND provisions also require approval from Institutional Review Boards (IRBs) in hospitals, health departments, and other vaccine-distribution venues. The FDA regulations permit the use of a national or "central" IRB. A treatment IND is one IND mechanism that FDA has available for use and is especially suited for large scale use of investigational products (http://www.access.gpo.gov/nara/cfr/waisidx_99/21cfr_99.html).

As an alternative to IND use of an unapproved antiviral drug, HHS may utilize the drug product under Emergency Use Authorization procedures as described in the FDA draft Guidance "Emergency Use Authorization of Medical Products" (<http://www.fda.gov/cber/gdlns/emerase.pdf>).

Vaccine monitoring and data collection

To ensure optimal use of a new pandemic influenza vaccine, the health department will need to be prepared to collect data on vaccine effectiveness, vaccine supply and distribution, vaccine coverage, and vaccine safety.

Vaccine effectiveness

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Vaccine effectiveness will be assessed by comparing rates of influenza-related illness, hospitalization, and/or death among vaccinated and unvaccinated persons. These studies will be implemented by CDC in collaboration with healthcare and university partners and with state and local health departments that participate in influenza surveillance systems.

Vaccine supply and distribution

Mechanisms for tracking vaccine supply and distribution will depend on how vaccine is purchased and distributed. Tracking will be implemented by state and local health authorities—who will have major responsibility for allocation decisions—working in association with CDC and vaccine producers. Data also will be obtained from vaccine producers and commercial distributors.

- Vaccine tracking and coverage information may be used by federal, state, and local decision-makers to estimate adverse event rates based on the number of doses administered and to determine if vaccine is being administered according to established priority groups for pandemic vaccine (especially in the early phases of vaccination). Data will be collected from individual providers, collated at the local and state levels, and reported to federal authorities on a scheduled routine basis.
- States with immunization registries may adapt them for use in tracking coverage with pandemic influenza vaccine. Or, states may use a vaccine database that will be supplied by CDC. At a minimum, tracking data should include:
 - Number of doses administered, by date and age, priority group, and state or county (or zip code)
 - Number of doses that represent second doses, as applicable
 - State and local authorities may consider additional data requirements for their own needs.

Vaccine coverage

CDC will work with states to develop a system for monitoring vaccination rates at regular intervals, using a pre-existing population-based survey tool (e.g., Behavioral Risk Factor Surveillance System) that provides national and state-level estimates and complements the vaccine tracking systems described above.

Vaccine safety

The health departments will be part of a system to report and investigate adverse events following immunization (AEFI) with a pandemic influenza vaccine. The Vaccine Adverse Event and Reporting System (VAERS) (www.vaers.hhs.gov) will be used.

VAERS typically involves direct reporting by individual healthcare providers, with periodic feedback to the states. During a pandemic, some state health departments may wish to receive direct reports of AEFI to conduct investigations of adverse events and minimize duplicate reporting of adverse events to VAERS.

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State-level AEFI reporting can build on the infrastructure and experience developed during the 2003 smallpox vaccination program. Adverse events related to use of IND vaccines may be reported through other mechanisms in addition to or in place of VAERS, in accordance with specific regulatory or policy requirements. Adverse events will also be monitored through the Vaccine Safety Datalink (www.cdc.gov/nip/vacsafe/default.htm#VSD), a network of seven geographically diverse health maintenance organizations through which active surveillance vaccine safety studies are conducted. Another potential resource for vaccine safety research is CDC's Clinical Immunization Safety Assessment (CISA) network (www.vaccinesafety.org/CISA/index.htm).

Public health communications

The provision of vaccine information will be an important component of ongoing public health communication during a pandemic.

- State and local health departments are working with federal partners to disseminate accurate, useful, and consistent public health messages and should tailor information to local needs as indicated.
- Health departments should provide information to healthcare providers, state and local government officials, and the news media on:
 - Rationale for prioritization and list of priority groups
 - Phasing of vaccination, if any, after priority groups have been vaccinated
 - When and where vaccination is available
 - Importance of vaccination given likelihood of subsequent pandemic waves, particularly if public interest in vaccination has decreased
- As noted above, state and local health departments should be prepared to disseminate information on vaccine use to healthcare providers who purchase private stocks of pandemic influenza vaccine. In addition, all vaccine providers will need vaccine information sheets that describe the risks and benefits of, and contraindications to, vaccination.

Coordination with bordering jurisdictions

The City of St. Louis Department of Health will review and coordinate vaccine distribution plans with health authorities in neighboring jurisdictions, including bordering states. This will be done through the St. Louis metropolitan coordinating health and disaster group St. Louis Area Regional Response System (STARRS).

Legal preparedness

The City of St. Louis Department of Health will ensure that appropriate legal authorities are in place to facilitate implementation of plans for distributing pandemic influenza vaccines. Health departments might undertake these legal preparedness steps:

- Ensure that plans for distribution of vaccines are reviewed by appropriate legal authorities.
- Determine whether state and local laws allow non-licensed volunteers or healthcare workers from other jurisdictions to administer influenza vaccines.

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- Work with professional organizations and unions to consider options for emergency performance of tasks outside of standard job descriptions.
- Determine whether state and local laws allow mandatory vaccination to protect public health, if needed.

Training

State and local health departments can assist healthcare partners in conducting training exercises to facilitate rapid and effective delivery and use of vaccines. Exercises and drills are essential to ensure that emergency procedures are in place and that roles and responsibilities are well understood. It may be useful, for example, to practice emergency implementation of mass vaccination (e.g., receiving large quantities of vaccine; storing and handling vaccine; setting up and staffing clinics; administering vaccine; testing information management systems; educating the public, media, and medical providers; targeting specific priority groups).

RECOMMENDATIONS FOR THE PANDEMIC PERIOD

Before a vaccine is available

Before a vaccine becomes available—state and local health departments should do the following:

- Meet with partners and stakeholders to review the major elements of the state's vaccine distribution plan.
- Modify the plan to account for possible updated interim recommendations on priority groups, projected vaccine supplies and timelines for availability, and staffing estimates for mass vaccination.
- Notify the medical community about the status of the plan and the expected availability of vaccines.
- If stockpiled vaccine of the pandemic subtype is available, work with healthcare partners and other stakeholders to distribute, deliver, and administer vaccines to designated groups.
- Update and disseminate public information on the production, distribution, and use of pandemic influenza vaccine before it becomes available.
- Conduct training for public health staff and partners involved in distributing and administering vaccines.

When a vaccine becomes available

- Once a vaccine is ready for distribution, state and local health departments should work with healthcare and community partners to activate plans to:
 - Vaccinate persons in priority groups, in accordance with existing recommendations.
 - Provide a second dose, if required for immunity.
 - Monitor vaccine supply, distribution, and use.
 - Monitor and investigate adverse events.
- Continue communication with partners and the public.

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- After priority groups have been vaccinated and additional vaccine stocks become available, public health authorities should phase-in vaccination of the rest of the population, based on age or other criteria that will ensure fair, equitable, and orderly distribution. HHS will issue national recommendations to aid in this process.
- After the pandemic has ended, state and local health departments should evaluate all response activities, including vaccine tracking and delivery, adverse event monitoring, and communications.

ANTIVIRAL DRUG DISTRIBUTION AND USE

RATIONALE

Drugs with activity against influenza viruses (“antivirals”) include the adamantanes *amantadine* and *rimantadine* and the neuraminidase inhibitors *oseltamivir* and *zanamivir*. Appropriate use of these agents during an influenza pandemic may reduce morbidity and mortality and diminish the overwhelming demands that will be placed on the healthcare system. Antivirals might also be used during the Pandemic Alert Period in limited attempts to contain small disease clusters and potentially slow the spread of novel influenza viruses. A huge and uncoordinated demand for antivirals early in a pandemic could rapidly deplete national and local supplies. Preparedness planning for optimal use of antiviral stocks is therefore essential.

OVERVIEW

This Unit provides recommendations given to local health departments on the distribution and use of antiviral drugs for treatment and prophylaxis during an influenza pandemic. The Interpandemic and Pandemic Alert Period recommendations focus on preparedness planning for the rapid distribution and use of antiviral drugs (e.g., procurement, distribution to priority groups, legal preparedness, training, and data collection on use, effectiveness, safety, and the development of drug resistance). These recommendations also cover the use of antiviral drugs in the management and containment of cases and clusters of infection with novel strains of influenza, including avian influenza A (H5N1) and human strains with pandemic potential.

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The Pandemic Period recommendations focus on the local use of antiviral drugs in three situations: 1) when pandemic influenza is sporadically reported in the United States (without evidence of spread in the United States), 2) when there is limited transmission of pandemic influenza in the United States, and 3) when there is widespread transmission in the United States. National recommendations for optimal use of limited stocks of antivirals will be updated throughout the course of an influenza pandemic to reflect new epidemiologic and laboratory data. Interim recommendations will also be updated as an effective influenza vaccine becomes available.

RECOMMENDATIONS FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS

Use of antivirals in management of cases of novel influenza

Influenza infections may be due to:

- 1) Interpandemic (i.e., 'normal') seasonal strains of influenza¹
- 2) Novel strains of influenza that do not appear to be easily transmissible but could be precursors to human pandemic strains (e.g., avian influenza A [H5N1] viruses)
- 3) Novel strains of influenza that demonstrate person-to-person transmission and therefore have pandemic potential (e.g., a new human pandemic strain) In this document the term "novel strains of influenza" is used to refer to avian or animal influenza strains that can infect humans (like avian influenza A [H5N1]) and new or re-emergent human influenza viruses that cause cases or clusters of human disease.

Use of antivirals for treatment

A patient with a suspected case of avian influenza A (H5N1) or another novel strain of influenza should be isolated as described and treated according to existing clinical guidelines. As of fall 2005, the recommendation for treatment includes the use of oseltamivir or zanamivir, administered as early as possible and ideally within 48 hours after onset of symptoms. These neuraminidase inhibitors are preferred because the majority of avian influenza A (H5N1) viruses currently affecting humans are resistant to amantadine and rimantadine, and resistance to these drugs typically develops rapidly when they are used for treatment of influenza. Although resistance to zanamivir and oseltamivir can be induced in influenza A and B viruses *in vitro*, multiple passages in cell culture are usually required to produce neuraminidase inhibitor resistance, in contrast with adamantane resistance, which can develop after a single passage. Because the neuraminidase inhibitors have different binding sites for the enzyme, cross-resistance between zanamivir- and oseltamivir-resistant viruses is variable. Current U.S. recommended doses for antiviral treatment are provided in the HHS document Pandemic Influenza Plan.

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Use of antivirals for prophylaxis of contacts

State and local health departments, in consultation with CDC, will consider whether it is necessary and feasible to trace a patient's close contacts and provide them with postexposure antiviral prophylaxis. Close contacts may include family, schoolmates, workmates, healthcare providers, and fellow passengers if the patient has been traveling. If deemed necessary by public health authorities, these persons may receive post-exposure prophylaxis with oseltamivir, as zanamivir is not currently indicated for prophylaxis. If the exposure to the novel influenza virus strain occurs during the regular influenza season, the patient's healthcare contacts (who may also care for persons with seasonal influenza) should be vaccinated against seasonal influenza to reduce the possible risk of co-infection and reassortment of seasonal and novel strains.

Use of antivirals for containment of disease clusters

In special circumstances, state and local health departments could consider "targeted antiviral prophylaxis" as a community based measure for containing small clusters of infection with novel strains of influenza. This measure could be implemented in small, well-defined settings such as the initial introduction of a virus with pandemic potential into a small community or a military base. However, once a pandemic is underway, such a strategy would not represent an efficient use of limited antiviral supplies. Because targeted antiviral prophylaxis would require rapid delivery and administration of substantial stocks of antiviral drugs, its feasibility should be evaluated in light of antiviral drug supply and interim recommendations on antiviral drug use during a pandemic. Targeted antiviral prophylaxis would involve investigation of disease clusters, administration of antiviral treatment to persons with confirmed or suspected cases of pandemic influenza, and provision of drug prophylaxis to all persons in the affected community. Targeted antiviral prophylaxis would also require intensive case-finding in the affected area as well as effective communication with the affected community.

VIII. Community Disease Control and Prevention

RATIONALE

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The initial response to the emergence of a novel influenza subtype that spreads between people should focus on containing the virus at its source, if feasible, and preventing a pandemic. Once spread beyond the initial focus occurs and with introduction of the virus into the United States, the foci of containment activities will be public health and individual measures that attempt to slow and limit viral transmission.

For the purposes of this document, containment measures refer to measures that attempt to fully limit transmission as well as those that attempt to slow transmission. Containment strategies aimed at controlling and slowing the spread of the virus might include measures that affect individuals (e.g., isolation of patients and monitoring their contacts) as well as measures that affect groups or entire communities (e.g., cancellation of public gatherings; implementation of community-wide snow days). Guided by epidemiologic data, state and local authorities will implement the most appropriate of these measures in efforts to maximize impact on disease transmission and minimize impact on individual freedom of movement.

The City of St. Louis has primary responsibility for public health matters within its borders, including isolation and quarantine. The current laws are contained in Chapter 11.56 of the St. Louis City Ordinances.

Under the authority of Section 361 of the Public Health Service Act (42 USC 264), the HHS Secretary may make and enforce regulations necessary to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the United States or from one state or possession into another.

Containment measures applied to individuals (e.g., isolation and quarantine) may have limited impact in preventing the transmission of pandemic influenza, due to the short incubation period of the illness, the ability of persons with asymptomatic infection to transmit virus, and the possibility that early symptoms among persons infected with a novel influenza strain may be non-specific, delaying recognition and implementation of containment.

Nevertheless, during the Pandemic Alert Period with a less efficiently transmitted virus, these measures may have great effectiveness, slowing disease spread and allowing time for targeted use of medical interventions. In addition, implementing these measures early in a pandemic when disease is first introduced into the U.S. and when the scope of the outbreak is focal and limited may slow geographical spread and increase time for vaccine production and implementation of other pandemic response activities. Later, when disease transmission is occurring in communities around the U.S., individual quarantine is much less likely to have an impact and likely would not be feasible to implement.

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Thus, community-based containment measures (e.g., closing schools or restricting public gatherings) and emphasizing what individuals can do to reduce their risk of infection (e.g., hand hygiene and cough etiquette) may be more effective disease control tools.

Although there are few data from past pandemics to guide containment efforts, the potential effectiveness of strictly implemented movement restrictions is supported by historical accounts that describe the use of such measures in American Samoa and in some Alaskan villages during the pandemic of 1918-1919. American Samoa banned inbound and outbound travel and mail service and (unlike Western Samoa) remained influenza-free. In Alaska, quarantine and isolation measures apparently delayed introduction of pandemic influenza into the Alaskan interior for several months, and some isolated villages were completely spared.

Today, much more extensive international and domestic travel and the interdependence between communities make it unlikely that strict restrictions could be effectively imposed and that, except in unique settings, communities could prevent outbreaks from occurring. Preliminary mathematical modeling results suggest that travel restrictions would need to be about 99% effective to delay introduction into a country by one to two months. Based on these results, the goals of containment activities during a pandemic should be to slow the spread of disease early after introduction into the U.S. and to limit the number of persons who become infected in community outbreaks throughout the pandemic.

ACTIVITIES FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS

- Identifying and engaging traditional partners (e.g., public health and healthcare workers) and non-traditional community partners (e.g., transportation workers) and inviting them to participate in preparedness planning and in pandemic influenza containment exercises and drills
- Identifying potential isolation and quarantine facilities
- Establishing procedures for medical evaluation and isolation of quarantined persons who exhibit signs of influenza-like illness (ILI)
- Developing tools and mechanisms to prevent stigmatization and provide mental health services to persons in isolation or quarantine, as well as to family members of affected persons and other community members
- Establishing procedures for delivering medical care, food, and services to persons in isolation or quarantine. These efforts should take into account the special needs of children and persons with disabilities.
- Developing protocols for monitoring and enforcing quarantine measures
- Ensuring legal authorities and procedures exist for various levels of movement restrictions
- Establishing procedures for issues related to employment compensation and job security

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Legal preparedness

States, localities, and tribes have primary responsibility for public health matters within their borders, including isolation and quarantine. Current quarantine laws, regulations, and enforcement procedures vary widely from state to state. Many of these laws date to the 19th century. In response to a request from CDC, the Center for Law and the Public's Health at Georgetown and Johns Hopkins universities has developed a draft Model State Emergency Health Powers Act (www.publichealthlaw.net/MSEHPA/MSEHPA2.pdf) to assist state and local health agencies in reviewing emergency public health powers to ensure they are adequate to respond to modern disease and bioterrorism concerns. Under the authority of Section 361 of the Public Health Service Act (42 USC 264), the HHS Secretary may make and enforce regulations necessary to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the United States or from one state or possession into another. Under authority delegated by the HHS Secretary, the CDC Director may isolate and quarantine persons who have been exposed to or are infected with certain specified communicable diseases and are arriving into the United States from a foreign country or traveling from one state or possession into another (42 CFR 71.32(a) & 42 CFR 70.6). The communicable diseases for which individuals may be subject to federal quarantine are specified in an Executive Order of the President, upon recommendation of the HHS Secretary in consultation with the Surgeon General. The most recent Executive Order is Executive Order 13295 of April 4, 2003, as amended by Executive Order 13375 of April 5, 2005. The April 5 amendment added influenza that is causing or has the potential to cause a pandemic to the list of federal quarantinable diseases (<http://www.cdc.gov/ncidod/dq/index.htm>). In addition, under section 311 of the PHS Act (42USC 243), HHS may cooperate with and aid state and local authorities in the enforcement of their quarantine and other health regulations.

New International Health Regulations (IHR) were recently adopted by the World Health Assembly, which requires member states to report cases of human infection caused by a new subtype. When WHO has determined that a particular event constitutes a public health emergency, the IHR require WHO to make a "real-time" response to the emergency. Based on the details specific to the emergency, the Director General of WHO will recommend measures for implementation by the affected state as well as by other states. These time-limited recommendations are made available to states and, subsequently, made public. Depending on the evidence, recommended measures could be modified or ended.

STATE OF MISSOURI LAW

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Missouri Revised Statutes, Chapter 44 Civil Defense Section 44.10 describes broad emergency powers that are granted to the governor. Under these laws, the governor can seize needed resources such as transportation, communication systems, fuel stocks, facilities for housing, feeding and hospitalization of persons. The Missouri State Department of Health and Senior Services in Missouri Revised Statutes, Chapter 192, Section 192.020 has the power to “make and enforce adequate orders, findings, rules and regulation to prevent the spread of such diseases” as listed on the communicable or infectious disease list. Influenza is included on the list.

Under 19 CSR (Code of State Regulations) 20-20.050, the local health authority or the State Health Director has the power to impose isolation and quarantine for a communicable disease. The rule also establishes ability to restrict movement or close schools or a “place of public or private assembly” by local health authority or state Health Department Director.

CITY OF ST. LOUIS LAW

Chapter 11.56 (Disease and Disease Prevention) of the Revised Code of the City of St. Louis included influenza in the list of communicable diseases. 11.56.800 describes the powers of the Health Commissioner to impose quarantine and isolation orders and specifies the conditions of the quarantine and isolation. There are appeal and enforcement provisions in the law.

Management of patients infected with novel strains of influenza and their contacts

In this document, the term “novel strains of influenza” is used to refer to avian or animal influenza strains that can infect humans (like influenza A [H5N1]) and new or reemergent human viruses that cause cases or clusters of human disease.

Patient isolation

Infection control precautions and procedures for isolating influenza patients—at home or in a residence, community facility, or hospital. The patient will be admitted to a hospital if clinically indicated, if public health needs require it, or if isolation at home or in a community facility cannot be achieved safely and effectively. Information for evaluating the suitability of homes and facilities for patient isolation is provided at the end of this unit.

The state or local health department, in consultation with federal agencies, will advise the healthcare provider and healthcare facility on additional steps that may be taken, before and after laboratory test results become available, via the state public health laboratory or CDC.

Management of close contacts

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In most situations—even at the earliest stages of a pandemic—it will not likely be possible to trace and quarantine close contacts of suspected or confirmed cases within 48 hours (the average incubation period for human influenza). However, in certain situations, especially during the later phases of the WHO Pandemic Alert Period, efforts to identify exposed

individuals or groups might be recommended. Examples might include:

- Suspected or confirmed cases of novel influenza. For example, a suspected or confirmed case of avian influenza A (H5N1) in persons who have traveled to an H5N1-affected country and have been exposed to sick poultry (either through handling or eating poultry products) or a laboratory-confirmed human case of H5N1 influenza
- Suspected or confirmed cases of avian influenza A (H5N1) or another novel strain of influenza in travelers on airplanes or cruise ships about to arrive in the United States.
- Suspected or confirmed cases of avian influenza of any type in persons with known exposure to sick poultry or birds in the United States
- Clusters of avian influenza A (H5N1) or another novel strain of influenza in small, well defined settings, such as a military base
- Cases of laboratory exposure to avian influenza A (H5N1) or influenza viruses with the potential to cause a pandemic (e.g., influenza A [H2N2])

Decisions on whether to trace a patient's contacts and how to manage them will be made on a case-by-case basis by local and/or state public health departments, in consultation with CDC, taking into consideration:

- Likelihood that the suspected case is due to a novel influenza strain (based on symptoms and travel history, if laboratory results are not yet available)
- Likelihood that the causative virus is transmitted from person-to-person with a moderate or high efficiency (as reflected in the designated Pandemic Alert phase)
- Feasibility of conducting contact-tracing given the short incubation period for influenza

A patient's close contacts may include family, friends, work colleagues, classmates, fellow passengers, and/or healthcare providers. Management of contacts might include passive or active monitoring without activity restrictions and/or quarantine at home or in a designated facility.

In the Pandemic Alert Period, especially during Phase 3 or 4 when little or limited person-to-

person transmission has been documented, quarantine of contacts should be implemented **only when there is a high probability that the ill patient is infected with a novel influenza strain that may be transmitted to others.**

Contacts who are quarantined should be monitored by a health department official (or designee) at least once a day—by phone or in person—to assess symptoms and address any needs. Frequent monitoring (e.g., twice a day) will facilitate early detection, reducing the interval between the onset of symptoms and the isolation of the sick person. Early signs of influenza include fever,

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respiratory symptoms, and chills, rigors, myalgia, headache, or diarrhea. Quarantine may be lifted as soon as the exposed contact has remained without signs or symptoms of disease for a complete incubation period for influenza disease. (Experience with seasonal influenza suggests the incubation period is 1-4 days, with an average length of 2 days. However, the clinical behavior of a novel influenza virus may be different and could potentially be as long as 10 days.)

Pandemic influenza preparedness activities should plan for containment measures that may last between 1-10 days. For the purposes of this document, 10 days is referred to as the incubation period; however, public health authorities should be prepared to adjust the time frame as more is known about the virus.) Additional information on monitoring and evaluating persons in quarantine is provided at the end of this unit.

Data collection

Public health officials or designees should collect information on cases and contacts, including:

- Number of contacts identified per case
 - Information on each contact:
 - Relationship to the case-patient
 - Nature and time of exposure
 - Whether the contact was vaccinated or on antiviral prophylaxis
 - Underlying medical conditions
 - Number of contacts (including any in quarantine) that become ill
 - Number of days between onset of symptoms and reporting to health officials
- These data will guide decision-making on whether to implement more stringent containment measures.

Containment of small clusters of infection with novel strains of influenza

Community-based control measures that state and local health officials might use to contain small clusters of infection with novel strains of influenza (during the later Pandemic Alert phases or when cases are first introduced into the U.S.) include targeted chemoprophylaxis and early detection of new cases by use of influenza hotlines and clinics. These approaches may be implemented in small, well defined settings. They are not likely to be useful once a pandemic is underway.

Targeted chemoprophylaxis of disease clusters

This intervention includes investigation of disease clusters, administration of antiviral treatment to persons with confirmed or suspected pandemic influenza, and provision of drug prophylaxis to all likely exposed persons in the affected community. CDC will assist state health departments in these efforts, as needed.

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Targeted chemoprophylaxis also requires intensive disease surveillance to ensure coverage of the entire affected area, effective communication with the affected community, and rapid distribution and administration of antivirals because they are most effective when provided within 48 hours of symptom onset or when used as post-exposure prophylaxis before onset of illness

Influenza hotlines and clinics

During the later phases of a Pandemic Alert, in a community experiencing a disease cluster, a combination of self-assessment and establishment of influenza hotlines may be effective in detecting potential influenza disease and conducting “community triage” to direct persons with symptoms to the appropriate site and level of care. This intervention includes asking all members of the affected community to monitor their symptoms in accordance with instructions from the state health department and CDC. For example, all members of the community might be asked to take their temperature (and the temperature of their household members) once or twice daily. Persons with temperatures above a certain level may be asked to either stay home and phone a designated influenza hotline for a medical referral, or proceed to a neighborhood influenza clinic established by local public health and healthcare authorities.

Healthcare workers at the clinic will determine whether the patient’s symptoms are likely due to pandemic influenza, to a different contagious disease, or to a noncontagious condition. If a person is judged likely to be infected with pandemic influenza, they will be referred for isolation and care as needed.

The establishment of hotlines and influenza clinics requires preparation to identify sites and personnel and to facilitate the procurement and distribution of thermometers and other supplies. Clinic personnel should be prepared to keep records and report cases, as requested, by state health departments and CDC.

RECOMMENDATIONS FOR THE PANDEMIC PERIOD

During the Pandemic Period, control measures such as contact tracing and quarantine applied to individuals may have limited impact in decreasing influenza transmission. In addition, individual-level measures may no longer be feasible.

During this stage, state and local health departments should consider measures that decrease social contact within groups or whole communities (e.g., self-shielding, cancellation of public events, snow days) and measures that individuals can take personally to decrease their risk of infection. Box 2 outlines measures that may be employed at different stages of a pandemic, as disease becomes more widespread. These begin with containment activities for individuals and move on, as needed, to community-based measures. Depending on the specific circumstances of an epidemic, these steps may not necessarily be taken in sequential order.

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Containment measures for individuals

Patient isolation

As noted above, a patient with a suspected or confirmed case of pandemic influenza should be separated from persons who are well, using infection control measures described earlier in this document. If a surge in patients overwhelms healthcare capacity or if home isolation is not feasible, health departments may need to use alternative facilities for isolation of influenza patients. Guidance on use of alternative facilities for isolation of influenza patients is provided in Appendix 7.

Management of contacts

Contact tracing, contact monitoring, and quarantine of close contacts may be effective only in special situations during the earliest stages of a pandemic. Because the usefulness and feasibility of these measures will be limited once the pandemic has started to spread, health authorities should consider community-based measures that reduce disease transmission by increasing social distance.

Community-based containment measures

If disease transmission in the community is significant and sustained, state and local public health authorities should consider implementing community-based containment measures. CDC will promote an active process of engagement and discussion to help states and localities decide what actions to take as the situation evolves. Community-based containment measures can be grouped into two broad categories: measures that affect groups of exposed or at-risk persons and measures that affect entire communities.

Table 1 lists quantifiable factors that may influence decisions on where and when to impose community-based containment measures. Social considerations—including levels of community cooperation and mobility—will also inform local decisionmaking.

Measures that affect groups of exposed or at-risk persons

Measures that affect groups of exposed or at-risk persons include:

- Quarantine of groups of exposed persons
- Containment measures that apply to use of specific sites or buildings

These measures should be considered when:

- There is limited disease transmission in the area.
- Most cases can be traced to contact with an earlier case or exposure to a known transmission setting (e.g., a school or

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workplace where a person has fallen ill).

- The intervention is likely to either significantly slow the spread of infection or to decrease the overall magnitude of an outbreak in the community.

Quarantine of groups of exposed persons

The purpose of quarantine is to reduce influenza transmission by separating exposed persons from others, monitoring exposed persons for symptoms, and providing medical care and infection control precautions as soon as symptoms are detected. Groups that might be quarantined include:

- Persons who might have been exposed to an influenza case
- Via family members
- At a public gathering
- On an airplane or cruise ship or other closed conveyance
- At their school or workplace
- Healthcare providers who work at a facility where influenza cases receive care

Group quarantine (like patient isolation) is optimally performed on a voluntary basis, in accordance with instructions of healthcare providers and health officials. However, many levels of government (local, state, federal) have the basic legal authority to compel mandatory isolation and quarantine of individuals and groups when necessary to protect the public's health (see below). Recommendations for quarantine and monitoring of quarantined persons in different situations (home quarantine, quarantine in a designated facility, working quarantine) are provided in Appendix 6.

Measures that apply to use of specific sites or buildings

Two ways of increasing social distance activity restrictions are to cancel events and close buildings or to restrict access to certain sites or buildings. These measures are sometimes called "focused measures to increase social distance." Depending on the situation, examples of cancellations and building closures might include:

- Cancellation of public events (concerts, sports events, movies, plays)
- Closure of recreational facilities (community swimming pools, youth clubs, gymnasiums)

Measures that affect communities

Measures that affect entire communities (including both exposed and non-exposed persons), include:

- Promotion of community-wide infection control measures (e.g., respiratory hygiene/cough etiquette)
- Snow days and self-shielding
- Closure of office buildings, shopping malls, schools, and public transportation (e.g., subways, buses)
- Widespread community quarantine (*cordon sanitaire*)

Measures that affect whole communities should be considered when:

- There is moderate to extensive disease transmission in the area.

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- Many cases cannot be traced to contact with an earlier case or known exposure.
- Cases are increasing among contacts of influenza patients.
- There is a significant delay between the onset of symptoms and the isolation of cases because of the large number of ill persons.

As community outbreaks of pandemic influenza occur, community-wide infection control measures may decrease the overall magnitude of the outbreak (see Box 3). Community-based measures may also include school closures, snow days, and selfshielding.

Community-wide infection control measures

Throughout a pandemic, public health authorities will encourage all persons with signs and symptoms of a respiratory infection, regardless of presumed cause, to:

- Cover the nose/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 or materials.

Persons at high risk for complications of influenza will be advised to avoid public gatherings (e.g., movies, religious services, public meetings) when pandemic influenza is in the community. They should also avoid going to other public areas (e.g., food stores, pharmacies); the use of other persons for shopping or home delivery service is encouraged.

Disposable surgical-type masks are used by healthcare workers taking care of ill patients to prevent splashes and droplets of potentially infectious material (e.g., from coughs and sneezes) from reaching the mucous membranes of the healthcare worker's nose or mouth. The benefit of wearing masks by well persons in public settings has not been established and is not recommended as a public health control measure at this time. In contrast to healthcare workers who necessarily have close contact with ill patients, the general public should try to avoid close contact with ill individuals.

Nevertheless, persons may choose to wear a mask as part of individual protection strategies that include cough etiquette, hand hygiene, and avoiding public gatherings. Mask use may be most important for persons who are at high risk for complications of influenza and those who are unable to avoid close contact with others or must travel for essential reasons such as seeking medical care. Public education should be provided on how to use and dispose of masks appropriately. In addition, this education should emphasize that mask use is not a substitute for social distance or other personal protection measures. Supply issues should be considered so that mask use in communities does not limit availability for healthcare settings where the importance and effectiveness of this use has been documented.

Snow days and self-shielding

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Implementation of “snow days”—asking everyone to stay home—involves the entire community in a positive way, is acceptable to most people, and is relatively easy to implement. Snow days may be instituted for an initial 10-day period, with final decisions on duration based on an epidemiologic and social assessment of the situation. States and local authorities may wish to consider recommendations to the public for acquisition and storage of necessary provisions including type and quantity of supplies needed during snow days. Snow days can effectively reduce transmission without explicit activity restrictions (i.e., quarantine). Consideration should be given to personnel who maintain primary functions in the community (e.g., law enforcement personnel, transportation workers, utility workers [electricity, water, gas, telephone, sanitation]). Compliance with snow days might be enhanced by “self-shielding” behavior (i.e., many people may stay home even in the absence of an official snow day [“reverse quarantine”]).

Closure of office buildings, shopping malls, schools, and public transportation

Closure of office buildings, stores, schools, and public transportation systems may be feasible community containment measures during a pandemic. All of these have significant impact on the community and workforce, however, and careful consideration should be focused on their potential effectiveness, how they can most effectively be implemented, and how to maintain critical supplies and infrastructure while limiting community interaction. For example, when public transportation is cancelled, other modes of transportation must be provided for emergency medical services and medical evaluation. Although data are limited, school closures may be effective in decreasing spread of influenza and reducing the overall magnitude of disease in a community. In addition, the risk of infection and illness among children is likely to be decreased, which would be particularly important if the pandemic strain causes significant morbidity and mortality among children. Children are known to be efficient transmitters of seasonal influenza and other respiratory illnesses. Anecdotal reports suggest that community influenza outbreaks may be limited by closing schools. Results of mathematical modeling also suggest a reduction of overall disease, especially when schools are closed early in the outbreak. During a Pandemic Period, parents should be encouraged to consider child care arrangements that do not result in large gatherings of children outside the school setting.

Widespread community quarantine (cordon sanitaire)

In extreme circumstances, public health officials may consider the use of widespread or community-wide quarantine, which is the most stringent and restrictive containment measure. Strictly speaking, “widespread community quarantine” is a misnomer, since “quarantine” refers to separation of exposed persons only and (unlike snow days) usually allows provision of services and support to affected persons. Like snow days, widespread community quarantine

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involves asking everyone to stay home. It differs from snow days in two respects: 1) It may involve a legally enforceable action, and 2) it restricts travel into or out of an area circumscribed by a real or virtual “sanitary barrier” or “*cordon sanitaire*” except to authorized persons, such as public health or healthcare workers.

Implementation of this measure during a pandemic is unlikely to prevent the introduction or spread of pandemic disease except in uncommon or unique circumstances (such as in a community able to be completely self-sufficient). In many cases, other less restrictive approaches such as snow days can be implemented to slow disease spread or decrease its magnitude in a community. Because of this, *cordon sanitaire* is not recommended during a pandemic unless a community is in a setting where it is likely to be applied effectively and has planned with neighboring jurisdictions how such an approach would be implemented and maintained during a pandemic.

Scaling back community containment measures

The decision to discontinue community-level measures must balance the need to lift individual movement restrictions against community health and safety. Premature removal of containment strategies can increase the risk of additional transmission. Decisions should be based on evidence of improving local/regional control, such as:

- Consistent decrease in the number of confirmed cases
- Reduction in the number of probable and known cases
- Effective protective countermeasures are in place (e.g., high coverage with a pandemic influenza vaccine)

General recommendations are to withdraw the most stringent or disruptive measures first (e.g., widespread community quarantine, snow days, mass transit interruptions).

CONTAINMENT MEASURES: TERMS AND DEFINITIONS

Isolation is the separation and restriction and movement or activities of ill infected persons (patients) who have a contagious disease, for the purpose of preventing transmission to others.

Quarantine is the separation and restriction of movement or activities of persons who are not ill but who are believed to have been exposed to infection, for the purpose of preventing transmission of disease. Individuals may be quarantined at home or in designated facilities; healthcare providers and other response workers may be subject to quarantine when they are off duty.

Quarantine of close contacts refers to the quarantine of individuals exposed to patients with communicable diseases (e.g., family members, work or school mates, healthcare workers).

Quarantine of groups of exposed persons refers to quarantine of people who have been exposed to the same source of illness (e.g., a case of influenza at a public gathering, on an airline, train, or cruise ship, at a school or workplace or apartment complex, or at a recently visited store or office).

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Widespread or community-wide quarantine refers to the closing of community borders or the erection of a real or virtual barrier around a geographic area (a cordon sanitaire) with prohibition of travel into or out of the area.

Self-shielding refers to self-imposed exclusion from infected persons or those perceived to be infected (e.g., by staying home from work or school during an epidemic).

Snow days are days on which offices, schools, transportation systems are closed or cancelled, as if there were a major snowstorm.

Influenza clinics are special facilities that may be established during a pandemic to provide rapid medical assessment of potentially infected persons. Ill persons would be encouraged to call influenza hotlines that provide advice on whether to stay home or seek help at an influenza clinic. Persons who come to an influenza clinic will be advised on whether they may be best served by hospital care or home care.

Individual-level containment measures include isolation of patients and management of their close contacts.

Focused measures to increase social distance (or decrease social contact) includes measures applied to groups rather than individuals or whole communities (e.g., quarantine of groups of exposed persons and measures that apply to the use of specific sites or buildings).

Containment measures that apply to use of specific sites or buildings include cancellation of public events (e.g., concerts, sports events, movies and plays), closure of office buildings, apartment complexes, or schools; and closure of subways or bus lines. These measures may also involve restricting entrance to buildings or other sites (e.g., requiring fever screening or use of face masks before entry to schools, worksites, or airplanes).

Community-based measures to increase social distance include measures applied to whole neighborhoods, towns, or cities (e.g., snow days, establishment of fever clinics, and community-wide quarantine).

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IX Managing Travel Related risks of Disease Transmission

CDC has not recommended that the general public avoid travel to any of the countries affected by H5N1. However, CDC does recommend that travelers to these countries avoid poultry farms and bird markets or other places where live poultry are raised or kept. For details about other ways to reduce the risk of infection, see

http://www.cdc.gov/travel/other/avian_influenza_se_asia_2005.htm.

More Information

Department of Health and Human Services at www.pandemicflu.gov

World Health Organization at

World Organization for Animal Health (OIE) at

http://www.oie.int/eng/en_index.htm

*For the current WHO Pandemic Phase, see

http://www.who.int/csr/disease/avian_influenza/phase/en/index.html.

† For a listing of influenza H5N1-affected countries, visit the CDC website at

<http://www.cdc.gov/flu/avian/outbreaks/current.htm>; the OIE website at

http://www.oie.int/eng/en_index.htm; and the WHO website at

http://www.who.int/csr/disease/avian_influenza/en/.

X. Public Health Communications

Annex C of the Bioterrorism and Emergency Response Plan contains Standard Operating Procedures and contact information for All Hazards response including Influenza Pandemic. It is on the H Drive in the BT Folder**

Overall Objects

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- Cooperation of the community
- Preparing the public for changes and inconveniences that may result as the public health structure attempts to slow the spread of disease through means including isolation and quarantine, “snow days,” school closings, business closings, travel restrictions and cancellation of public events and/or places where people gather in large numbers.
- Maximum participation in any immunization/prophylaxis program
- Reduction of the impact of the disease on individuals and the community
- Meeting the needs of the news media
- Meeting the information needs of the medical community
- Coordinating with other agencies involved in responding and providing information to the public
- Providing information that is accurate, timely and pertinent

Overall Premises

- During a pandemic, the public will need timely information about what is known and what is unknown and will need advice on steps to take to protect their health and the health of others.
- The medical community will require continuous updating about the situation, availability of antivirals and vaccines, and public health /public safety responses to the pandemic.
- Coordination with other local jurisdictions, the state and federal governments will be essential to delivering a consistent message.

❖ For appropriate messages, see Message Map 1,2,3 & 4 in the Influenza Planning 2005 Folder on the G drive.

Getting the Information Out

- Press releases, etc., through established channels. Rapid faxes, emails, phone calls. Press releases go out from the Mayor’s office. Redundancy is available through the Health Alert Network and media contact information in Annex C.
- Press Conferences: Ideally a Joint Information Center (JIC) will conduct regular press conferences to keep media informed.
- Citizens’ Service Bureau and other City Offices: All will receive scripts from the Health Department’s BT and Emergency Response PIO for responding to inquiries from the public. Contact info in Annex C of the DOH BT/Emergency Response Plan..
- Multigraph (city duplicating services) can print flier for hand distribution if necessary.
- Health Alert Network, mass fax system, can send information to physicians, hospitals, community health centers, and others.

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- The Internet: The BT and Emergency Response PIO will work with the Health Department IT specialist to maintain information about the influenza pandemic on the city website with links to federal and state websites.
- MEDCOM: Medical Operations Center can communicate with all hospitals in area.

Key Public Information Activities

During Interpandemic and Pandemic Alert Periods

- Continue educating public about planning for emergencies through materials such as Ready in 3, public presentations, media placements.
- Prepare public for changes and inconveniences that could result during a pandemic through occasional pitched stories or press releases. Educate reporters about what they can expect and how they can help.
- Use Health Alert Network to keep medical community informed about new developments.

During Pandemic

- Establish links with other PIO's in surrounding jurisdictions, hospitals, state and federal government. St. Louis City BT and Emergency Response PIO will alert Mayor's press secretary and City PIOs will be assigned to specific duties and shifts to include working from Mayor's Office, Joint Information Center or elsewhere, monitoring media, preparing spokespersons, writing releases, responding to calls from media and so on.
- Receive briefings from Emergency Response Planners and others.
- Work with City epidemiologist and epi specialists in preparing information for medical community to be distributed through Health Alert Network and other methods.
- In collaboration with state, federal government and other jurisdiction, determine appropriate messages and establish site/s for media briefings.
- BT PIO will also prepare scripts for Citizens' Service Bureau, other departments and possible Hot Lines. Messages should be coordinated with other jurisdictions and state for consistency.
- Prepare spokespersons
- Help establish JIC or other media staging area for press briefings (or determine other methods for briefing press)
- Maintain rumor control log and files for media queries/responses/outcomes
- Update and refine messages

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See Annex C of BT and Emergency Response Plan for Standard Operating Procedures. Located on H Drive under BT Plan

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APPENDICES

PUBLIC INFORMATION

Message Maps

HHS Pandemic Influenza Message Maps: *Pandemic Influenza*

HHS developed these pandemic influenza and avian influenza communication tools using the communication science-based message mapping development process.

"Message maps" are risk communication tools used to help organize complex information and make it easier to express current knowledge. The development process distills information into easily understood messages written at a 6th grade reading level. Messages are presented in 3 short sentences that convey 3 key messages in 27 words. The approach is based on surveys showing that lead or front page media and broadcast stories usually convey only three key messages usually in less than 9 seconds for broadcast media or 27 words for print.

These pandemic influenza and avian influenza message maps are in the public domain. You may use them freely, including copying or redistributing on paper or electronically.

101. What is pandemic influenza?

Pandemic influenza is a global outbreak caused by a new influenza virus.

The virus may spread easily, possibly causing serious illness and death. Because so many people are at risk, serious consequences are possible. Historically, pandemic influenza has caused widespread harm and death.

Pandemic influenza is different from seasonal influenza (or “the flu”).

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Seasonal outbreaks of the flu are caused by viruses that are already among people.
Pandemic influenza is caused by an influenza virus that is new to people.
Pandemic influenza is likely to affect many more people than seasonal influenza.

Timing and consequences of pandemic influenza are difficult to predict.

Pandemic influenza has occurred three times in the last century.
Flu viruses are constantly changing.
The most serious was the 1918 pandemic which killed tens of millions of people worldwide.

Preparing now can limit the effects of pandemic influenza.

The World Health Organization, the US Department of Health and Human Services, and countries throughout the world have developed emergency plans for a pandemic influenza. Informed public participation and cooperation will be needed for effective public health efforts. Individuals should stay informed about pandemic influenza and prepare as they would for any emergency.

For more information

See Related Maps

105. What are the chances that there will be pandemic influenza again?

202. What is being done to prepare for pandemic influenza?

215. What can individuals do to prepare?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

102. How is pandemic influenza different from seasonal flu?

Pandemic influenza is caused by an influenza virus that is new to people.

Seasonal flu is caused by viruses that are already among people.
Pandemic influenza may begin with an existing influenza virus that has changed.
Fewer people would be immune to a new influenza virus.

The timing of an influenza pandemic is difficult to predict.

Seasonal flu occurs every year, usually during winter.
Pandemic influenza has happened about 30 times in recorded history.
An influenza pandemic could last longer than the typical flu season.

An influenza pandemic is likely to be more severe than seasonal flu.

Pandemic influenza is likely to affect more people than seasonal flu.
Pandemic influenza could severely affect a broader set of the population, including young adults.

DRAFT

A severe pandemic could change daily life for a time, including limitations on travel and public gatherings.

For more information

See Related Maps

125. How does a new influenza virus arise?

104. What were previous pandemics like?

202. Are we prepared for pandemic influenza?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

103. Have there been influenza pandemics before?

Influenza pandemics have occurred throughout recorded history.

About 30 influenza pandemics have been recorded.

There were three influenza pandemics in the last century.

The most recent influenza pandemic was Hong Kong Influenza in 1968-69.

The severity of influenza pandemics has varied.

The 1918 pandemic killed tens of millions of people worldwide.

Deaths from the 1968-69 Pandemic were about the same as for seasonal influenza.

Severe pandemics can have severe adverse effects on the economy and daily life.

It is difficult to predict how the next influenza pandemic will compare to the past.

The severity of a pandemic influenza will depend on the virus that causes it.

Increased travel and greater populations could speed the spread of pandemic influenza.

Better detection and medical treatments could lessen the effects of an influenza pandemic.

For more information

See Related Maps

125. How does a new influenza virus arise?

104. What were previous pandemics like?

202. Are we prepared for pandemic influenza?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

105. What are the chances there will be pandemic influenza again?

Pandemic influenza will occur again.

DRAFT

It is difficult to predict when the next pandemic will occur and how severe it will be. Influenza viruses are always changing. Occasionally a new virus emerges that can spread easily among humans.

Scientists are concerned that “bird flu” (H5N1 avian influenza) in Asia could change, causing pandemic influenza.

The virus is spreading to birds and other animals in new regions. The virus has infected some people, causing severe illness and death. In rare cases the virus has spread from one person to another.

The United States and other countries are preparing to respond to pandemic influenza.

The Department of Health and Human Services and others are developing supplies of vaccines and medicines.

The US has been working with the World Health Organization and other countries to strengthen detection and response to outbreaks.

Preparedness efforts are on-going at the national, state, and local level.

For more information

See Related Maps

301. What is H5N1 avian influenza?

314. Is it safe to buy and eat chicken and duck?

315. What advice would you give to someone traveling to Asia?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

108. How much warning will we have in the U.S. if a pandemic starts?

Warning time will depend on where the new virus starts.

New influenza viruses often originate in Asia.

Many experts believe that the worst recorded outbreak of pandemic influenza – the 1918 pandemic - started in the United States.

The US is working with the World Health Organization and other countries to strengthen detection and tracking of new influenza viruses.

Warning time will depend on how soon the virus is identified.

Pandemic influenza is caused by an influenza virus that is new to people.

Many viruses circulate in animals, but don't cause disease in most humans

The virus must spread easily among people to become pandemic influenza

The effectiveness of control measures will depend on where the new virus starts.

DRAFT

If the new virus starts in Asia, limitations on travel, such as those used for SARS, may delay entry into the U.S.

It is unlikely that control measures will prevent pandemic influenza from entering the U.S. Preparing now can limit the spread and effects of pandemic influenza.

For more information

See Related Maps

117. If pandemic influenza comes into the United States, who is likely to get it first?

202. Is the U.S. prepared for an influenza pandemic?

115. How worried should people be?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

109. How fast would pandemic influenza spread?

When pandemic influenza begins, it is likely to spread very rapidly.

Influenza is a contagious disease of the lungs.

Influenza usually spreads by infected people coughing and sneezing.

Most people will have little or no immunity to pandemic influenza.

Efforts to prepare for pandemic influenza are continuing.

Public health officials are building on existing disease outbreak plans, including those developed for SARS.

Researchers are working to produce additional vaccine more quickly.

Countries are working together to improve detection and tracking of influenza viruses.

Public participation and cooperation will be important to the response effort.

Severe pandemic influenza could produce changes in daily life, including limits on travel and public gatherings.

Informed public participation and cooperation will help public health efforts.

People should stay informed about pandemic influenza and be prepared as they would for any emergency.

For more information

See Related Maps

101. What is pandemic influenza?

502. Can a vaccine be made to protect against pandemic influenza?

215. What can individuals do to prepare?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

DRAFT

Go to <http://www.pandemicflu.gov> on the Internet.

110. How many people are likely to get sick in a pandemic? How many will die?

The consequences of pandemic influenza are difficult to predict.

Pandemic influenza has occurred three times in the last century.
The most recent, in 1967, was the mildest.
The most serious was the 1918 pandemic, which killed tens of millions of people worldwide.

During a pandemic many people will be infected.

One-third of the people in the U.S. got sick during the 1918 pandemic.
Historically, most people who get sick will recover.
Having many people ill can be highly disruptive to daily life.

In general, some people are at greater risk for illness and death.

People who already have a health problem are often at higher risk.
People with weakened immune systems (for example transplant patients) are likely to be at higher risk.
Older people tend to be at higher risk from certain diseases.

For more information

See Related Maps

112. Will people with strong immune systems be immune to pandemic influenza?

115. How worried should people be?

804. Are there certain things I should do to help manage worries about pandemic influenza? Are there things I should avoid doing?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

113. Will this be like Swine Flu in 1976, when many people were vaccinated, then the disease didn't appear?

Scientists are confident that an outbreak of pandemic influenza will occur again.

Influenza pandemics have occurred over 30 times in recorded history.
There were three influenza pandemics in the last century.
The 1918 pandemic, the worst, killed tens of millions of people worldwide.

DRAFT

The timing and consequences of pandemic influenza are difficult to predict.

Scientists are uncertain when pandemic influenza will occur and how severe it will be. Influenza viruses are always changing.

Occasionally a new influenza virus emerges or an old one re-emerges that can spread easily.

Preparing now can limit the effects of pandemic influenza.

The World Health Organization, the US Department of Health and Human Services, and countries throughout the world have developed emergency plans for a pandemic influenza. Informed public participation and cooperation will be needed for public health efforts. Individuals should stay informed about pandemic influenza and prepare as they would for any emergency.

For more information

See Related Maps

101. What is pandemic influenza?

103. Have there been influenza pandemics before?

202. Is the U.S. prepared for an influenza pandemic?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

115. How worried should people be about pandemic influenza?

Preparing and staying informed are the best responses now.

Right now, there is no pandemic influenza in the U.S. or the world.

Preparing now can limit the effects of pandemic influenza.

You can stay informed through www.pandemicflu.gov.

The United States and other countries are preparing to respond to pandemic influenza.

The Department of Health and Human Services and others are developing supplies of vaccines and medicines.

The US is working with the World Health Organization and other countries to strengthen monitoring and response to outbreaks.

Preparedness efforts are on-going at the national, state, and local level.

Individuals, communities, and businesses can prepare.

Individuals should stay informed about pandemic influenza and prepare as they would for any emergency.

Businesses should prepare or review their emergency plans.

DRAFT

Communities should prepare as for other public health emergencies.

For more information

See Related Maps

215. What can individuals do to prepare for pandemic influenza?

214. What can communities do to prepare for pandemic influenza?

213. What can businesses be doing to prepare for pandemic influenza?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

116. Could terrorists make and spread an influenza virus for a pandemic?

Experts believe it highly unlikely that pandemic influenza could result from terrorism.

Experts believe that other types of terrorist activities, such as bombings, are more likely. Developing a pandemic influenza virus would require extraordinary scientific skill. Developing a pandemic influenza virus would require sophisticated scientific equipment and other resources.

Preparing now can limit the effects of pandemic influenza – regardless of the source.

Individuals should stay informed about pandemic influenza and prepare as they would for any emergency.

Businesses should prepare or review their emergency response plans.

Communities should prepare as for other public health emergencies.

Public health agencies throughout the world are preparing for pandemic influenza – regardless of the source.

The World Health Organization, the US Department of Health and Human Services, and countries throughout the world are building on existing plans, including those developed for SARS.

Researchers are working to produce more vaccine more quickly.

A coordinated international effort is underway to improve detection and tracking of influenza viruses.

For more information

See Related Maps

108. What are the chances there will be another influenza pandemic?

205. What is being done to prepare for pandemic influenza?

115. How worried should people be?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

117. If pandemic influenza comes into the United States, who is likely to get it first?

When pandemic influenza begins, it is likely to spread very rapidly.

Influenza is a contagious disease of the lungs.
Influenza usually spreads by infected people coughing and sneezing.
Most people will have little or no immunity to pandemic influenza.

Federal, state, and local governments are preparing for pandemic influenza.

Systems for early detection and containment have been improved.
Researchers are working to produce additional vaccine more quickly.
Pandemic influenza could still have serious effects on society.

Individuals should stay informed and prepare as they would for any emergency.

Right now, there is no pandemic influenza in the U.S. or the world.
Because of bird flu in Asia, travelers to this area should be careful.
People can stay informed about pandemic influenza at <http://www.pandemicflu.gov>

For more information

See Related Maps
205. What is being done to prepare for pandemic influenza?
310. What is bird flu (H5N1 Avian Influenza)?
315. What advice would you give someone traveling to Southeast Asia?
Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
Go to <http://www.pandemicflu.gov> on the Internet.

121. What should the public know about pandemic influenza now?

Pandemic influenza is a global outbreak caused by a new influenza virus.

The virus may spread easily, possibly causing serious illness and death.
Because so many people are at risk, serious consequences are possible.
Historically, pandemic influenza has caused widespread harm.

Scientists are confident that an outbreak of pandemic influenza will occur again.

There have been three influenza pandemics in the last century, including an outbreak in 1918 that killed tens of millions of people worldwide.
Scientists are uncertain when a new pandemic will occur and how severe it may be.

DRAFT

Influenza viruses are always changing: new influenza viruses emerge or old ones re-emerge that can spread easily.

Preparing now can limit the effects of pandemic influenza.

The World Health Organization, the US Department of Health and Human Services, and countries throughout the world are building on existing disease outbreak plans, including those developed for SARS.

A coordinated international effort is underway to develop vaccines and improve the detection and tracking of influenza viruses.

Individuals should stay informed about pandemic influenza and prepare as they would for any emergency.

For more information

See Related Maps

101. What is pandemic influenza?

205. What is being done to prepare for pandemic influenza?

115. How worried should people be?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

124. What should people to do if there is an outbreak of pandemic influenza?

People should stay informed about prevention and control actions.

Public health officials will share information about prevention and control actions.

Information about prevention and control actions will be shared in a variety of ways, including through the CDC Hotline and www.pandemicflu.gov

Informed public participation and cooperation will be needed for public health efforts.

People should use information about prevention and control actions to care for themselves and their loved ones.

Public health officials will provide information on the signs and symptoms of the specific disease. People should practice good health habits, including eating a balanced diet and getting sufficient rest.

People should discuss individual health concerns with their health care provider, health department, or other trusted sources.

People should take common-sense actions to keep from spreading germs.

People should cover their coughs and sneezes, and wash their hands frequently.

People should stay away from sick people as much as possible.

If you are sick, you should stay away from others as much as possible.

DRAFT

For more information

See Related Maps

701. How will you know if a pandemic has started?

729. What will you recommend people do if they show symptoms of pandemic influenza?

115. How worried should people be about pandemic influenza?

Go to <http://www.pandemicflu.gov> on the Internet.

Call the CDC hotline at 1-800-CDC-INFO

125. How do new influenza viruses come about?

Influenza viruses are always changing.

Changes can occur whenever the virus reproduces.

The virus reproduces in those who have influenza.

The changes can affect how the disease works in the body.

The most common changes are small changes called “drift.”

Drift is why influenza vaccine is changed every year.

Scientists are always tracking these changes in influenza viruses.

Drift usually result in an influenza to which some people have immunity.

Occasionally, large changes occur that produce a pandemic influenza.

Major changes are called “shift” and can result in a new type of influenza virus.

Shift can result in the re-emergence of an old type of influenza virus.

Shift is the type of change most likely to cause pandemic influenza.

For more information

See Related Maps

101. What is pandemic influenza?

105. What are the chances there will be another influenza pandemic?

115. How worried should people be about pandemic influenza?

Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).

Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

HHS Pandemic Influenza Message Maps:

Preparedness

HHS developed these pandemic influenza and avian influenza communication tools using the communication science-based message mapping development process.

"Message maps" are risk communication tools used to help organize complex information and make it easier to express current knowledge. The development process distills information into easily understood messages written at a 6th grade reading level. Messages are presented in 3 short sentences that convey 3 key messages in 27 words. The approach is based on surveys showing that lead or front page media and broadcast stories usually convey only three key messages usually in less than 9 seconds for broadcast media or 27 words for print.

These pandemic influenza and avian influenza message maps are in the public domain. You may use them freely, including copying or redistributing on paper or electronically.

DRAFT

202. Is the United States prepared for an influenza pandemic?

Steps have already been taken to prepare.

- Federal, state, and local governments have plans.
- The U.S. has started storing test vaccine and medicine.
- The U.S. is working with the World Health Organization and other countries to strengthen monitoring and response.

Efforts to prepare for pandemic influenza are continuing.

- Public health officials are building on experience, such as from SARS and Hurricane Katrina.
- Researchers are working to produce additional vaccine more quickly.
- There are international efforts to improve worldwide monitoring of influenza viruses.

Public participation and cooperation will be important to the response effort.

- In a pandemic, travel and public gatherings could be limited.
- Other emergency measures, such as quarantine, might be needed.
- People can stay informed and be prepared as they would for any other emergency.

For more information

- See Fact Sheets
 - 205. What is being done to prepare for pandemic influenza?
 - 502. Can a vaccine be made to protect against pandemic influenza?
 - 215. What can individuals do to prepare for pandemic influenza?
- Go to <http://www.pandemicflu.gov> on the World Wide Web.
- Call the CDC hotline at 1-800-CDC-INFO

DRAFT

204. Are state and local governments prepared for pandemic influenza?

State and local governments are preparing for pandemic influenza.

- State and local governments have plans for various emergencies (for example, snow storms and earthquakes).
- State and local governments are developing, improving, and testing their plans for pandemic influenza.
- The U.S. Department of Health and Human Services, and other federal agencies are providing funding, advice, and other support.

An influenza pandemic could still have serious effects.

- Vaccine might be in limited supply in the early stages of pandemic influenza.
- Hospitals are likely to be overwhelmed.
- Other public health measures might be required such as limiting travel and public events.

Public health officials already have some systems to help be ready for pandemic influenza.

- Vaccines for H5N1 and drugs to treat infection have been stockpiled.
- There are several systems for rapidly sharing emergency health information.
- A worldwide network of laboratories is in place to detect and track influenza viruses.

For more information

- See Fact Sheets
 - 202. Are we prepared for pandemic influenza?
 - 212. Who else should be preparing for pandemic influenza?
 - 504. How long will it take to make enough pandemic influenza vaccine for everyone in the U.S.?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

212. Who else should be preparing for pandemic influenza?

By preparing now the people can help protect themselves and their families later.

- Keep a supply of essential supplies at home (such as food, water, medicine) as for any emergency.
- People can volunteer with local organizations to help in emergency response.
- People should stay informed about pandemic influenza through 1800 CDC INFO or www.pandemicflu.gov

As in other emergencies, pandemic influenza could affect everyday life.

- Schools and businesses might be closed during pandemic influenza.
- Travel could be limited during a pandemic.
- There may be spot shortages during an influenza pandemic...

Many types of organizations are also preparing for pandemic influenza.

- Hospitals are planning how to deal with many sick people in a pandemic.
- Non-Government Organizations (for example the Red Cross) are planning their response to pandemic influenza.
- Businesses are making or improving plans to continue operations in an emergency.

For more information

- See Fact Sheets
 - 105. What are the chances there will be pandemic influenza again?
 - 305. Why are public health officials preparing for pandemic influenza?
 - 202. Are we prepared for pandemic influenza?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

209. What is the U.S. Department of Health and Human Services (HHS) doing to prepare for pandemic influenza?

HHS is developing a public health plan for pandemic influenza.

- The HHS Pandemic Influenza Strategic Plan describes a coordinated public health program for preparation and response.
- The Plan draws from experience with other public health events (for example, SARS).
- The Plan provides information to help guide national, state, and local preparedness and response.

HHS is working with researchers and other health organizations to prepare for pandemic influenza.

- HHS has been working with the World Health Organization and other countries to strengthen detection, tracking, and response to influenza.
- HHS is working with researchers and companies on ways to produce more vaccine more quickly.
- HHS is working with organizations (for example, hospitals) to increase their ability to respond to pandemic influenza.

HHS is working with other Federal Departments to develop a Federal Plan.

- Other Departments are examining how a pandemic will affect their sectors.
- Communities are being encouraged to develop plans for continuity services during a pandemic.
- Discussions are ongoing regarding how to best use limited supplies of medicine.

For more information

- See Fact Sheets
 - 305. Why are public health officials preparing for pandemic influenza?
 - 212. Who else should be preparing for pandemic influenza?
 - 223. What is the review process that is being used for the national plan?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

213. What can businesses do to prepare for pandemic influenza?

Determine your business's risks from pandemic influenza and develop an emergency response plan.

- Consider what challenges you might face in a pandemic and how to address them.
- Identify essential functions and personnel needed to keep your business running.
- Work with your medical advisor on ways to protect employees.

Learn about community resources that can help in a pandemic.

- State and local health departments can help identify resources.
- Trade associations and employee groups may have helpful information.
- Government information sources can help (see Internet site, below).

Time invested in preparation can protect your company's future.

- Identify and plan for challenges to essential functions and personnel.
- Develop a plan to maintain operations during an influenza pandemic.
- Work to minimize disruption to you and your customers.

For more information

- See Fact Sheets
 - 121. What should the public know about pandemic influenza now?
 - 305. Why are public health officials preparing for pandemic influenza?
 - 110. How many people are likely to get sick in a pandemic? How many will die?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

214. What can communities do to prepare for pandemic influenza?

Communities can assess the resources they have to meet the challenges of pandemic influenza.

- Planning for pandemic influenza can be built on existing emergency plans.
- Communities should consider all the partners that might be able to help in a pandemic.
- Communities should plan to ensure the delivery of basic services without outside help.

Communities should identify their special needs and unique features.

- They can develop a list of resources and groups that might be at higher risk during pandemic influenza.
- Communities can identify possible barriers to communication
- Communities should consider their unique features that may affect how they respond.

Communities should coordinate and test plans for pandemic influenza.

- Communities should coordinate their plans with state and federal pandemic influenza plans.
- Planning should prepare to provide care for a large number of people during a pandemic.
- Plans should be tested and corrected to improve response to pandemic influenza.

For more information

- See Fact Sheets
 - 121. What should the public know about pandemic influenza now?
 - 305. Why are public health officials preparing for pandemic influenza?
 - 213. What steps is the U.S. Department of Health and Human Services (HHS) taking to prepare for pandemic influenza?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

215. What can individuals do to prepare for pandemic influenza?

Preparing and staying informed about pandemic influenza are the best responses now.

- Right now, there is no pandemic influenza in the U.S. or the world.
- Preparing now can limit the effects of pandemic influenza.
- You can stay informed through the Internet and other sources (See “For more Information”, below.).

If pandemic influenza starts, public health officials will provide more specific information.

- More information will become available as the circumstances of the pandemic become known.
- Vaccine might be in short supply in the early stages of an influenza pandemic.
- People should anticipate that daily life could change for a while, such as school closings and travel limitations.

People preparing now for pandemic influenza can help protect themselves and their families later.

- Keep a supply of essential supplies at home, such as food, water, medicine and a thermometer.
- People can volunteer with local organizations to help with emergency response.
- Prepare as you would for any emergency that affects large segments of society, such as an earthquake or blizzard.

For more information

- See Fact Sheets
 - 121. What should the public know about pandemic influenza now?
 - 115. How worried should people be?
 - 502. Can a vaccine be made to protect against pandemic influenza?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

217. Why aren't more resources being invested in preparing for pandemic influenza?

Funding to prepare for pandemic influenza has increased considerably.

- The US has been working with the World Health Organization and other countries to strengthen detection and response to outbreaks of influenza.
- There is funding to increase the amount of antiviral medicines set aside for emergencies.
- Research is in progress on how to make more vaccine more quickly.

Efforts for other public health issues help preparations for pandemic influenza.

- Resources devoted to being prepared for terrorist attacks helps prepare for pandemic influenza.
- Preparation for other diseases helps prepare for pandemic influenza.
- Lessons from natural disasters can be used in preparing for pandemic influenza.

The U.S. is better prepared each day for pandemic influenza.

- The Department of Health and Human Services and others are preparing for pandemic influenza.
- State and local governments are preparing for pandemic influenza.
- The World Health Organization and many countries are working together.

For more information

- See Fact Sheets
 - 213. What is the U.S. Department of Health and Human Services (HHS) doing to prepare for pandemic influenza?
 - 202. Is the United States prepared for pandemic influenza?
 - 204. Are state and local governments prepared for pandemic influenza?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

HHS Pandemic Influenza Message Maps:

H5N1 Avian Influenza

HHS developed these pandemic influenza and avian influenza communication tools using the communication science-based message mapping development process.

"Message maps" are risk communication tools used to help organize complex information and make it easier to express current knowledge. The development process distills information into easily understood messages written at a 6th grade reading level. Messages are presented in 3 short sentences that convey 3 key messages in 27 words. The approach is based on surveys showing that lead or front page media and broadcast stories usually convey only three key messages usually in less than 9 seconds for broadcast media or 27 words for print.

These pandemic influenza and avian influenza message maps are in the public domain. You may use them freely, including copying or redistributing on paper or electronically.

DRAFT

301. What is bird flu (H5N1 Avian Influenza)?

Bird flu is a disease of wild and domesticated birds.

- This type of influenza can also infect other animals and people.
- Since the 1990s, bird flu outbreaks have occurred in eastern Asia.
- The virus is spreading to birds and other animals in new regions.

This virus has infected some people.

- Although rare, human cases have been reported in South East Asia.
- Most human cases probably came from direct contact with infected birds or their droppings.
- More than 100 people have gotten bird flu, and about half of them have died.

We are watching closely for any person-to-person spread of bird flu.

- So far there has been limited person-to-person spread.
- We are watching for changes in the virus that could lead to easier spread.
- The US Department of Health and Human Services, and the World Health Organization, and many others are working together.

For more information

- See Fact Sheets
 - 101. What is pandemic influenza?
 - 310. How does H5N1 influenza get from birds to people?
 - 324. What will happen if H5N1 influenza is found in U.S. poultry?
- Go to <http://www.pandemicflu.gov> on the World Wide Web.
- Call the CDC hotline at 1-800-CDC-INFO

DRAFT

302. How many people have gotten bird flu (H5N1 Avian Influenza)? How many have died?

More than 100 people, all in Asia, have died from bird flu.

- About half of the people who got bird flu died.
- Most cases come from contact with infected birds.
- New cases are expected as bird flu occurs in new regions.

There may be more human cases than have been reported.

- Disease tracking methods sometimes miss cases.
- To date, most outbreaks of bird flu (H5N1) have occurred in developing countries.
- Mild cases may not be recognized or reported.

The World Health Organization and many nations are working to improve disease tracking.

- Resources are being devoted to monitoring and detection.
- Health care workers in Asia are being trained to use test kits.
- Disease experts from many nations are working on this effort.

For more information

- See Fact Sheets
 - 309. What is being done to keep bird flu from becoming a pandemic disease?
 - 318. Why is H5N1 Influenza so deadly?
 - 209. How is the U.S. working with the World Health Organization and other governments to prepare for pandemic influenza?
- Go to <http://www.pandemicflu.gov> on the World Wide Web.
- Call the CDC hotline at 1-800-CDC-INFO

DRAFT

305. Why are public health officials preparing for pandemic influenza?

Pandemic influenza can be a serious and prolonged outbreak affecting all aspects of society.

- Some pandemics caused widespread illness and death, changing day-to-day life.
- The timing and consequences of pandemic influenza can be difficult to predict.
- The 1918 pandemic caused more deaths than World War II.

Scientists are watching “bird flu” (H5N1 avian influenza) because of its potential to change into pandemic influenza in people.

- The virus is spreading to animals in new regions.
- The virus has infected some people, causing severe illness and death.
- In rare cases the virus has spread from one person to another.

Preparing now can limit the effects of pandemic influenza.

- The World Health Organization and many countries are working together to plan.
- The US Department of Health and Human Services is working with States and communities to prepare.
- Individuals can stay informed and prepare as for any emergency.

For more information

- See Fact Sheets
 - 101. What is pandemic influenza?
 - 301. What is bird flu (H5N1 Avian Influenza)?
 - 202. Are we prepared for pandemic influenza??
- Go to <http://www.pandemicflu.gov> on the World Wide Web.
- Call the CDC hotline at 1-800-CDC-INFO

DRAFT

308. If bird flu (H5N1 Avian Influenza) becomes pandemic, what will happen?

Pandemic influenza can be a serious worldwide event.

- Most pandemics cause widespread illness and death,
- The timing and consequences of pandemic influenza can be difficult to predict.
- Because one-third of the population can be sick, there are severe social consequences.
- **Public participation and cooperation will be important to the response effort.**
- In a pandemic, travel and public gatherings could be limited.
- Other emergency measures might be needed.
- People should stay informed about pandemic influenza, and prepare as they would for any emergency.

The United States and other countries are preparing to respond to pandemic influenza.

- The Department of Health and Human Services and others are developing supplies of potential vaccines and medicines against influenza.
- The US has been working with the World Health Organization and other countries to strengthen detection and response to outbreaks of influenza.
- Preparedness efforts are on-going at the national, state, and local level.

For more information

- See Fact Sheets
 - 101. What is pandemic influenza?
 - 301. What is bird flu (H5N1 Avian Influenza)?
 - 102. How is pandemic influenza different from seasonal influenza?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

309. What is being done to keep bird flu (H5N1 Avian Influenza) from becoming a pandemic disease?

We are watching closely for any person-to-person spread of bird flu.

- So far there has been limited person-to-person spread of bird flu worldwide.
- We are watching for changes in the virus that could lead to easier spread between people.
- US Department of Health and Human Services and the World Health Organization, and many others are working together.

Public health officials already have some systems to help be ready for pandemic influenza.

- There is a program for fast distribution of vaccines and medicines.
- There are several systems for rapidly sharing emergency health information.
- A worldwide network of laboratories detects and tracks influenza viruses.

The United States and other countries are preparing to respond to pandemic influenza.

- The Department of Health and Human Services and others are developing supplies of potential vaccines and medicines.
- The US has been working with the World Health Organization and other countries to strengthen monitoring and response to outbreaks.
- Preparedness efforts are on-going at the national, state, and local level.

For more information

- See Fact Sheets
 - 213. What is the U.S. Department of Health and Human Services (HHS) doing to prepare for pandemic influenza?
 - 508. Is anyone making a vaccine against bird flu (H5N1 Avian Influenza)? When will it be ready?
 - 202. Is the United States prepared for an influenza pandemic?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

310. How does bird flu (H5N1 Avian Influenza) get from birds to humans?

Bird flu is a disease of wild and farm birds.

- This type of influenza can also infect other animals and people.
- Since the 1990s, bird flu outbreaks have occurred in Asia and Europe
- We are watching for changes in the bird flu virus that could lead to easier spread between people.

Although rare, human cases of bird flu have been reported.

- All human cases of bird flu have been in Asia.
- A few reports are linked to drinking uncooked poultry blood.
- Most human cases probably came from direct contact with infected birds or their droppings.

There is worldwide coordination to control the spread of bird flu.

- Flocks are monitored for bird flu.
- Possibly infected birds are kept separate.
- Sick and possibly infected birds are killed.

For more information

- See Fact Sheets
 - 302. How many people have gotten bird flu (H5N1 Avian Influenza)? How many have died?
 - 314. Given concerns about bird flu, is it safe to buy and eat chicken and duck in the U.S.?
 - 315. What advice would you give someone traveling to Southeast Asia?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

311. How easily does bird flu (H5N1 Avian Influenza) spread from human to human?

So far bird flu has rarely passed from human to human.

- Bird flu is a disease of wild and farm birds.
- Most human cases in Asia probably came from direct contact with infected birds or their droppings.
- The few people who got bird flu from other people did not pass it on.

Scientists are watching bird flu because of its potential to change into pandemic influenza in people.

- The virus is spreading to animals in new regions.
- The virus has infected some people, causing severe illness and death.
- In rare cases the virus has spread from one person to another.

We are watching closely for any person-to-person spread of bird flu.

- So far there has been limited person-to-person spread.
- We are watching for changes in the virus that could lead to easier spread between people.
- The US Department of Health and Human Services and the World Health Organization, and many others are working together.

For more information

- See Fact Sheets
 - 302. How many people have gotten bird flu (H5N1 Avian Influenza)? How many have died?
 - 314. Given concerns about bird flu, is it safe to buy and eat chicken and duck in the U.S.?
 - 315. What advice would you give someone traveling to Southeast Asia?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

DRAFT

314. Given concerns about bird flu, is it safe to buy and eat chicken and duck in the U.S.?

It is safe to eat properly cooked poultry in the US .

- H5N1 (the bird flu from Asia) has not been found in the U.S.
- Cooking destroys germs, including the bird flu virus.
- The U.S. bans imports of poultry from areas with bird flu.

There is worldwide coordination to control the spread of bird flu.

- Flocks are monitored for illness.
- Possibly infected birds are kept separate.
- Sick and possibly infected birds are killed.

As usual, you should take steps to control the spread of germs from poultry.

- Keeps hands, utensils, and surfaces clean.
- Because of bird flu in Asia, travelers to this area should be careful.
- Fully cook poultry.

For more information

- See Fact Sheets
 - 301. What is bird flu (H5N1 Avian Influenza)?
 - 310. How does this disease get from birds to humans?
 - 202. Are we prepared for pandemic influenza?
- Go to <http://www.pandemicflu.gov> on the World Wide Web.
- Call the CDC hotline at 1-800-CDC-INFO

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315. What advice would you give someone traveling to Southeast Asia?

During travel you should take steps to minimize risk.

- Avoid contact with chickens and ducks (including droppings and blood).
- Follow good health habits, such as frequent hand-washing.
- Avoid “live markets”, birds farms, and partially cooked bird.

Before travel take other steps.

- Check the CDC’s web site (<http://www.cdc.gov>) for travel advisories.
- Be sure your shots are up-to-date and your health insurance covers you overseas.
- Contact the U.S. Consulate there to learn of available health care.

There are things to do after your travel to Southeast Asia.

- If you have any illness within 10 days, see your health care provider.
- Tell your health care provider about your travel.
- To date no travelers to Southeast Asia have gotten bird flu.

For more information

- See Fact Sheets
 - 301. What is bird flu (H5N1 Avian Influenza)?
 - 310. How does this disease get from birds to humans?
 - 317. What are the symptoms of bird flu infection?
- Go to <http://www.pandemicflu.gov> on the World Wide Web.
- Call the CDC hotline at 1-800-CDC-INFO

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317. What are the symptoms of bird flu (H5N1 Avian Influenza) in people?

Symptoms of bird flu are like those for other influenza viruses.

- A high fever that lasts for several days.
- Muscle aches occur and feel worse if they are touched.
- Coughing and shortness of breath are common.

We are watching closely for any person-to-person spread of bird flu.

- So far there has been limited person-to-person spread worldwide.
- We are watching for changes in the virus that could lead to easier spread between people.
- The US Department of Health and Human Services and the World Health Organization, and many others are working together.

So far, all human cases of bird flu have been in Asia.

- Human cases are rare (116 cases have been reported).
- Spread from person to person is very rare.
- Most human cases probably came from direct contact with infected birds or their droppings.

For more information

- See Fact Sheets
 - 311. How easily does bird flu (H5N1 Avian Influenza) spread from human to human?
 - 302. How many people have gotten bird flu (H5N1 Avian Influenza)? How many have died?
 - 315. What advice would you give someone traveling to Southeast Asia?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

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318. Why is bird flu (H5N1 Avian Influenza) so deadly?

The bird flu virus is new to people and mostly in developing countries.

- Few people are immune to a new virus.
- All human cases of bird flu in people have occurred in Southeast Asia.
- Where bird flu is occurring, people may have less access to health care.

We are watching closely for any person-to-person spread of bird flu.

- So far there has been limited person-to-person spread worldwide.
- We are watching for changes in the virus that could lead to easier spread between people.
- The US Department of Health and Human Services, and the World Health Organization, and many others are working together.

The World Health Organization and many nations are working to improve detection and tracking of influenza viruses.

- Funding for detection and tracking has been increased.
- Health care workers in Asia are being trained to use kits to test for bird flu.
- Disease experts from many nations are working on this effort.

For more information

- See Fact Sheets
 - 302. How many people have gotten bird flu (H5N1 Avian Influenza)? How many have died?
 - 311. How easily does bird flu (H5N1 Avian Influenza) spread from human to human?
 - 309. What is being done to keep bird flu (H5N1 Avian Influenza) from becoming a pandemic disease?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

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319. How can infection with bird flu (H5N1 Avian Influenza) be prevented?

So far, all human cases of bird flu have been in Asia.

- Most human cases of bird flu probably came from direct contact with infected birds or their droppings.
- Passing of bird flu from one person to another is very rare.
- Travelers to Southeast Asia should take steps before, during, and after travel.

We are watching closely for any person-to-person spread of bird flu.

- So far there has been limited person-to-person spread of bird flu worldwide.
- We are watching for changes in the virus that could lead to easier spread between people.
- The US Department of Health and Human Services and the World Health Organization, and many others are working together.

The World Health Organization and many nations are working to improve detection and tracking of bird flu.

- Resources are being devoted to detection and tracking of influenza viruses.
- Health care workers in Asia are being trained to use kits to test for bird flu.
- Disease experts from many nations are working on this effort.

For more information

- See Fact Sheets
 - 315. What advice would you give someone traveling to Southeast Asia?
 - 314. Given concerns about bird flu, is it safe to buy and eat chicken and duck in the U.S.?
 - 309. What is being done to keep bird flu (H5N1 Avian Influenza) from becoming a pandemic disease?
- Go to <http://www.pandemicflu.gov> on the Internet.
- Call the CDC hotline at 1-800-CDC-INFO

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320. How are patients with bird flu (H5N1 Avian Influenza) treated?

Antiviral medicines can help lessen the severity of influenza.

- Antiviral medicines work against a number of types of viruses.
- Each type of influenza virus must be tested to learn if antiviral medicines work against it.
- So far, research shows that some antiviral medicine works against bird flu

Antiviral medicines could be important if bird flu becomes widespread in people.

- The U.S. has a supply of antiviral medicines.
- The U.S. has ordered more to increase its supplies as part of planning for pandemic influenza.
- There is a system to distribute these medicines quickly to where they are needed.

Bird flu is also treated by supportive care.

- Supportive care is treatment of the symptoms of a disease (for example, reducing fever).
- Supportive care includes treating other germs if they infect someone sick with bird flu.
- Supportive care includes treating other medical conditions the patient has, such as heart disease.

For more information

- See Fact Sheets
 - 301. What is bird flu (H5N1 Avian Influenza)?
 - 302. How many people have gotten bird flu?
 - 601. Are there medicines that can prevent or treat influenza?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

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321. Is there a test that can tell if someone has bird flu (H5N1 Avian Influenza)?

There is a test for bird flu.

- Health care workers in Asia are being trained to use kits to test for bird flu.
- Most often diagnosis of bird flu is made by symptoms a patient has.
- Laboratories worldwide work to detect and track bird flu.

For now, only selected people with symptoms are tested for bird flu.

- Usually they are from areas where there is bird flu (Asia).
- Usually they are people with direct contact with birds.
- Some other people and animals are tested to see if bird flu is spreading.

The World Health Organization and many nations are working to improve the detection and tracking of bird flu.

- Funding for detection and tracking bird flu has been increased.
- Health care workers in Asia are being trained to use kits to test for bird flu.
- Disease experts from many nations are working on this effort.

For more information

- See Fact Sheets
 - 301. What is bird flu (H5N1 Avian Influenza)?
 - 314. Given concerns about bird flu, is it safe to buy and eat chicken and duck in the U.S.?
 - 315. What advice would you give someone traveling to Southeast Asia?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the Internet.

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HHS Pandemic Influenza Message Maps:

Vaccines

HHS developed these pandemic influenza and avian influenza communication tools using the communication science-based message mapping development process.

"Message maps" are risk communication tools used to help organize complex information and make it easier to express current knowledge. The development process distills information into easily understood messages written at a 6th grade reading level. Messages are presented in 3 short sentences that convey 3 key messages in 27 words. The approach is based on surveys showing that lead or front page media and broadcast stories usually convey only three key messages usually in less than 9 seconds for broadcast media or 27 words for print.

These pandemic influenza and avian influenza message maps are in the public domain. You may use them freely, including copying or redistributing on paper or electronically.

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502. Can a vaccine be made to protect against pandemic influenza?

We will need a vaccine for the specific pandemic influenza virus.

- Influenza viruses are changing all the time.
- Pandemic influenza is likely to be caused by a virus that is new to people.
- It is difficult to make large amounts of vaccine without knowing the exact pandemic influenza virus.

In a pandemic, the goal would be to vaccinate everyone.

- Vaccine might be in limited supply in the early stages of pandemic influenza.
- People who perform essential society services (for example, health care providers and police) will likely be the first vaccinated.
- Other groups will be identified for vaccination based on the pandemic.

Potential vaccines are already being made and tested against likely viruses.

- Researchers are making and testing small amounts of possible vaccines.
- Influenza viruses are being monitored for changes that would affect vaccine production.
- Research is underway on methods to make more vaccine more quickly.

For more information

- See Fact Sheets
 - 504. How long will it take to make enough vaccine for everybody?
 - 511. How would the vaccine be distributed quickly enough if a pandemic breaks out?
 - 512. Should people get vaccinated now?
- Go to <http://www.pandemicflu.gov> on the World Wide Web.
- Call the CDC hotline at 1-800-CDC-INFO

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504. How long will it take to make enough pandemic influenza vaccine for everyone in the U.S.?

The goal is to have enough vaccine for everyone.

- Supplies might be limited early in a pandemic.
- Researchers are working on ways to make vaccine more quickly.
- The U.S. is working to have more producers of vaccine.

Today, it could take a year to produce enough vaccine for the U.S.

- The exact pandemic influenza virus cannot be identified before a pandemic.
- Current techniques require months to make and test vaccines.
- Currently there are only two U.S. producers of influenza-vaccine.

We are preparing for early limits on vaccine availability.

- Medical experts and the public are recommending how best to use limited supplies.
- People who perform essential day-to-day services (for example, health care workers and police) will likely be among the first vaccinated.
- Other groups will be identified for vaccination based on the details of the pandemic.

For more information

- See Fact Sheets
 - 502. Can a vaccine be made to protect against pandemic influenza?
 - 503. What is the government doing to make sure there will be enough pandemic vaccine for everybody?
 - 506. Who decides who will get vaccine and who will not? How will they decide?
- Go to <http://www.pandemicflu.gov> on the World Wide Web.
- Call the CDC hotline at 1-800-CDC-INFO

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506. Who decides who will get vaccine and who will not and how do they decide?

Scientific and public groups made recommendations about who will get vaccine first in a pandemic.

- Medical experts used their knowledge and experience to make recommendations.
- Groups of community members reviewed those recommendations.
- The recommendations will be provided to the President.

Fairness in vaccine use during a pandemic is important.

- Protecting people at high risk is an important consideration.
- Protecting essential day-to-day services, such as electricity and water, is an important consideration.
- Decisions regarding use of vaccine have been discussed by the public and medical experts.

People can help protect themselves and others during pandemic influenza.

- Frequent hand-washing can limit the passing of germs.
- Covering coughs and sneezes can limit the spread of germs.
- Staying home when you are sick helps protect others.

For more information

- See Fact Sheets
 - 502. Can a vaccine be made to protect against pandemic influenza?
 - 504. How long will it take to make enough pandemic influenza vaccine for everyone in the U.S.?
 - 511. How would the vaccine be distributed quickly enough if a pandemic breaks out?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the World Wide Web.

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508. Is anyone making vaccine against bird flu (H5N1 Avian Influenza)?

Small amounts of vaccine against bird flu are being made and tested.

- Other possible vaccines are also being made and tested to see if they work against bird flu.
- Influenza viruses are being monitored for changes that would affect vaccine production.
- Research is underway on methods to make more vaccine more quickly.

There are challenges with making vaccines that need to be overcome.

- With current methods, it takes months to produce a batch of influenza vaccine.
- There are a limited number of companies that make influenza vaccine.
- It is difficult to make large amounts of vaccine without knowing the exact pandemic influenza virus.

The goal is to have enough vaccine for everyone in a pandemic.

- The U.S. is working to have more producers of influenza vaccine.
- Research is underway on methods to make additional vaccine more quickly.
- There are international efforts to improve worldwide detection and tracking of influenza viruses.

For more information

- See Fact Sheets
 - 301. What is bird flu (H5N1 Avian Influenza)?
 - 302. How many people have gotten bird flu?
 - 502. Can a vaccine be made to protect against pandemic influenza?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the World Wide Web.

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510. How safe will a pandemic influenza vaccine be?

The U.S. and others have experience in making safe and effective influenza vaccines.

- Influenza vaccine cannot give someone influenza.
- The most common side effects are sore arm and redness.
- Most people who get vaccinated for annual influenza have no side effects.

Before being used, new vaccines pass many safety tests.

- Safety tests are conducted at each step in development.
- Safety standards are very high.
- The Food and Drug Administration and panels of experts review safety findings before approving vaccines.

Vaccines being used continue to be monitored for safety.

- There is a system in place for monitoring vaccine use.
- This monitoring helps identify rare adverse events.
- Vaccines against a pandemic would have to meet existing safety requirements.

For more information

- See Fact Sheets
 - 502. Can a vaccine be made to protect against pandemic influenza?
 - 124. What would you want people to do in a pandemic?
 - 202. Is the United States prepared for an influenza pandemic?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the World Wide Web.

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511. How will vaccine be distributed quickly if a pandemic breaks out?

Most likely, the federal government will direct shipments of influenza vaccine to the states.

- States are developing and improving plans to distribute a vaccine rapidly.
- These plans build on experience from other emergencies.
- An important part of this planning is to keep the public informed.

Influenza vaccine makers already distribute vaccine.

- Millions of doses of influenza vaccine are shipped every year.
- During past shortages, vaccine makers have responded to urgent situations.
- Informing the public of changes as events develop is important.

Other systems are already in place.

- The Strategic National Stockpile (SNS) is designed to get medical supplies and equipment quickly anywhere in the country.
- States have plans for distributing medicines and vaccines from the SNS.
- Informing the public of where to go for vaccine is part of states' plans.

For more information

- See Fact Sheets
 - 502. Can a vaccine be made to protect against pandemic influenza?
 - 124. What would you want people to do in a pandemic?
 - 202. Is the United States prepared for an influenza pandemic?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the World Wide Web.

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512. Should people get vaccinated now?

People need not and cannot be vaccinated against pandemic influenza now.

- There is currently no pandemic influenza in the world.
- Test vaccines have been developed but will not be used until a pandemic is imminent
- Preparing and staying informed are the best responses now.

Vaccination will be an important tool if pandemic influenza breaks out.

- Researchers are making and testing small amounts of possible vaccines.
- Influenza viruses are being detected and tracked for changes that would affect vaccine production.
- Research is underway on methods to make more vaccine more quickly.

Getting a yearly “flu shot” for seasonal flu is recommended for many.

- Vaccination is recommended for the young, the old, and people they live with.
- Vaccination is recommended for health care workers.
- Vaccination is recommended for those with other health problems such as heart disease.

For more information

- See Fact Sheets
 - 101. What is pandemic influenza?
 - 121. What should the public know now about pandemic influenza?
 - 502. Can a vaccine be made to protect against pandemic influenza?
- Call the CDC hotline at 1-800-CDC-INFO (1-800-232-4636).
- Go to <http://www.pandemicflu.gov> on the World Wide Web.

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APPENDIX

1918 Influenza in St. Louis

Mark Kennedy, author

In his book, *The Great Influenza*, author John Barry discussed how public officials in Philadelphia and elsewhere failed to heed the warnings of medical professionals and refused to publicize or take action to prevent the influenza outbreak of 1918, thus contributing to the epidemic. (p. 203; pp. 333 – 365). Moreover, the press were often willing accomplices in the deception of the American public. (p. 335).

In St. Louis however, this did not appear to be the case. Beginning in late September, the *St. Louis Globe Democrat* frequently published news about the epidemic, both locally and abroad. The Spanish Influenza even shared the front page headlines with war reports.

What follows is a discussion of the control measures adopted by the St. Louis region, the editorials that appeared during the epidemic, the coverage of the epidemic and the nature of the advertisements that appeared during this period.

CONTROL MEASURES

Beginning in early October, 1918, readers of the *St. Louis Globe Democrat* began seeing the beginning of an active campaign to deal with the spread of Influenza in the region. Nurses were assigned to reinforce those struggling with an outbreak of Spanish Influenza at the Jefferson Barracks Army Base. An October 7 headline on page 8 declared *150 Nurses and Aids to War*

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on Influenza. The article described how local nurses were sent to assist the sixty one nurses at Jefferson Barracks who were working to contain an outbreak there.

On October 8, readers learned just how serious the epidemic was becoming. Up until this date, articles concerning the outbreak in the St. Louis Region appeared throughout the newspaper, but on October 8, readers woke to the page 1 headline *Influenza Quarantine Placed on City and Schools; Theaters and Churches Are to be Closed*. This article listed Theaters, Moving Picture Shows, Schools, Billiard Halls, Churches, Sunday Schools, Cabarets, Lodges, Societies, Public Funerals, Open Air Meetings, Dance Halls, and Conventions as all being closed by the quarantine and advised the police would enforce the ban. Conspicuously absent from the ban were saloons. The health commissioner, Dr. Starkloff was quoted as saying he feared a major epidemic. Articles in the following days listed additional precautionary measures.

- High School sports (practice as well as games) were suspended. (10-09-18)
- Movie releases were halted. (10-09-18)
- Gravesite services were banned. (10-09-18)
- Saloons finally ordered closed. (10-16-18)
- Retail stores ordered to close at 4:30 pm everyday. (10-20-18)
- The local chapter of the Red Cross (11-03-18)
 - Registered and organized nurses and nurses aids.
 - Posted circulars on how to avoid the flu.
 - Manufactured several hundred thousand gauze masks.

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- Established an emergency hospital to be used in the event hospitals became overtaxed.
- Supplied quilts, food, medicine and other necessities to the needy.
- Made thousands of sheets.
- College football games were allowed to proceed but without spectators.
(11-04-18)

- The War work campaign was listed as postponed. (11-09-18)

On November 9, page 1 headlines declared *Flu Barrier Closes St. Louis Tight*. This article listed additional measures taken to contain the outbreak (which continued to spread) including the closing of most wholesale and retail stores, banks, construction companies and a long list of other businesses. These measures met with some resistance in the business community (*Business Men Dissent from Doctors on Extending Flu Quarantine*) but they were told the police would strictly enforce the ban. (*Police Make Several Arrests in Keeping Business Places Shut.*) On November 10 however, pressure apparently forced the Influenza Advisory Commission to modify the list. (*Quarantine Order is Modified to Extend List of Exemptions.*)

EDITORIALS / COVERAGE

The editorials throughout this period focused on the war effort and local politics making no mention of the epidemic.

Coverage was quite extensive with over 77 articles written in a 41 day period (October 1 to November 10). Some articles dealt with the concerns of the mayor, health commissioner, clergy and prominent businessmen.

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- *City Threatened by Great Epidemic Declares Kiel.* (P. 1; 10-08-18)
- *Health Commissioner Starkloff Fears Epidemic.* (p. 1; 10-08-18)
- *Closings Necessary to Safeguard Lives Declares Kiel.* (p. 2; 10-08-18)
- *Mayor Says Danger is Great and Urges Public to Co-Operate.* (p.2; 10-08-18)
- *Archbishop Glennon Asks Catholics to Obey Health Order.* (p.4; 10-10-18)
- *Influenza Said to Cost Monthly, 1,200, 000 Tons of Anthracite.* (p.5; 10-18-18)
- *Rabbi Thurman Applauds St. Louis Quarantine.* (p.5; 11-02-18)
- *Businessmen Dissent from Doctors on Extending Flu Quarantine.* (p.2; 11-09-18)

Coverage also dealt with the rise of new cases as well as the mortality rate here and in other cities and the below sample of headlines totaled the progression and toll of the disease.

- *115 Cases in St. Louis and 900 at Jefferson Barracks.* (p.1; 10-08-18)
- *6 Deaths at Jefferson Barracks.* (p.1; 10-08-18)
- *5 Deaths and 103 Cases at City Hospital Alone.* (p.1; 10-0-18)
- *Patients at Jefferson Barracks increase from 500 to 1000.* (p.1; 10-08-18)
- *Drastic Measures Taken in New Orleans as Death Toll hits 10,000.* (p.4; 10-09-18)

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- *Influenza Sweeping Through Nation and is now Epidemic.* (p.4; 10-10-18)
 - *12,321 New Cases in U.S. 889 Deaths*
- *Spanish Influenza kills 13 more here. Total now 49.* (p.4; 10-10-18)
- *9 Deaths in Day from Influenza Here. 612 New Cases Appear.* (p.6; 10-13-18)
- *Nurses Needed as 558 New Influenza Cases and 9 Deaths Occur.* (p.6; 10-17-18)
- *425 New Cases and 15 Deaths Reported in a Day.* (p.8; 11-08-18)
 - *Since October 7, 11,921 Cases, 601 Influenza Deaths, 287 Pneumonia Deaths.*

ADVERTISEMENTS

As the epidemic progressed, ads appeared offering a host of remedies and preventatives.

- *Oil of Hyomel – “Best Plan is to begin treatment before the first symptoms start”.*
- *Tonsiline – “Spanish Flu is a Germ Disease and preventive measures should be taken”.*
- *Hoods Sarsparilla and Blood Purifier – “After Influenza”*
- *Ely’s Cream Palm – “Cream applied in Nostrils may Prevent Spanish Flu.”*
- *Harlick’s Malted Milk – “The diet during and after influenza.”*

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- *Kolynos Dental Cream* – “...because Spanish Influenza is an airborne disease.”

Ads for remedies became so frequent that on October 25, the newspaper ran an article about the problems associated with the use of home and over the counter remedies.

Throughout the early stages of the epidemic, business and retail advertisements reflected a “business as usual” attitude, however, on November 11, retailers placed full page ads on page 3, reflecting what stores would be closed for the duration of the epidemic.

Possibly, the more straightforward approach adopted by St. Louis officials was responsible for the lower infection and mortality rates.