

# Kentucky Pandemic Influenza Operations Plan July 2008

William D. Hacker, M.D., FAAP, CPE  
Commissioner for Public Health

Cabinet for Health and Family Services  
Department for Public Health  
Division of Epidemiology and Health Planning

*Kentucky*  
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# Kentucky Pandemic Influenza Preparedness Plan

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## EXECUTIVE SUMMARY

It is not a question of if but when another influenza pandemic will occur. Kentucky must be prepared for this and other types of public health emergencies. To lessen the impact of an influenza pandemic, the Kentucky Department for Public Health has created the Kentucky Pandemic Influenza Preparedness Plan to promote an effective response throughout the pandemic. The plan was originally drafted in 2002 but is being updated through a coordinated effort of the Kentucky Department for Public Health (KDPH), Kentucky Division of Emergency Management (KYEM), Kentucky Office of Homeland Security (KOHS), Kentucky Department of Education (KDE), Kentucky Department of Agriculture (KDA), Kentucky Department of Criminal Justice Training (DOCJT), Kentucky State Police (KSP), Chamber of Commerce, universities, local health departments and other partners and stakeholders. The plan is considered a “living document” and will be updated with changes as needed.

Some of the most diverse areas within the United States are in Kentucky. The state ranges from the Eastern Coal Fields, a rugged mountainous region to the gently rolling central part of the state, the Bluegrass Region, to the Western Coal Fields. Kentucky’s health and medical community has been divided among the 14 Health Resource Service Administration (HRSA) planning regions. Each region has its unique planning considerations, culture and players. Even though Kentucky has over four million residents and is geographically and culturally diverse, it is a tightly knit state. Public health has built strong relationships with preparedness partners and stakeholders and knows this will go far in response to nature’s “pop quizzes”. Understanding and appropriately addressing these facets will allow Kentucky to be as prepared as possible for a public health emergency such as an influenza pandemic.

While a successful pandemic response is dependent on public health response, many agencies, organizations, and private institutions will need to work in a coordinated and collaborative manner to ensure an effective overall response in Kentucky. Some key players and planning activities include:

- KDPH as the lead agency for preparedness and response to an influenza pandemic in Kentucky.
- Local health departments are critical to planning and response as all disasters and emergencies are local.
- Emergency Management and Homeland Security will be important for ensuring overall coordination of government resources.
- First responder agencies have important manpower and logistical resources that will be necessary for ensuring the safety of individuals and communities.
- Hospitals and healthcare institutions will be the frontline of a pandemic and are essential planning partners at the local and state level.
- Volunteer agencies serving as important partners in emergency response activities.
- Businesses and schools will need to collaborate and coordinate with public health to help limit the spread of disease.

These entities have been critical to the development of the plan, and are encouraged to develop their own influenza pandemic response plans that coordinate with the Kentucky Pandemic Influenza Preparedness Plan. Kentucky Pandemic Influenza Preparedness Plan will become an integral part of the Kentucky Emergency Operations Plan.

The United States Department of Health and Human Services (HHS) has incorporated the World Health Organization's (WHO) Pandemic Planning Periods and Phases into its influenza pandemic response plan. In keeping with the national model, the Kentucky Pandemic Influenza Preparedness Plan identifies responsible parties and prescribes necessary actions, based on the WHO/HHS pandemic periods.

The heart of the Kentucky Pandemic Influenza Preparedness Plan is the Response Activity Supplements section, which addresses the concepts listed below. These supplements are subject-area specific and provide very detailed planning and response activities for both state and local health departments. The supplements include:

- *Laboratory and Surveillance* - The capability of identifying pandemic influenza viruses depends not only on rapid detection and characterization, but also on strong partnerships between clinical and public health laboratories. This supplement provides guidance to stakeholders such as health care providers that serve as sentinel sites for reporting, local health department surveillance contacts and health care providers who voluntarily submit specimens to the state laboratory.
- *Healthcare Coordination and Planning* - The healthcare system in Kentucky will experience significant strains on its resources during a pandemic. Preparedness for this area includes surge capacity, mortuary issues, data collection, and mental health concerns. This supplement provides detailed guidance to healthcare agencies on pandemic influenza coordination and planning.
- *Infection Control* - Because a vaccine may not yet be widely available and the supply of antiviral drugs may be limited, infection control will be an important strategy. The Infection Control Supplement provides guidance to healthcare and public health partners on basic principles of infection control for limiting the spread of pandemic influenza.
- *Clinical Guidelines* - Early identification and appropriate medical intervention are essential for patients who present with suspect pandemic influenza symptoms. The Clinical Guidelines supplement provides recommendations on the initial screening, assessment and management of patients who present from the community with fever and/or respiratory symptoms during the pandemic phases.
- *Vaccine and Antiviral Distribution and Use* – During a pandemic, antiviral drugs may or not be effective or available for all. Vaccine is unlikely to be available, especially early in a pandemic. The Antiviral Supplement provides

recommendations to state and local partners on the distribution and use of antiviral drugs for treatment and prophylaxis during and influenza pandemic.

- *Community Mitigation* - Public health interventions, such as quarantine and social distancing, will be necessary during a pandemic to slow the transmission of disease in the community.
- *Public Health Communications and Training* - Providing accurate and timely coordinated messages during a pandemic will be critical to successful control and response. This supplement provides guidance on internal communications, communication with stakeholders and partners, and risk communication for the public.
- *Psychosocial Considerations* - Response agencies and organizations need to ensure the safety and well being of response personnel to ensure sustained and effective response. This supplement addresses the all-hazards approach that the Kentucky Community Crisis Response Board (KCCRB) will take in response to situations as they relate to the psychological and behavioral health.

The Kentucky Pandemic Influenza Preparedness Plan serves as a guide for the state during the various pandemic phases. The goal of this plan is to prevent illness and death and preserve critical community infrastructures. The potential impact of a pandemic could be both medical and economic. It is important to respect the potential impact a pandemic poses to all parts of society. Because Mother Nature does not aim, all citizens of the Commonwealth are at risk during a pandemic. The Kentucky Department for Public Health serves as the lead in this type of event, but it will require coordination and collaboration with many state and community partners to effectively manage a pandemic. In order to adequately prepare, the Kentucky Department for Public Health encourages all sectors to participate in planning, exercising, and responding to pandemic influenza.

**KENTUCKY PANDEMIC INFLUENZA PREPAREDNESS PLAN  
BASE PLAN**

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## I. INTRODUCTION

Experts say it is not a question of if, but when the next pandemic will occur. The economic costs associated with pandemic influenza are expected to be in the billions of dollars. Estimates of morbidity and mortality will place a tremendous burden on the Commonwealth's health and medical systems. Health and medical personnel, as well as infrastructure workers, (i.e., law enforcement, fire and public works), will not be immune to the threat of an influenza pandemic. The potential threat of a pandemic can not be taken casually. To prepare for the next pandemic, the Kentucky Department for Public Health (KKDPH), Division of Epidemiology and Health Planning, in cooperation with many state and local organizations and partners, have developed this Kentucky Pandemic Influenza Preparedness Plan which provides strategies to reduce pandemic influenza-related morbidity, mortality, and social disruption in the state.

### A. Purpose

The purpose of this plan is to provide a guide for state and local agencies on detecting and responding to an influenza pandemic. The major goals of the plan are to prevent illness and death and preserve critical community infrastructures. The plan describes a command structure and provides guidelines to the state and local health departments on the following issues:

- Laboratory and Surveillance: Supplement I
- Healthcare Planning: Supplement II
- Infection Control: Supplement III
- Clinical Guidelines: Supplement IV
- Vaccine: Supplement V
- Antiviral: Supplement VI
- Community Containment: Supplement VII
- Public Health Communications: Supplement VIII
- Psychosocial Considerations: Supplement IX

If confronted with pandemic influenza, the priorities of KDPH will be to assure the continuation and delivery of essential public health services, while providing assistance to meet emergency needs of the affected population. This plan establishes the framework and guidelines for ensuring that an effective system of health and medically related emergency response is in place to contain adverse outcomes of influenza pandemic.

In the face of a pandemic threat or ongoing nationwide influenza pandemic, the need to vaccinate millions of persons as rapidly and safely as possible will pose a potentially overwhelming burden on the usual sites for annual influenza vaccination. As knowledge and infrastructure change, the plan should be revised accordingly. In addition, in the event of a pandemic, the judgments of leadership, based on the epidemiology of the virus and the extent of population infection, may alter or override anticipated action plans.

The Kentucky Pandemic Influenza Preparedness Plan must be considered a "living document" that will be updated when new information and guidelines from the WHO or CDC are available. At any time during the stages, the activities may be changed or cancelled by KDPH.

## **B. Influenza Virus**

Influenza is a highly contagious illness and can be spread easily from person to person. It is spread through droplet contact from the nose and throat of an infected person during coughing and sneezing. Rapid onset of high fever, chills, sore throat, runny nose, severe headache, nonproductive cough, and intense body aches - followed by extreme fatigue - are signs and symptoms of influenza. The incubation period is from one to five days. Annual seasonal epidemics typically occur from December to April in the continental United States, including Kentucky.

Influenza A and B are the two types of influenza viruses that cause epidemic human disease. Influenza A viruses are further categorized into subtypes on the basis of two surface antigens: hemagglutinin and neuraminidase. Influenza B viruses are not categorized into subtypes. Influenza A viruses are unique because they can infect both humans and animals and are usually associated with more severe illness than type B influenza viruses.

*Antigenic drift* and *shift* are the terms used to describe how influenza viruses mutate. *Antigenic drift* is a minor change caused by mutation that results in the emergence of a new strain within a subtype. Antigenic drift has been responsible for heavier-than-normal influenza seasons in the past, like the outbreak of influenza A Fujian (H3N2) in the 2003 – 2004 influenza season. Drifts can occur in both type A and B influenza viruses. *Antigenic shift* is associated with influenza pandemics. It is a major change caused by genetic recombination that results in the emergence of a novel virus strain that has not previously infected humans. Only in influenza type A viruses does antigenic shift occur. As an example, H3N2 and H5N1 can form H5N2

## **C. Background**

The devastation that could accompany an influenza pandemic is not reflected in the public's perception of the annual flu season, despite the fact that influenza causes significant morbidity and mortality each year. In 1918, the public shared today's casual view of the virus. Influenza was, as recorded by A.W. Crosby in Influenza 1918, The American Experience, "a homey, familiar kind of illness, two or three days in bed, a week of feeling shaky, and then back to normal." Thus, the rapid and gruesome deaths that occurred during the 1918 pandemic were shocking to both physicians and the public.

A local historian from a small town in southern Ohio put the potential impact of a major shift in viral sub-types into perspective when he recalled the influence of the 1918 pandemic on his community. The town was located near a military encampment. The historian recalled how the young soldiers would arrive at the camp in the morning healthy and well and, within twenty-four hours, be dead. The dead were so numerous, the community's funeral parlors were overcome and makeshift morgues were located throughout the community. The infamous "Spanish Flu" of 1918 was responsible for more than an estimated 20 million deaths worldwide and at least a 500,000 deaths in the United States.

The mortality rates from the pandemics of 1957 and 1968 were lower due in part to less virulent viruses, antibiotic treatment of secondary infections and improved supportive care. Significant

societal changes have occurred since 1968, making it difficult to predict the level of illness and disruption that an influenza pandemic could cause today. Increased international travel, a larger cohort of persons over 65 years of age, and a larger number of persons with immunosuppressive conditions contribute to the predicted difficulty.

The following estimates of the impact of a pandemic on Kentucky's population and health resources have been made using the CDC FluAid software application. The software permits the planner to alter variables to reflect on different, possible scenarios. The jurisdiction's population and health status characteristics are two variables that may be manipulated.

#### **D. Planning Assumptions**

In order to perform preparedness planning for a pandemic, certain assumptions need to be made regarding the evolution and impacts of a pandemic. Determining the potential impact of a pandemic is difficult, but studying pandemics in the past can be useful to help with future predictions. In the 20<sup>th</sup> century, all pandemics had similar characteristics. For example, each one had about 30% of the U.S. population develop the illness, with about half of those seeking medical care. The highest rates of illness have been in children. School-age children, however, have not had the highest rates of death and severe disease. Virtually all communities experienced outbreaks and rapid geographical spread in each pandemic. The following are national pandemic planning assumptions:

- Susceptibility to the pandemic influenza subtype will be universal.
- The clinical disease attack rate will be 30% in the overall population. Illness rates will be highest among school-aged children (about 40%) and decline with age. Among working adults, an average of 20% will become ill during a community outbreak.
- Of those who become ill with influenza, 50% will seek outpatient medical care.
- The number of hospitalizations and deaths will depend on the virulence of the pandemic virus. Estimates differ about 10-fold between more and less severe scenarios. Because the virulence of the influenza virus that causes the next pandemic cannot be predicted, two scenarios are presented based on extrapolation of past pandemic experience (Table 1).

**Table 1. Number of Episodes of Illness, Healthcare Utilization, and Death Associated with Moderate and Severe Pandemic Influenza Scenarios in the United States\***

Characteristic	Moderate (1958/68-like)	Severe (1918-like)
Illness	90 million (30%) of population	90 million (30%)
Outpatient medical care	45 million (50%) of those ill	45 million (50%)
Hospitalization	865,000	9,900,000
ICU care	128,750	1,485,000
Mechanical ventilation	64,875	742,500
Deaths	209,000	1,903,000

\* Estimates based on extrapolation from past pandemics in the United States. Note that these estimates do not include the potential impact of interventions not available during the 20th century pandemics.

- Risk groups for severe and fatal infections cannot be predicted with certainty. During annual fall and winter influenza season, infants and the elderly, persons with chronic illnesses and pregnant women are usually at higher risk of complications from influenza infections. In contrast, in the 1918 pandemic, most deaths occurred among young, previously healthy adults.
- The typical incubation period (the time between acquiring the infection until becoming ill), for influenza averages 2 days. We assume this would be the same for a novel strain that is transmitted between people by respiratory secretions.
- Persons who become ill may shed virus and can transmit infection for one-half to one day before the onset of illness. Viral shedding and the risk for transmission will be greatest during the first 2 days of illness. Children will shed the greatest amount of virus and, therefore, are likely to pose the greatest risk for transmission.
- On average about 2 secondary infections will occur as a result of transmission from someone who is ill. Some estimates from past pandemics have been higher, with up to about 3 secondary infections per primary case.
- In an affected community, a pandemic outbreak will last about 6 to 8 weeks. At least two pandemic disease waves are likely and may occur over different influenza seasons. Following the pandemic, the new viral subtype is likely to continue circulating and to contribute to seasonal influenza.

- The seasonality of a pandemic cannot be predicted with certainty. The largest waves in the U.S. during 20th century pandemics occurred in the fall and winter. Experience from the 1957 pandemic may be instructive in that the first U.S. cases occurred in June, but no community outbreaks occurred until August. The first wave of illness peaked in October.

Other planning assumptions include:

- A pandemic is inevitable and will impact all states and regions.
- Vaccine safety is important, but also important is speed and efficiency in administering vaccine.
- The general public will be involved, concerned and desirous to receive information. Those responsible must clearly communicate the facts, risks and necessary protection steps to the public.
- It is difficult to perceive any aspect of society that will not be affected by a pandemic of even minor severity.
- Volunteers, especially health and medical volunteers, will be available and able to be utilized.
- Antiviral agents are likely to only be available for limited distribution.
- Vaccine may not be available for some time.

A summary of pandemic influenza morbidity and mortality data for Kentucky (as created by Flu Aid) is as follows:

**E. Basis of Estimates:**

- Gross Attack Rates – 15%, 25% and 35%
- High risk percentages by age category:
  - 0-18 years of age; 6.4% of the population
  - 19-64 years of age; 17.0% of the population
  - 65+ years of age; 47.0% of the population
- Hospitalization rates are equal to the software’s default percentages for high risk and non-high risk populations.
- Inter-pandemic deaths attributed to influenza and pneumonia are 1,030 persons (taken from state surveillance data for the calendar year 2003).

Deaths: (Most Likely)

Attack rate	15%	25%	35%
Gross number deaths	1842	3069	4296
Inter-pandemic “base”	834	834	834
Incremental deaths due to pandemic	1008	2235	3462

Deaths: (Maximum)

Attack rate	15%	25%	35%
Gross number deaths	3103	5172	7241
Inter-pandemic “base”	834	834	834
Incremental deaths due to pandemic	2269	4338	6407

Hospitalizations: (Most Likely)

Attack rate	15%	25%	35%
Number of hospitalizations	7233	12055	16878
Average length of stay per hospitalization	6 days	6 days	6 days
Total patient days	43398	72330	101268
Pandemic period	8 weeks	8 weeks	8 weeks
Average daily census	775	1292	1808

Hospitalizations: (Maximum)

Attack rate	15%	25%	35%
Number of hospitalizations	9483	15807	22130
Average length of stay per hospitalization	6 days	6 days	6 days
Total patient days	58698	94842	132780
Pandemic period	8 weeks	8 weeks	8 weeks
Average daily census	1048	1694	2371

## II. COMMAND AND MANAGEMENT

The HHS Pandemic Influenza Plan clearly states the roles and responsibilities of HHS agencies and offices and gives HHS Actions for Pandemic Influenza Preparedness and Response. KDPH will lead the state response to pandemic influenza. It is imperative that both state and local health departments know their role in response to pandemic influenza. This section lays out major roles of federal, state and local health during the Interpandemic, Pandemic Alert and Pandemic Periods.

### A. Major Roles of HHS

Interpandemic and Pandemic Alert Period:

- Expand the supply of antiviral drugs by stimulating increased U.S.-based production capacity
- Expand U.S.-based production capacity for pandemic vaccine and work with manufacturers to ensure that pandemic vaccine is produced at full capacity

### Pandemic Period:

- Provide ongoing information from the national influenza surveillance system on impact of the pandemic on health and healthcare system
- Assist in conducting outbreak investigations, as requested by state
- Conduct epidemiological and laboratory-based studies (“special studies”), as requested
- Distribute public stocks of vaccines, when they become available
- Provide guidance on community containment strategies, including travel restrictions, school closings, and quarantine and isolation
- Communicate with the public via the news media
- Monitor the response
- Distribute public stocks of antiviral drugs and other medical supplies from the Strategic National Stockpile (SNS) to the states

## **B. Major Roles of the KDPH**

### Interpandemic and Pandemic Alert Period

- The KDPH will have responsibility for implementation of the Kentucky Pandemic Influenza Preparedness Plan.
- Enhance disease surveillance to ensure early detection of the first cases in the state
- Coordinate storage and distribution of antivirals
- Coordinate with local health departments for local pandemic influenza planning
- Coordinate with partners agencies on pandemic plans
- Enhance laboratory capacity

### Pandemic Period

- The Commissioner of Public Health (State Health Officer) will have primary authority for implementation of the pandemic response plan
- Provide guidance on clinical management and infection control
- Provide guidance on disease transmission using a range of containment strategies
- Provide ongoing communication with the public
- Coordinate with partners to provide psychological and social support services to emergency field workers and other responders
- Coordinate antiviral and vaccine distribution

## **C. Major Roles of Local Health Departments**

### Interpandemic and Pandemic Alert Periods

- Identify administrative and medical decision makers during the pandemic
- Coordinate with school board on school closure
- Develop a local pandemic influenza preparedness plan that correlates with existing emergency plans
- Meet with local stakeholders and review major elements of the local pandemic influenza plan
- Decide when the pandemic plan is implemented and assure local emergency plans are implemented during the influenza pandemic
- Develop and implement a local mass vaccination and/or distribution plan

- Develop a plan to close businesses and other public events, if necessary
- Collaborate with the local school board for closing and re-opening of school.
- Develop a plan to educate the public prior to the onset of the pandemic. Identify administrative and medical decision makers during the pandemic Pandemic Alert Period

Pandemic Period

- Enhance disease surveillance to ensure early detection of the first cases of pandemic influenza in the county or district
- Distribute antiviral drugs and vaccines and communicate with HRSA planning partners on clinical management and infection control
- Prevent local disease transmission using a range of containment strategies
- Provide ongoing communication with the public
- Coordinate with psychological and social support services to provide assistance to field workers.
- Communicate on a timely basis the status of county to KDPH.

**D. KDPH Command and Control**

**1. Interpandemic Period and Pandemic Alert Period**

*Phases 1-2*

*Phases 3-5*

- The ESF 8 DOC Manager will convene a Pandemic Influenza Planning and Management Team to develop a Pandemic Influenza Preparedness Plan for Kentucky. (Note: This document is a product of this activity).
- The members of the Pandemic Influenza Planning and Management Team will assist on issues related to their specific areas of expertise for implementation of the state’s public health response to pandemic influenza. Members of the Pandemic Influenza Planning and Management Team include:

**From CHFS:**

**Director of Division of Epidemiology and Health Planning  
Preparedness Branch (9)  
Vital Statistics (2)  
Communicable Disease Branch (5)  
Division of Communications  
CDC Field Epidemiologist  
Response  
State Public Health Veterinarian  
Immunization Branch (3)  
Local Health Department Operations  
Division of Laboratory Services (3)  
Office of Information Technology  
Public Health Protection and Safety  
CHFS General Counsel  
Office of Information Technology  
Office of Aging**

**Other Agencies:**

**KY Dept. of Education  
KYEM (2)  
KOHS  
US Army (Fort Campbell)  
University of Kentucky  
University of Louisville  
Lexington Metropolitan Medical System (MMRS)  
Louisville MMRS  
Northern KY MMRS  
Local Health Department (3)  
DOCJT  
Justice Cabinet  
State Representative  
KCCRB  
Chamber of Commerce  
Coroner’s Association**

- Responsibilities of the Pandemic Influenza Planning and Management Team include:
  - Developing the CHFS response to pandemic influenza
  - Providing guidance and support to local health departments to prepare for an influenza pandemic
  - Assisting with KDPH response by serving in the incident command structure
- The Pandemic Influenza Planning and Management Team will review the Kentucky Pandemic Influenza Plan at least annually and update the document as needed. The Planning Coordinator from the Public Health Preparedness Branch will be responsible for reviewing and updating the document.
- The Planning and Management Team is working during Interpandemic to:
  - Help promote county and/or regional planning
  - Help promote planning within HRSA regions
  - Identify state and local law enforcement personnel who will assist in maintaining public order and enforcing control measures during a pandemic
  - Make planning decisions on acquisition and distribution of antiviral drugs and vaccines
  - Conduct state-level table top exercises
  - Encourage local jurisdictions to conduct exercises and drills

## **2. Pandemic Period**

### *Phase 6*

#### **Executive Level**

- In the event of the occurrence or threatened or impending occurrence of any of the situations or events contemplated by KRS 39A.010, the Governor may declare, in writing, that a state of emergency exists. Conditions enumerated in KRS 39A.010 include “threats to public safety and health.”
- The Cabinet Secretary will advise the Governor on pandemic influenza issues.
- In consultation with Kentucky Emergency Management (KYEM), the State Health Officer will help determine the need for activation and, if activated, when closure of the state Emergency Operations Center (EOC) is appropriate. Full or partial activation of the State EOC will be discussed.
- The State Health Officer will determine when to advise the CHFS Secretary to recommend the Governor declare a "State of Emergency in Kentucky" in response to the influenza pandemic
- The State Health Officer or designee will act as an advisor and will collaborate with Emergency Management set the incident objectives, strategies, and priorities and has overall responsibility of the operations.
- The State Health Officer will ensure continuity of critical operations (COOP) for public health.

#### **Command Staff**

- General Counsel will be responsible to provide legal advice to Cabinet Secretary and State Health Officer
- The Public Information Officer (PIO) is responsible to disseminate information to the public in a timely manner and participate in the Joint Information System (JIS). It may be necessary to send an additional PIO to serve at the Joint Information Center (JIC).

- The State Epidemiologist reports to the State Health Officer regarding the state's public health response to pandemic influenza and will make recommendations based on epidemiology and communicate up and down the chain of command. The State Epidemiologist will oversee the operations level and communicate directly with the ESF 8 DOC Manager.
- The Cabinet Liaison will work with other agencies and will likely serve as the state Emergency Operations Center.

### **Operations Level**

- The ESF-8 DOC Manager will meet with response team members as often as needed to guide the implementation of Kentucky's pandemic influenza response. The ESF 8 DOC Manager will oversee all section chiefs. Responsibilities of the ESF 8 DOC Manager include:

- Update the State Epidemiologist and oversee operations, planning, logistics and administration.
- Conduct briefings on a regular basis with CHFS leadership and staff
- Oversee the Operations Section and monitor the state's daily response to situation
- Oversee the Planning Section
- Oversee Logistics Section
- Oversee the Finance/Administration Section

- The following section chiefs will be assigned to coordinate activities:

#### Planning Section Chief – Major responsibilities include:

- Gather, analyze and disseminate intelligence and information
- Managing the planning process
- Decide on the benefit using of alternate facilities during the influenza pandemic will and arrange for additional facilities to use for the pandemic response
- Compile the Incident Action Plan and recommending objectives
- Develop a written Action Plan/Situation Status, if necessary.
- Track daily activities for KDPH
- Track and receiving updates from the Regional Epidemiologists, Planners, Regional HRSA Coordinators and keeping the ESF 8 DOC Manager informed of the pandemic response
- Communicate with other Divisions within the KDPH as needed regarding the status of the influenza pandemic and the KDPH response
- Work closely with the ESF 8 DOC Manager, so that information is shared effectively and results in an efficient planning process.

#### Operations Section Chief – Major responsibilities include:

- Develop and implement strategies and tactics to carry out the incident objectives
- Organize, assign and supervise resources for operations
- Work closely with the ESF 8 DOC Manager and PIO to be sure that information is shared effectively and results in an efficient process
- With guidance from the ESF 8 DOC Manager, ensure that public messages are communicated
- Coordinate KDPH response activities with those of the local health department
- Responsible for communicating need for reassigned KDPH employees to Admin/Finance Section Chief

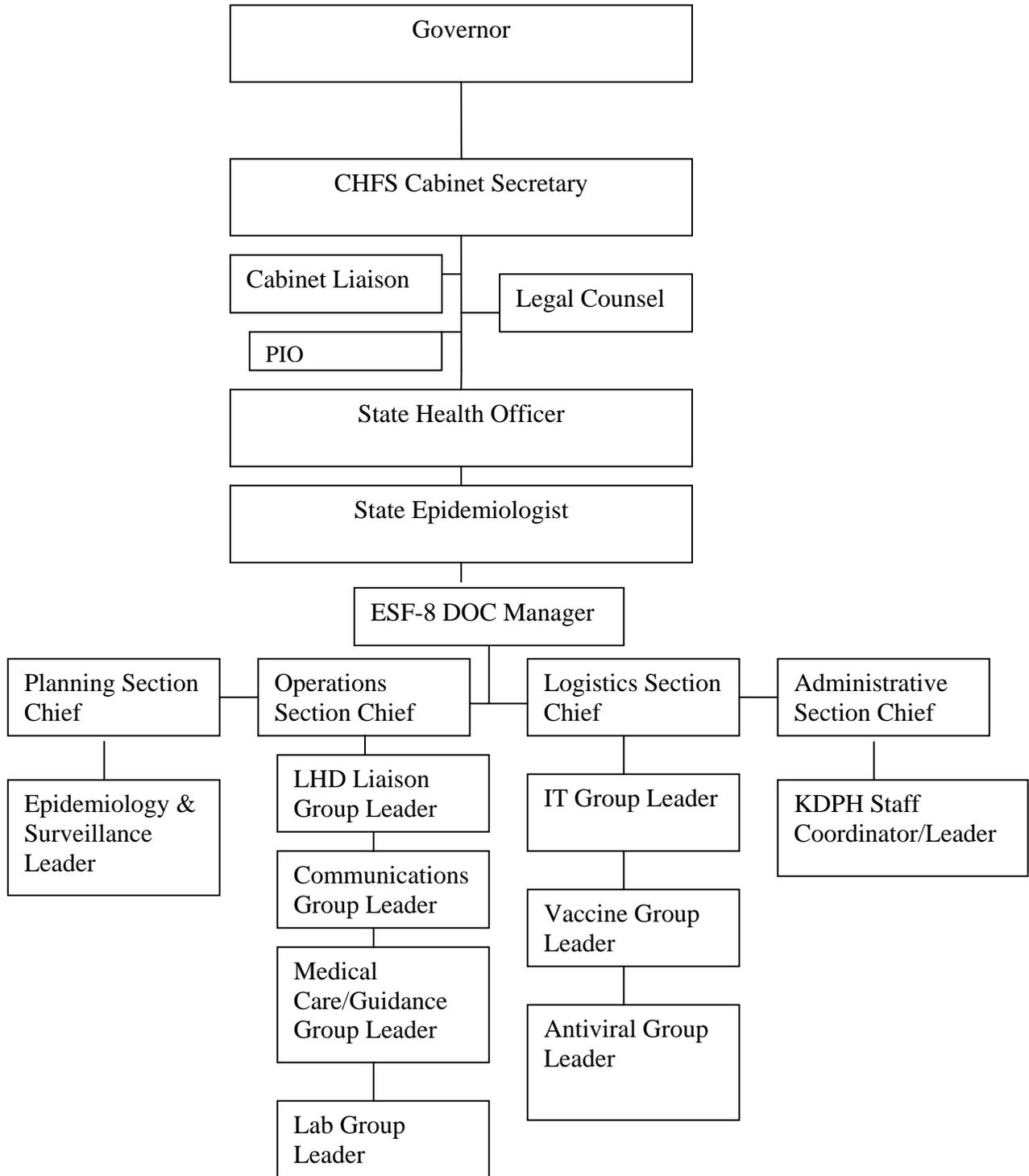
Logistics Section Chief – Major responsibilities include:

- Provide support, resources and all other services needed to meet the operational objectives
- Obtain, maintain, and account for essential personnel, equipment, and supplies
- Track supply, storage and movement of antivirals and vaccines
- Work closely with the ESF 8 DOC Manager to be sure that information is shared effectively and results in an efficient process.

Administrative/Finance Section Chief - Major responsibilities include:

- Monitor the assigned responsibilities of staff
- Serve as liaison with the State Health Officer, the Secretary of the CHFS and the Director of Public Affairs, CHFS
- Provide administrative support during the pandemic response
- Coordinate program support during the pandemic response
- Assess the availability of KDPH personnel available to assist in the pandemic response, upon recommendation from Operations Section Chief
- Contact other Divisions within the KDPH for assistance, as necessary
- All Divisions within the KDPH may assume a supportive role, working within the ESF-8 DOC in ways appropriate to their program authority and responsibilities.

**APPENDIX 1**  
**ICS Organizational Chart for the Cabinet for Health and Family Services**



**APPENDIX 2**  
**Glossary**

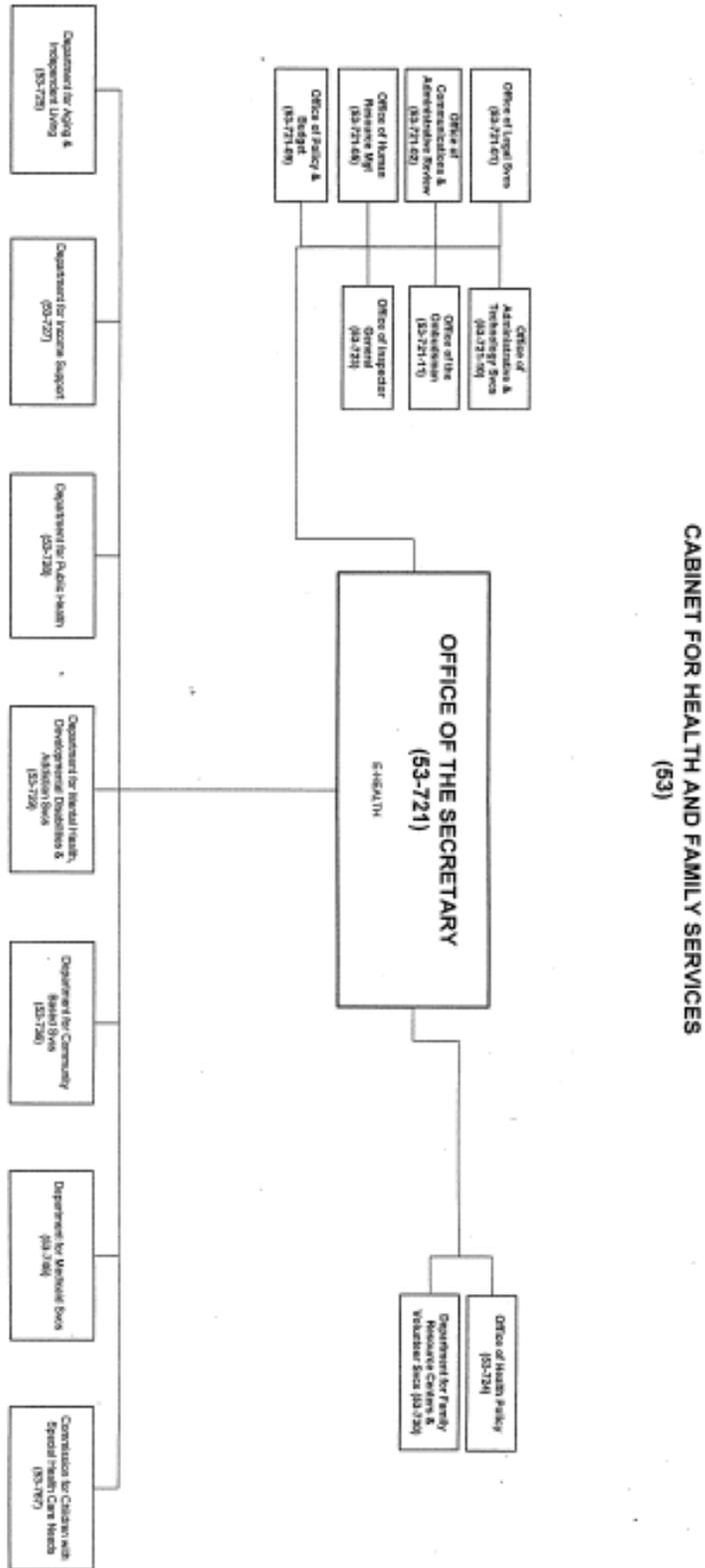
<b>Continuity of Operations (COOP)</b>	<b>Ensures that essential services are prioritized and continue to operate.</b>
<b>Epidemic</b>	<b>The occurrence of a disease in a community or region clearly in excess of normal expectations</b>
<b>Health Alert Network (HAN)</b>	<b>A program used to communicate health and emergency messages</b>
<b>Influenza-like illness (ILI)</b>	<b>The presence of fever <math>\geq 100^{\circ}</math> F, with a cough or sore throat</b>
<b>Joint Information Center (JIC)</b>	<b>A central location for involved agencies to coordinate public information activities and a forum for news media representatives to receive disaster or emergency information</b>
<b>Joint Information System (JIS)</b>	<b>The overall system for public information.</b>
<b>Novel virus</b>	<b>A virus rarely, or not previously known to infect humans</b>
<b>Pandemic</b>	<b>The occurrence of a disease in excess of normal expectations in extensive regions, countries and continents</b>
<b>Strategic National Stockpile (SNS)</b>	<b>A federal cache of medical supplies and equipment to be used in emergency and disaster situations</b>
<b>Subtype</b>	<b>Identification of influenza A viruses according to the hemagglutinin (H) and neuraminidase (N) components of the virus, such as H1N1 or H3N2</b>
<b>Surveillance</b>	<b>The collection, analysis and dissemination of data</b>
<b>Syndromic</b>	<b>Based on clinical signs and symptoms</b>

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**Appendix 3**

**KY Cabinet for Health and Family Services and Department for Public Health  
Organizational Diagrams**



**DEPARTMENT FOR PUBLIC HEALTH**  
 Commissioner: William D. Hacker, MD, FAAP, CPE

**Chief of Staff:** Charles Kendell, MPA

**Commissioner's Office**

**Deputy Commissioner:** Steve Davis, MD  
**Chief Nursing Officer:** Rosie Miklavcic, BSN.

**Division of Maternal and Child Health**  
 Ruth Shepherd, MD

**Division of Women's Health**  
 Ruth Shepherd, MD

**Division of Prevention and Quality Improvement**  
 Regina Washington, DrPH

**Division of Epidemiology and Health Planning**  
 Kraig Humbaugh, MD, MPH

**Division of Public Health Protection and Safety**  
 Guy Delius, RS (Acting)

**Division of Laboratory Services**  
 Stephanie Mayfield, MD

**Division of Administration and Financial Management**  
 Melissa Royce

**Nutrition Services Branch**  
 WIC Program  
 WIC Food Delivery/Data Section  
 Clinical Nutrition Section

**Maternal and Child Health Branch**  
 Pediatric Section  
 Oral Health Section

**Early Childhood Development Branch**  
 Early Childhood Promotion  
 Early Intervention Section  
 Newborn Screening Section

Abstinence Education and Adolescent Health Program  
 Breast and Cervical Cancer Screening Program  
 Breast Cancer Research and Education Trust Fund  
 Family Planning Program  
 Preconception Health Program

**Chronic Disease Prevention Branch**  
 Disease Management Section  
**Public Health Improvement Branch**  
 Quality Improvement Section  
 Worksite Health Section  
**Health Care Access Branch**  
**Education and Workforce Development Branch**  
**Health Promotion Branch**

**HIV/AIDS Branch**  
 HIV/AIDS Services Section  
 HIV/AIDS Prevention Section  
**Infectious Disease Branch (Rob Brawley, MD, MPH)**  
 TB Prevention & Control Section  
 Immunization Section  
 STD Prevention and Control Section  
 Reportable Diseases Section  
**Vital Statistics Branch**  
**Public Health Preparedness Branch**  
 Community Health Preparedness Section  
 Healthcare System Preparedness Section

**Milk Safety Branch**  
 Milk Safety  
**Food Safety Branch**  
 Retail Food Section  
 Food Manufacturing Section  
**Environmental Management Branch**  
 Facilities Environmental Section  
 Community Environmental Section  
**Radiation Health Branch**  
 Radiation Producing Machines Section  
 Radioactive Material Section  
 Radiation/Environmental Monitoring Section  
**Public Safety Branch**

**Microbiology Branch**  
 Virology Section  
 Bacteriology Section  
**Molecular & Clinical Chemistry Branch**  
 NBS & Metabolic Section  
 Molecular & Biomedical Engineering Section  
**Global Preparedness and Environmental Branch**  
 Environmental Section  
 Preparedness Section  
**Business Operations Branch**  
 Procurement Section  
 Customer Service Section

**Contracts and Payment Branch**  
 Payment Section  
 Contract Section  
**Local Health Operations Branch**  
 Coding and Billing Section  
**Budget Branch**  
 State Budget Section  
 Local Health Budget Section  
**Local Health Personnel Branch**  
 Employee Management Section  
 Staffing Services Section

**Appendix 4**

**WHO and US Government Pandemic Phases**

<b>WHO Phases</b>		<b>Federal Government Response Stages</b>	
<b>INTER-PANDEMIC PERIOD</b>			
<b>1</b>	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 disease is considered to be low.	<b>0</b>	New domestic animal outbreak in at-risk country
<b>2</b>	No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.		
<b>PANDEMIC ALERT PERIOD</b>			
<b>3</b>	Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.	<b>0</b>	New domestic animal outbreak in at-risk country
		<b>1</b>	Suspected human outbreak overseas
<b>4</b>	Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.	<b>2</b>	Confirmed human outbreak overseas
<b>5</b>	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).		
<b>PANDEMIC PERIOD</b>			
<b>6</b>	Pandemic phase: increased and sustained transmission in general population.	<b>3</b>	Widespread human outbreaks in multiple locations overseas
		<b>4</b>	First human case in North America
		<b>5</b>	Spread throughout United States
		<b>6</b>	Recovery and preparation for subsequent waves

**KENTUCKY PANDEMIC INFLUENZA OPERATIONS PLAN  
LABORATORY AND SURVEILLANCE SUPPLEMENT**

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## LABORATORY AND SURVEILLANCE SUPPLEMENT

This supplement provides guidance on surveillance and laboratory activities during the various phases of pandemic.

### **I. RATIONALE/OVERVIEW**

Surveillance for pandemic influenza centers around four major issues that will vary in importance depending on the pandemic phase: (1) to respond to every individual case to limit the spread of disease; (2) to respond to clusters or upward trends or outbreaks; (3) to provide information to plan prevention programs and (4) to provide information to evaluate prevention and control programs. In order to evaluate and tailor disease control interventions of a novel virus, it will be crucial to collect and analyze detailed real-time data on its clinical and epidemiological characteristics.

An effective statewide pandemic influenza surveillance system requires a well-functioning, interpandemic influenza surveillance system. Surveillance needs will expand and change as an influenza pandemic evolves from the initial stages (i.e., when a novel influenza virus is first identified in one or more persons), to a pandemic (i.e., with efficient human-to-human transmission). Surveillance needs will differ depending on where the disease has been identified, whether there is coexisting disease among livestock or other animals, how efficiently transmission occurs between people, and whether disease outbreaks have occurred in the United States or other countries.

Disease surveillance data will be critical to guide the implementation of control measures (i.e., restricting travel, closing schools, canceling public gatherings, initiating antiviral and vaccine administration to target groups, etc.), assessing the impact of a pandemic on the healthcare system, and assessing the social and economic impact on society. In order to quickly identify a novel strain of influenza in our population, Kentucky has instituted year-round influenza surveillance as described in Appendix 1.

The goals of disease surveillance are to:

- Serve as an early warning system to detect increases in ILI in the community.
- Monitor the pandemic's impact on health (e.g., by tracking outpatient visits, hospitalizations, and deaths).
- Track trends in influenza disease activity and identify populations that are severely affected.

Diagnostic testing for pandemic influenza virus may involve a range of laboratory assays, including rapid antigen tests, reverse-transcription polymerase chain reaction (RT-PCR), virus isolation, and immunofluorescence antibody (IFA) assays. 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 ensuring the timeliness of diagnostic testing and the availability of diagnostic supplies and reagents, addressing staffing issues, and disseminating 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.

The goals of diagnostic testing during a pandemic are to:

- Identify the earliest Kentucky cases of pandemic influenza (whether the pandemic begins in the United States or elsewhere).
- Support disease surveillance to monitor the pandemic's geographic spread and impact of interventions.
- Facilitate clinical treatment by distinguishing patients with influenza from those with other respiratory illnesses.
- Monitor circulating viruses for antiviral resistance and antigenic drift or antigenic shift.

In conjunction with recommendations from other public health partners, such as the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO), the Division of Epidemiology and Health Planning (DEHP) will provide updated guidance to medical providers and LHDs on an ongoing basis. Surveillance activities outlined below will be contingent on local, national and international influenza activity at the time.

## II. BASIC OPERATIONS

### Key Personnel

It will be critical to maintain quick and efficient data collection, analysis, and reporting mechanisms during pandemic alert and pandemic phases. The state influenza surveillance coordinator is the lead position responsible for coordinating all activities relating to influenza surveillance. The state influenza surveillance coordinator is located in the Immunization Section of the Infectious Disease Branch in the DEHP of the Kentucky Department for Public Health (KDPH). The KDPH is organizationally located within the Cabinet for Health and Family Services (CHFS). See Appendix 7 for contact information and a list of other key personnel for pandemic influenza laboratory and surveillance activities. See Appendices 1 and 3 of the Base Plan for the organizational structure of the CHFS and KDPH.

In addition to the key personnel at the state level, the local influenza surveillance coordinators and the 18 regional epidemiologists will be instrumental in conducting enhanced surveillance and investigation of early cases and clusters of a novel strain of

influenza. See Appendix 8 for a map of the areas served by the regional epidemiologists and their contact information.

### Surveillance Communications

- Human influenza reporting requirements, recommendations, clinical criteria and case definition information will be sent through established channels of communication to local health departments (LHDs), hospitals, and healthcare providers. These communication channels include the Infection Control Listserv, email, WebEOC, EMSystem and EMResource, KDPH Pandemic Influenza website: <http://panflu.chfs.ky.gov>, the Health Alert Network (HAN), *Kentucky Epidemiologic Notes and Reports*, conference calls, and satellite radio (when necessary).
- The KDPH possesses contact information for all LHDs and hospitals throughout Kentucky. In order to relay information to private providers, KDPH will send clinical criteria, case definitions, and reporting requirements through the Kentucky Medical Association (KMA).
- All reporting requirements, clinical criteria, case definitions, and laboratory specimen packaging and shipping instructions will be posted on the KDPH pandemic influenza website: <http://panflu.chfs.ky.gov>.
- The website and all disseminated information will include contact information for the state influenza surveillance coordinator, the Infectious Disease Branch, the Division of Laboratory Services (DLS), as well as a 24/7 contact number for KDPH's on-call epidemiologist: **888-9REPORT**. See Appendix 5, 6, and 7 of the Communications Supplement for a complete listing of Kentucky LHDs and hospitals.
- Electronic reporting of influenza activity will be done through the established Disease Surveillance Module (DSM) of the Kentucky Electronic Public Health Reporting System (KY-EPHRS).
- Animal surveillance for highly pathogenic strains of influenza is conducted by the Kentucky Department of Agriculture (KDA) and the Kentucky Department of Fish and Wildlife Resources (KDFWR). The KDA is responsible for surveillance of all commercial and privately-owned animals while the KDFWR is responsible for all wild animals.
- The KDPH has been working with the KDA with the development of the State Agriculture Response Team (SART). The SART is a resource that will be utilized for an emergency response to an agricultural disaster or disease outbreak. Its members include representatives from state agencies, industry, universities, volunteers, and the private sector.

- KDPH has met with the KDA to discuss pandemic influenza preparedness and establishing lines of communication to enhance animal and human surveillance for highly pathogenic avian influenza (HPAI). The KDA has a strong relationship with KDFWR and the Kentucky Poultry Federation (KPF) who have protocols and response plans for highly pathogenic avian influenza (HPAI).
- A state-wide avian influenza workshop was conducted in October 2007 which brought together state and local public health, representatives from KDA and KDFWR, and commercial poultry producers to build relationships and discuss human and animal surveillance for highly pathogenic influenza. All agencies have agreed to share surveillance information and send notifications in the event of highly pathogenic avian influenza and/or pandemic influenza.
- Contact information for the KDA and the KDFWR can be found in Appendix 3 of the Communications Supplement. The KDA and KDFWR will send animal surveillance information to the DEHP through emailing and/or faxing key personnel listed in Appendix 7.
- Contacts for mass fatality preparations have also been made, so that death surveillance can be linked with those who are involved in the disposition of the remains of pandemic victims. KDPH has been collaborating with the State Medical Examiner's Office for several years. The state's forensic anthropologist serves on the Health and Medical Preparedness Advisory Committee.
- The Kentucky Coroner's Association has been engaged in planning activities with the KDPH, such as creation of an electronic death registry, and these agencies are jointly creating mass fatality response teams.
- Information regarding novel influenza cases will be sent to the Kentucky Coroner's Association and to the Medical Examiner's Office for dissemination to all local coroners and medical examiners. The 120 coroners throughout Kentucky will be given a profile in the Health Alert Network so they can receive quick notifications from the KDPH regarding pandemic influenza and other public health emergencies. Communications from coroners will come directly to the KDPH or through the state Medical Examiner's Office and sent to the key personnel defined in Appendix 7.

### III. GUIDELINES FOR INTERPANDEMIC AND PANDEMIC ALERT PERIODS

The objectives of surveillance for pandemic influenza will vary based on the phase of the pandemic.

#### Interpandemic Surveillance Objectives

During the interpandemic phase, sentinel surveillance throughout the state is used to assess the seasonal burden of influenza. Surveillance data is primarily used to enhance the influenza vaccination program and to identify the predominant circulating strains of influenza. Surveillance serves not only to detect local outbreaks of seasonal influenza, but also unusual clusters of illness that may be due to a new influenza virus. Influenza is not a reportable disease; however, outbreaks or clusters of any disease, including influenza, are reportable by Commonwealth of Kentucky regulation.

#### Interpandemic and Pandemic Alert Novel Influenza Virus Surveillance Activities

- Ensure early detection of cases and clusters of respiratory infections that might signal the presence of a novel influenza virus.
- Ensure laboratory resources are available to rapidly detect the introduction of a novel virus.
- If a novel strain of influenza is confirmed, ensure prompt and complete identification and reporting of potential cases to facilitate control and management of local outbreaks.

### **A. Epidemiological and Laboratory Surveillance for Human Infection**

**During WHO Pandemic Phases 1 and 2 (Interpandemic Period: No novel influenza subtypes have been detected in humans, but a novel subtype that has caused human infection may be present or circulating in animals), the DEHP will:**

- Continue all interpandemic influenza surveillance activities as described in Appendix 1.
- Encourage influenza sentinel providers and health departments to perform year-round reporting of ILI activity.
- In conjunction with LHDs and the Kentucky Hospital Association (KHA), work closely with healthcare organizations and healthcare providers to implement active surveillance in emergency departments, inpatient wards, and intensive care units and explore developing an enhanced surveillance system for pneumonia and influenza-associated hospitalizations.
- Continue the planned implementation of WebEOC in the KDPH, LHDs, and hospitals throughout Kentucky. WebEOC will permit exchange of de-identified information regarding influenza and pneumonia-related hospitalizations and deaths.
- In conjunction with LHDs and hospitals, work with state and local medical examiners and coroners to establish lines of communication and explore developing an enhanced surveillance system for influenza and pneumonia-related

deaths. Register all coroners and medical examiners on KY Health Alert Network (HAN) and create a medical examiner and coroner listserv.

- Continue working with the FEMA Region IV Planning Coalition to establish mass fatality teams.
- Continue working to establish an electronic death registry.
- Encourage the use of influenza and rapid diagnostic tests, IFA assays, and PCR to detect the first cases of novel virus infection in Kentucky, and target containment strategies, such as isolation and quarantine, contact tracing, and use of limited vaccine and antivirals in the populations at risk during the interpandemic period and early stages of a pandemic, before community transmission is established.
- Request LHDs, healthcare providers, and healthcare facilities to report any suspect avian influenza cases and forward clinical specimens to the Division of Laboratory Services (DLS) for concurrent testing.
- Expand the capacity for novel virus testing among local laboratories, including providing training, technical assistance, and reference or validation testing. Request laboratories to report testing for any suspect avian influenza cases and to forward clinical specimens to the DLS for testing.
- Coordinate with the Kentucky Department for Agriculture, Kentucky Poultry Federation, and Kentucky Fish and Wildlife Resources for enhanced surveillance and reporting of novel influenza virus in poultry workers, commercial and private poultry flocks, and wild birds to identify disease activity in animal populations and to characterize the human health threat.
- Share influenza surveillance data and epidemiological information in a timely manner with LHDs, regional epidemiologists, and the CDC.
- Develop and implement criteria and protocols for epidemiologic investigation of influenza outbreaks, influenza case clusters with unusual clinical presentations, and clusters of unexplained pneumonia.
- Enhance and expand capacity at the local levels to conduct case investigations and epidemiologic investigations. These activities will include conducting an inventory of current capacity, determining current skill levels, conducting drills and exercises in case investigations, developing forecasts of future capacity needs under different pandemic scenarios, identifying gaps in capacity, and building ERTs and Epi Strike Teams throughout the state.

- In conjunction with LHDs, evaluate and implement an outbreak management system to assist with case management, case ascertainment, case reporting, surveillance, and data analysis.
- Develop protocols that clearly designate who will conduct epidemiologic studies of novel influenza strains and coordinate between local, state, and federal investigations.
- Identify funding and training strategies to ensure that epidemiologic capacity at the state and local levels is consistent with current and future needs.

**WHO Pandemic Phases 3 and 4 (Pandemic Alert Period: Human infection with no or very limited human-to-human transmission)**

Investigation of Early Human Cases

- KDPH closely monitors the World Health Organization Pandemic Influenza Phases, <http://pandemicflu.gov>, <http://www.cdc.gov/flu/weekly/fluactivity.htm>, and notifications of influenza-related activity sent through Epi-X. As the threat of a pandemic escalates and progress is made into WHO phase 4, KDPH will increase communications with LHDs, local influenza surveillance coordinators, hospitals, infection control practitioners, and regional epidemiologists. Current case definitions and all contact information for KDPH and DLS will be disseminated throughout the state and posted on the KDPH Pandemic Influenza website: <http://panflu.chfs.ky.gov>.
- During the interpandemic and pandemic alert phases, KDPH will rely upon several different data sources to quickly identify novel strains of influenza. These sources include the Influenza Sentinel Surveillance System (Appendix 1), the Disease Surveillance Module (DSM) of the KY Electronic Public Health Records System (KY-EPHRS), and community-based surveillance systems throughout the state.
  - The DSM is a secured, electronic reporting system for notifiable diseases and conditions. Data is entered into the DSM by hospital infection control practitioners and local health departments throughout the state.
  - In addition to DSM, KDPH contracted with a software development company and hospitals in the Louisville Metro area to implement an electronic community-based surveillance system. Data is automatically collected from hospital databases based on diagnoses and analyzed for frequencies and aberrations. This system will be set to identify pneumonia and influenza-related emergency room visits and hospital admissions and is planned to expand to other highly populated areas of the state such as central, northern, and eastern Kentucky in 2008 and 2009. The community-based surveillance system will also be linked to BioSense

through several select hospitals in the Louisville Metro Area in the near future. The KDPH has also been piloting Outbreak Management System (OMS) within the next few months.

- Local influenza surveillance coordinators and regional epidemiologists will maintain daily communication with sentinel providers and local hospitals.
- If a human case of novel influenza is suspected; the local healthcare provider, local influenza surveillance coordinator, and/or regional epidemiologist will contact the state influenza surveillance coordinator or call the 24/7 contact number (if after normal business hours of Mon-Fri 8:00AM-4:30PM) for consultation and technical assistance. The local influenza surveillance coordinator or regional epidemiologist will then conduct an interview using the Human Influenza A (H5) Domestic Case Screening Form found in Appendix 3. A lab specimen will be collected, packaged, and shipped to the Division of Laboratory Services (DLS) according to Appendices 2 and 6. The Centers for Disease Control and Prevention (CDC) will be notified.
- If the suspected case meets the case definition, the individual may be isolated and the local Epi Rapid Response Team (ERRT) will be activated. All contacts of the case in question may be quarantined. All confirmed cases, suspected cases, and contacts will be closely monitored. KDPH's Department Operations Center (DOC) may be activated and the LHD DOC may be activated.
- If the presence of a novel strain of influenza is laboratory confirmed, the local ERRT will begin active surveillance of its community/region. KDPH will activate the DOC and activate the Kentucky Pandemic Influenza Operations Plan to quickly identify cases and implement community mitigation activities.
- All LHDs, hospitals, and healthcare providers throughout Kentucky will be promptly notified through the aforementioned communication channels.
- KDPH will provide consultation and technical assistance to all counties, districts, and regions for all pandemic influenza-related health and medical activities.
- All local influenza surveillance coordinators and regional epidemiologists should work with local healthcare providers to gather information on individuals who meet clinical criteria and should ensure laboratory specimens are collected and shipped to DLS for confirmation.
- All influenza-like-illness (ILI) data will be gathered at the local and regional level and reported to the state influenza surveillance coordinator daily.
- Data for pneumonia and influenza-related hospitalizations will be collected from all KY hospitals through secured communications via EMSsystem and EMTrack.

This data will be used to estimate attack rates and rates of influenza-associated hospitalizations.

- Mortality data will be gathered from local influenza surveillance coordinators, coroners and medical examiners, and the Office of Vital Statistics (OVS). Mortality data are to be matched with confirmed and suspected influenza cases to calculate case fatality rates.
- All data received at the state level will be tabulated and analyzed by epidemiologists from the DEHP.
- The state influenza coordinator will report all cases of novel influenza, attack rates, and mortality rates to the CDC on a daily basis through established channels of reporting or through other mechanisms specified by the CDC.
- In addition to tracking confirmed and suspected cases, local influenza surveillance coordinators, ERRTs, and Regional Epidemiologists will be responsible for collecting and reporting all data regarding the number of isolated and quarantined individuals within their jurisdiction to the DEHP.
- The Kentucky Office of Vital Statistics (OVS) is in the process of implementing an electronic death registry (EDR). When the registry is complete, it will be used to monitor influenza and pneumonia-related mortality.
- The Vital Statistics Branch is organizationally located in the DEHP of KDPH and can easily share mortality data with the Infectious Disease Branch and Public Health Preparedness Branch of KDPH. See Appendix 9 for the KY EDR implementation plan.
- If a pandemic begins before the EDR is complete, DEHP will use the current method for processing death certificates and download mortality data each day from the existing electronic database and calculate influenza and pneumonia-related mortality rates.

**The DEHP will:**

- Upon lab confirmation of the first case of novel influenza virus in Kentucky, distribute guidance to all LHDs on surveillance, case detection, contact tracing, and infection control. The DEHP will coordinate disease control activities and provide technical assistance to LHDs and healthcare facilities with any confirmed cases of novel influenza virus infection.
- Actively monitor and implement as necessary, any changes in recommendations and guidelines for surveillance and diagnostic testing from CDC (e.g., revision to the case definition, screening criteria, case report forms, or diagnostic testing

algorithms), and post a case screening form and a case report form for laboratory confirmed cases on the KDPH Pandemic Influenza website at:  
<http://panflu.chfs.ky.gov>

- Disseminate case definitions, clinical criteria, and epidemiological criteria for the evaluation of patients with possible novel influenza to all LHDs, hospitals, and healthcare providers. The current criteria is as follows:
  - During the Pandemic Alert Period, human infections with novel influenza A viruses will be uncommon. Therefore, **both clinical and epidemiologic criteria should be met**. The criteria will be updated as needed and found at [www.cdc.gov/flu](http://www.cdc.gov/flu).
  - **Clinical criteria**  
Any suspected cases of human infection with a novel influenza virus must meet the criteria for ILI: **temperature of >100.4°F (>38°C) plus one of the following: sore throat, cough, or dyspnea.**
    - Because of the large number of ILI cases during a typical influenza season, during the Interpandemic and Pandemic Alert Periods laboratory evaluation for novel influenza A viruses is recommended **only** for:
      - a) Hospitalized patients with severe ILI, including pneumonia, who meet the epidemiologic criteria (see below), or
      - b) Non-hospitalized patients with ILI and with strong epidemiologic suspicion of novel influenza virus exposure (e.g., direct contact with ill poultry in an affected area, or close contact with a known or suspected human case of novel influenza within 10 days prior to onset of symptoms.).
    - See the Clinical Guidelines Supplement of this plan for more detailed recommendations for the evaluation of patients with respiratory illnesses.
  - **Epidemiologic criteria**  
Epidemiologic criteria for evaluation of patients with possible novel influenza focus on the **risk of exposure** to a novel influenza virus with pandemic potential. Although the incubation period for seasonal influenza ranges from 1 to 4 days, the incubation periods for novel types of influenza are currently unknown and might be longer. Therefore, the maximum interval between potential exposure and symptom onset is set conservatively at 10 days.
    - **Exposure risks** — Exposure risks fall into two categories: a) travel and b) occupational.

**a) Travel risks:** Persons have a travel risk if they have, within 10 days prior to onset of symptoms:

- 1) recently visited or lived in an area affected by highly pathogenic avian influenza A outbreaks in domestic poultry or where a human case of novel influenza has been confirmed, **and**
- 2) either had direct contact with poultry, **or**
- 3) had close contact with a person with confirmed or suspected novel influenza. Updated listings of areas affected by avian influenza A (H5N1) and other current/recent novel strains are provided on the websites of the OIE ([http://www.oie.int/eng/en\\_index.htm](http://www.oie.int/eng/en_index.htm)), WHO ([www.who.int/en/](http://www.who.int/en/)), and CDC ([www.cdc.gov/flu/](http://www.cdc.gov/flu/)).

**Direct contact with poultry** is defined as: 1) touching birds (well-appearing, sick, or dead), or 2) touching poultry feces or surfaces contaminated with feces, or 3) consuming uncooked poultry products (including blood) in an affected area. Close contact with a person from an infected area with confirmed or suspected novel influenza is defined as being within 3 feet (1 meter) of that person during their illness. Because specific testing for human infection with avian influenza A (H5N1) might not be locally available in an affected area, persons reporting close contact in an affected area with a person suffering from a severe, yet unexplained, respiratory illness should also be evaluated.

Human influenza viruses circulate worldwide and year-round, including in countries with outbreaks of avian influenza A (H5N1) among poultry. Therefore, during the Interpandemic and Pandemic Alert Periods, human influenza virus infection can be a cause of ILI among returned travelers at any time of the year, including during the summer in the United States. This includes travelers returning from areas affected by poultry outbreaks of highly pathogenic avian influenza A (H5N1) in Asia. As of May 2006, such persons are currently more likely to have infection with human influenza viruses than with avian influenza A (H5N1) viruses.

**b) Occupational risks**

Persons at occupational risk for infection with a novel strain of influenza include:

- 1) persons who work on farms or live poultry markets
- 2) persons who process or handle poultry infected with known or suspected avian influenza viruses
- 3) workers in laboratories that contain live animal or novel influenza viruses
- 4) healthcare workers in direct contact with a suspected or confirmed novel influenza case.

Information on limiting occupational risk is provided on the Occupational Health and Safety Administration (OSHA) website at: [www.osha.gov/dsg/guidance/avian-flu.html](http://www.osha.gov/dsg/guidance/avian-flu.html).

During the Interpandemic and Pandemic Alert Periods, when there is no sustained human-to-human transmission of any novel influenza viruses, **direct contact** with animals such as poultry in an affected area or close contact with a case of suspected or confirmed human novel influenza is **required** for further evaluation.

During the Pandemic Alert Period, Phases 3 and 4, the majority of human cases of novel influenza will result from avian-to-human transmission (see Box 1). Therefore, a history of direct contact with poultry (well-appearing, sick, or dead), consumption of uncooked poultry or poultry products, or direct exposure to environmental contamination with poultry feces in an affected area will be important to ascertain.

During the Pandemic Alert Period, Phase 5, a history of close contact with an ill person suspected or confirmed to have novel influenza in an affected area will be even more important.

#### **Other avian influenza A viruses**

Although the epidemiologic criteria for novel influenza are based on recent human cases of avian influenza A (H5N1), they are intended for use in the evaluation of suspected cases of infection with any novel influenza A virus strain.

Other avian influenza A viruses that have caused human disease include the highly pathogenic viruses H7N7 and H7N3 and the low pathogenic viruses H9N2 and H7N2. Some of these human cases have occurred in Europe (Netherlands) and North America (Canada and the United States). Therefore, the same high-risk exposures defined above for avian influenza A (H5N1) also apply to other avian influenza A viruses.

A strong epidemiologic link to an avian influenza outbreak in poultry, even in areas that have not experienced poultry outbreaks of avian influenza A (H5N1), may raise the index of suspicion for human infection with avian influenza A viruses.

In the future, other animal hosts (in addition to poultry) or novel influenza A virus subtypes (in addition to H5N1) might become significantly associated with human disease. If such events occur, this guidance will be updated.

- Communicate with LHDs, regional epidemiologists and infection control practitioners via the Infection Control Listserv, email, WebEOC (if necessary) KKDPH Pandemic Influenza website: <http://panflu.chfs.ky.gov>, HAN, *Kentucky Epidemiologic Notes and Reports*, and conference calls to share information on surveillance criteria, case management, specimen collection, appropriate testing, and community containment.
- In conjunction with LHDs and the Kentucky Hospital Association (KHA), continue working with healthcare organizations and healthcare providers to implement active surveillance in emergency departments, inpatient wards, and intensive care units. Develop an enhanced surveillance system for influenza and pneumonia-related hospitalizations.
- In conjunction with LHDs and hospitals, continue working with state and local medical examiners to develop an enhanced surveillance system for influenza and pneumonia-related deaths. Ensure that all medical examiners are registered in HAN and the medical examiner listserv is current.
- Continue working to establish mass fatality teams and an electronic death registry.
- Issue guidance for managing suspect novel influenza cases; including infection control guidelines, guidelines for collecting and shipping specimens for influenza A diagnostics, and laboratory biosafety guidelines for handling and processing of specimens of novel influenza A. Laboratory biosafety guidelines will be posted on the DLS website along with specimen submittal forms at: <http://chfs.ky.gov/dph/info/lab/>
- Work with health departments to detect and monitor persons who have recently traveled to areas where the novel virus has been identified and who present with clinical illness consistent with influenza. Provide technical assistance and guidance to assess and report suspect cases of novel virus infection.
- Encourage all influenza sentinel providers to report data year-round and educate sentinel providers of enhanced surveillance activities, including submission of specimens to DLS, and of the need to report suspect cases to their local health department for further evaluation and testing.
- Recruit additional sentinel physicians to report ILI activity, collect respiratory specimens, and submit them for testing.
- Encourage reporting of all suspect human cases of the novel influenza virus cases of clinical illness consistent with a novel influenza virus through an electronic case reporting system.

- Generate daily reports of statewide influenza activity and distribute surveillance data to LHDs, regional epidemiologists, participating agencies, CDC, KDPH public information officers, and KY Emergency Management (KYEM).
- Review plans to further enhance influenza surveillance if efficient person-to-person transmission of the novel virus is confirmed, including training additional personnel on surveillance, case detection, contact tracing, and infection control issues.
- Work with the KDA, KY Poultry Federation (KPF), and KDFWR on enhanced surveillance and reporting of novel influenza virus detection in poultry workers, commercial and private poultry flocks, and in wild birds to identify disease activity in animal populations and to characterize the human threat.
- Collaborate with commercial laboratory stakeholders who are offering novel virus testing to report any preliminary positive results for novel virus infection to either the local health department or the DLS.
- Encourage submission of clinical specimens from ILI cases from all sources (public and private clinics, sentinel providers, and hospitals) and facilitate subtyping of influenza A viruses.
- In coordination with the CDC, develop, distribute and implement case management protocols to ensure that suspect human cases are promptly identified and isolated and that the source(s) of exposure (animal vs. human) are determined. Ensure protocols are distributed to LHDs and settings where cases and their contacts might be diagnosed.
- In collaboration with the CDC and LHDs, conduct, direct, coordinate, or provide guidance on epidemiologic investigations of human cases to identify the populations at risk, the current clinical characteristics of the disease, and the risk that infected persons or their environment may pose to others, including an assessment of likely human-to-human transmission.
- In conjunction with LHDs, develop a database or registry for case investigations, case management, case ascertainment, case reporting, surveillance, and data analysis.
- Coordinate with CDC and other partners on studies of viral shedding and determine the infectious and incubation periods for use in defining the duration of isolation and quarantine.
- Summarize and distribute study results to LHDs, and utilize the *Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza*

*Mitigation in the United States – Early, Targeted, Layered Use of Non-pharmaceutical Interventions* to assess recommendations regarding the application and utility of non-pharmaceutical containment measures.

**During WHO Pandemic Phase 5 (Pandemic Alert Period: Substantial pandemic risk with larger clusters of disease, but still limited human-to-human transmission; sustained community transmission possible), the DEHP will:**

- Communicate with the CDC to monitor any changes in recommendations and guidelines for surveillance and diagnostic testing, including guidance on triaging specimens for testing and choosing which isolates to send the CDC and immediately inform LHDs and sentinel sites of new recommendations.
- Recommend which subset of suspect cases of ILI meet the criteria for influenza testing at either the institutional, local, or the state level and post recommendations on HAN and the KDPH Pandemic Influenza website: <http://panflu.chfs.ky.gov>
- Work closely with LHDs to manage new suspect cases, provide confirmatory testing, and implement containment strategies to prevent or limit local spread.
- Provide technical assistance to guide expanded testing on specific cases that represent a risk of spread of the novel virus infection in the community, including those who have an epidemiologic link to infected cases or who are hospitalized. Communicate with CDC concerning management, reference laboratory testing, and containment strategies in these cases.
- Continue working with the KDA, KPF, and KDFWR on enhanced surveillance and reporting of novel influenza virus detection in poultry workers, commercial and private poultry flocks, and in wild birds to identify disease activity in animal populations and to characterize the human threat.
- Communicate current surveillance criteria for cases of human novel virus infection, and the need to report data year-round and submit clinical specimens on ILI cases to sentinel providers and LHDs.
- Utilize WebEOC and EMS systems in conjunction with LHDs and hospitals to monitor bed counts and influenza and pneumonia-related hospitalizations and deaths.
- Generate daily reports of statewide influenza activity and make current surveillance data available to all participating agencies as well as the CDC, LHDs, regional epidemiologists, KDPH Public Information Officers, and KY EM.

- Maintain expanded critical laboratory testing capacity, including novel virus testing based on availability of reagents and laboratory supplies from manufacturers.
- Communicate via e-mail, Infection Control Listserv, HAN, WebEOC, *Kentucky Epidemiologic Notes and Reports*, and conference calls with stakeholders regarding the detection and circulation of novel virus worldwide and in the United States and provide detailed guidance on updated case definitions, diagnostic algorithms, laboratory infection control issues, surveillance criteria, case management, specimen collection, and appropriate testing.. As the pandemic progresses and guidelines and testing algorithms are revised, KDPH will communicate the changes and post the information on the KDPH Pandemic Influenza website at: <http://panflu.chfs.ky.gov>
- In coordination with the CDC, review and revise case management protocols to reflect current recommendations and epidemiologic data.
- Continue pandemic influenza-specific epidemiologic investigations and other special clinical studies.

#### **B. Laboratory/ Epi Support for Seasonal Influenza Surveillance**

- The DLS will ensure all participating sites will have a constant stock of test kits for rapid diagnosis based on the availability of reagents and supplies from manufacturers. The DLS monitors and replaces inventory weekly to ensure an abundant amount of supplies. During times of surge, inventory is monitored daily.
- The DEHP influenza coordinator will send guidelines to Local Health Department and Healthcare provider sentinel sites, and Local Health Department Surveillance Contacts, as well as health care providers who voluntarily submit specimens to the state laboratory, detailing routine surveillance guidelines recommended by the CDC and the WHO for submitting influenza isolates (i.e. numbers of samples, when to send samples etc.) See Appendix 1, 2, and 5.
- The DEHP will also send a reminder to those sites which request kits that the only portion of the kits which expire is the transport media. Staff at the sentinel site can order only this portion of a kit, if applicable.
- The DLS has implemented a plan for surveillance of ILI among laboratory personnel.

#### **C. Laboratory/Epi Support for Novel Influenza Subtypes**

In anticipation of pandemic influenza, the DLS has instituted several improvements in technology in preparation for surge capacity:

- DLS will use PCR typing for flu type A, B, H1, H3 and the H5 strains. This enables the detection of avian flu and identification of novel strains during routine surveillance.
- DLS will use R-mix shell vials, which allows for more rapid turn-around times. Incorporation of these technologies has decreased time for identification and typing of influenza from approximately 6 days to 2 days; however, this method has significantly increased the cost for reagents and kits for the identification and typing of influenza.
- DLS will use an ABI 7500 Fast PCR instrument to reduce turnaround time for influenza typing to 2 hrs (versus 4-5 hrs) once the virus is identified in culture.
- DLS will use an Easy Mag Extractor with capacity for high thru put extraction for influenza typing.
- Results are reported to healthcare submitters the same day they are confirmed and electronic reports are generated and submitted to the DEHP.
- DLS has purchased a PHIN compliant Lab Info System (LIMS) and has updated reporting procedures.
- DLS has provided collection instructions, shipping instructions, support for seasonal surveillance and novel strain typing as well as the influenza testing algorithms (See Appendices). This information is available to hospital and lab personnel statewide via the KDPH pandemic influenza website: <http://panflu.chfs.ky.gov>.
- DLS utilizes is the HAN which is available to healthcare providers, public health personnel, and KY Sentinel Labs throughout the state. HAN would be used as an early electronic warning system in the event of a pandemic.
- Current routine surveillance of influenza has allows DLS to monitor the referral of clinical samples from hospital labs, clinics and physician's offices by the use of sentinel sites for submission of samples for influenza analysis. These sentinel sites are located throughout KY to give a representative epidemiological view of influenza activity in the state and allow for year round surveillance of influenza.
- DLS monitors ILI among lab personnel and maintains a 24/7 call number accessible in the event of an after hours event. See Appendix 10.

- Through price contracts, standing orders, and procard purchases, the DLS has the capability to procure lab supplies, including collection kits, which would allow for a 100% increase in processing.
- In order to improve surge capacity, a local county health department laboratory (Louisville Metro Department of Health and Wellness) has been designated as an alternate site to perform novel flu testing if necessary. DLS is currently working with this site to provide training for their technologists as well as proficiency samples for quality assurance testing.
- DLS has an MOU with the 41<sup>st</sup> Civil Support Team of the National Guard. Their lab has PCR capabilities and is capable of performing novel flu testing.
- The Breathitt Veterinary Laboratory in Murray, KY can also be utilized if the DLS, Louisville Metro, and 41<sup>st</sup> Civil Support Team Laboratories, need additional laboratory capacity.
- The DLS will ensure all sentinel sites will have a constant stock of test kits for rapid diagnosis, based on availability from manufacturers. The DLS monitors and replaces inventory weekly to ensure an abundant amount of supplies. During times of surge, inventory is monitored daily.
- The state influenza coordinator will distribute the CDC guidelines for suspect avian flu cases (see Appendix 3, 4, and 5) to hospital infection control professionals, local influenza surveillance coordinators, LHDs and healthcare provider sentinel sites. In addition, “KDPH Guidelines for Reporting Suspected Cases of Avian Influenza” and instructions for submitting specimens will be posted on the KDPH Pandemic Influenza website: <http://panflu.chfs.ky.gov>, HAN, and published in the *Kentucky Epidemiologic Notes and Reports* publication.
- If ILI is suspected, a nasopharyngeal/throat specimen should be collected on viral media for transport. (Instructions for collection of these specimens are provided with the collection kits sent out by the DLS.) Concurrently, a rapid antigen test should be performed if ILI is suspected.

**SEE APPENDIX 6 for DO’s and DONT’S of specimen collection.**

- If a specimen has been reported to contain influenza A virus (positive rapid antigen test) and the individual’s condition meets the screening criteria (see Appendix 5) please contact the DEHP immediately to obtain a Screening Form. The DEHP will then determine if the CDC Director’s Emergency Operations center should be contacted and fax the screening form if necessary.

- If a novel influenza subtype is confirmed through laboratory testing, the DEHP, specimen submitter, and LHD will be contacted immediately.
- In the event of a pandemic, submission of influenza samples may be restricted as determined by guidelines from CDC and the DEHP.
- The DEHP will develop extended addendum forms to the influenza screening form for tracking activities of suspected novel influenza cases (travel agenda, flight numbers, contacts...) similar to those used for SARS histories. (See Appendix 4.)

#### **D. Laboratory Planning to Support the Response to a Pandemic**

- For detection and characterization of novel influenza strains, PCR will be performed on any suspect avian or novel influenza strains. If needed, culture of these viruses will be performed only in the DLS BSL-3 Laboratory.
- The DLS has instituted year-round PCR typing for influenza type A, B, H1, H3, and H5 strains. This allows the capability to detect avian influenza as well as a novel strain during routine surveillance.
- The DLS has switched culture methods from traditional cell lines to R-mix shell vials. This has allowed for an overall decrease for identification and typing of influenza from approximately 6 days to 2 days.
- Laboratory reporting will be included in the testing algorithm and should be similar to the current standard.
  - Lab results can be reported electronically to LHDs.
  - Lab results can be reported via fax and de-identified results can be sent electronically via email.
  - Using the PHIN compliant Laboratory Information System (LIMS), laboratory results can be sent electronically to healthcare providers, LHDs, the CDC, and any entity submitting specimens for testing.
- Diagnostic reagents and kits will be distributed based upon their availability from manufacturers.
- Distribution of diagnostic reagents and test information for nursing homes to confirm influenza will be coordinated through the LHDs and the local health center nurses, and the DEHP influenza coordinator and the DLS.

- Distribution of diagnostic reagents and test information for sentinel sites will be coordinated through LHDs or sentinel labs, the DEHP influenza coordinator, and the DLS.
- Laboratory Surge Capacity Planning
  - DLS will continue cross-training of BT personnel in viral culture and PCR.
  - DLS will communicate and coordinate with DEHP to limit the number of samples submitted by any one site. This would also apply to the distribution of collection kits.
  - DLS will continue annual training, workshops, and monthly newsletters for the 65 sentinel laboratories throughout Kentucky. Each sentinel lab is registered in the KY HAN. Notification via HAN is exercised regularly. See Appendix 11 for a complete listing of all sentinel laboratories throughout Kentucky.
  - DLS will encourage the use of packaging and shipping certification training module for TRAIN.
  - DLS will provide influenza testing kits to sentinel sites, send additional rapid testing kits, assist them in screening samples, and conduct informational/training conference calls and teleconferences to improve surge capacity
  - DLS will continue working with the designated local health department laboratory for training and proficiency testing of technologists.
  - DLS will continue planning and coordination with the 41<sup>st</sup> Civil Support Team of the National Guard for laboratory capacity building.
- Local sentinel laboratories will utilize current packaging and shipping protocols for submitting specimens to DLS.
- The DLS will use established LRN protocols to submit specimens to the CDC.
- Partnerships
  - Healthcare providers and clinical labs
  - Packaging and shipping training provided by DLS.

## IV. GUIDELINES FOR PANDEMIC PERIOD

### Pandemic Surveillance Objectives

Case-based surveillance and control strategies should be maintained if it serves clear objectives, such as to support planning of the use of scarce resources, evaluate control measures or monitor changes in the influenza virus. The data collection process in this phase will be modified based on available resources.

At Phase 6 onset, case-based detection will be in place. During the peak of pandemic influenza activity, case-based detection methods will no longer be practical and surveillance data collection will be geared toward estimating community impact. Case-based detection will again become important as elimination of the pandemic influenza strain becomes feasible due to vaccine availability or an immune population.

### Pandemic Influenza Virus Surveillance Activities (after case-based detection methods are no longer applicable)

Once a pandemic has been confirmed, monitor:

- Change in circulating virus, including development of anti-viral resistance, and shifts in the affected populations.
- Impact on human health, by conducting ongoing assessment of the morbidity and mortality.
- Evaluation of community- and population-based control measures, as applicable.

### **A. Epidemiological and Laboratory Surveillance for Human Infection**

**During WHO Pandemic Phase 6 (Pandemic Period: Increased and sustained transmission in the general population), the DEHP will:**

- Monitor the epidemiology and impact of the pandemic on Kentucky.
- Communicate via e-mail, Infection Control Listserv, HAN, WebEOC, *Kentucky Epidemiologic Notes and Reports*, and conference calls with stakeholders regarding the detection and circulation of novel virus worldwide and in the United States and provide detailed guidance on updated case definitions, diagnostic algorithms, laboratory infection control issues, surveillance criteria, case management, specimen collection, and appropriate testing.. As the pandemic progresses and guidelines and testing algorithms are revised, KDPH will communicate the changes and post the information on the KDPH Pandemic Influenza website at: <http://panflu.chfs.ky.gov>
- Sustain the capacity to perform laboratory-based surveillance as long as possible because influenza viruses may undergo antigenic drift or develop resistance to antiviral drugs.

- Support LHDs, public and private medical providers, hospitals, and other stakeholders to maintain surveillance efforts for cases of novel virus infection. As the pandemic progresses and laboratory services become overwhelmed, public and private medical providers and hospitals may be asked to selectively submit clinical specimens as directed by the CDC. If laboratory supplies and reagents are exhausted, surveillance for novel virus infection will rely on a presumptive clinical diagnosis made by clinicians.
- Recommend discontinuing individual case reporting and request regular status reports from LHDs on cumulative statewide counts associated with novel virus infection, morbidity, and mortality. Such reports might include the number of:
  - Clinically suspected cases
  - Laboratory confirmed cases
  - Persons hospitalized with a novel virus infection
  - Deaths attributed to novel virus infection
- In collaboration with the CDC and LHDs, and as resources are available, conduct investigations to:
  - Describe unusual clinical syndromes
  - Describe unusual pathologic features associated with fatal cases
  - Determine efficacy of vaccination, if vaccine is available, or antiviral prophylaxis
  - Assess antiviral effectiveness in circulating strains to help refine antiviral recommendations and target high risk groups
  - Assess the effectiveness of non-pharmaceutical containment measures such as school and business closures
- Determine which populations are at greatest risk and, in conjunction with the CDC, refine and revise priority groups for vaccination as vaccine availability increases.
- Utilize the electronic death reporting system to track influenza and pneumonia-related deaths.
- Generate daily reports of statewide influenza activity and make current surveillance data available to all participating agencies as well as the CDC, LHDs, regional epidemiologists, KDPH Public Information Officers, and KYEM.
- As resources permit, and depending on guidance from the CDC, continue to conduct laboratory testing for influenza.
- As resources permit and as indicated by the CDC, characterize the strain of incoming specimens and isolates to detect antigenic drift variants and reassortant

viruses that could limit the efficacy of vaccines produced against the original pandemic strain.

- As resources permit, continue to perform laboratory testing critical to ongoing surveillance.
- Continue situation-specific pandemic influenza epidemiologic investigations and other special clinical studies, as necessary.

#### **B. Laboratory Support for Disease Surveillance**

- Support will remain the same as with routine surveillance. DLS will heighten communication with the DEHP.
- DLS will rely upon the CDC for recommendations in submission of samples, testing protocols and acquisition of reagents.

#### **C. Laboratory Support for Clinicians**

- The DEHP influenza coordinator will provide consultation to the local health department sentinel sites regarding when rapid detection kits should be used. DLS will provide rapid detection kit with instructions for collecting the specimens and performing the test as well as safe handling practices.

#### **D. Biocontainment Procedures**

- PCR may be performed in BSL-2. Viral culture must be performed in BSL-3.

#### **E. Occupational Health Issues for Laboratory Workers**

- If staffing becomes critically low due to illness or time off to care for family members, the DLS surge capacity plans of cross training will go into effect.
- DLS will provide all laboratory technicians education concerning the appropriate PPE, biosafety level techniques and preventive exposure precautions during the processing and testing of influenza as well as symptoms associated with ILI, and seasonal influenza vaccine for lab staff.

See HHS plan for appendix – guidelines for shipping as well as diagnostic assays.

## Appendix 1

### **Influenza Sentinel Surveillance System (ISSS)**

#### **A. Sources of Information for the ISSS**

Influenza like illness (ILI) is reported by sentinel Local Health Department (LHD) sites. All sites surveil absenteeism in a school district, or schools representative of grades K-12, for one day each week, with the exception of when school is not in session. Every site is requested to also surveil a nursing home for ILI. Some LHD sites also surveil health care providers and hospitals.

Sentinel Health Care Provider (HCP) sites report ILI to the Centers for Disease Control and Prevention (CDC), and obtain specimens for laboratory culture confirmation.

Mandatory reporting of culture confirmed cases within one week is required of laboratories.

Long-term care facilities are required by law to report immediately to the LHD, two or more ILI within a one-week period of time.

#### **B. Description of Data Collected**

Throughout the year, LHD sentinel sites send an email, fax, or phone in weekly reports of ILI counts received from medical practices, nursing homes, and hospitals; absenteeism for schools is collected on Tuesdays. Numbers and types of influenza virus isolates from clinical laboratories are maintained in a database and reported to CDC. HCP sentinel sites send information about ILI by age group to the CDC through an automated touch-tone system, fax or phone. The state influenza coordinator has access to the computer data. Laboratory confirmed cases, ILI reports from sentinel LHD sites and HCP sentinel sites are considered in determining the state's activity code for each week. The state's activity code is reported to the CDC. The information is also compared to previous weeks of the current season and to previous influenza seasons.

ILI cases and absentees for six weeks in the fall are used to determine outbreak baseline numbers for LHD sentinel site participants. HCPs and hospital outbreak baseline numbers are three ILI cases. The nursing home outbreak baseline number is two. School absentees for six weeks are added together, divided by six and multiplied by two to obtain an outbreak baseline number for each participating school district. Outbreak baseline numbers are used to compare the levels of ILI. The state influenza surveillance coordinator uses all the information to make a subjective determination regarding the influenza activity rating for the State Epidemiologist's report each week. Activity levels and definitions are:

- **No activity** – Overall clinical activity remains low and there are no lab confirmed cases
- **Sporadic** – Isolated cases of lab confirmed influenza in the state and ILI activity is not increased, or lab confirmed outbreak in a single institution in the state and ILI activity is not increased.
- **Local outbreak** – Increased ILI within a single region and recent (within the past three weeks) laboratory evidence of influenza in that region. ILI activity in other regions is not increased, or two or more institutional outbreaks (ILI or lab confirmed) within a single region and recent lab confirmed influenza in that region. Other regions do not have increased ILI and virus activity is no greater than sporadic in those regions.
- **Regional** – Increased ILI in greater than or equal to two but less than half of the regions and recent lab confirmed influenza in the affected regions, or institutional outbreaks (ILI or lab confirmed) in greater than or equal to two and less than half of the regions and recent lab confirmed influenza in the affected regions.
- **Widespread** – Increased ILI and/or institutional outbreaks (ILI or lab confirmed) in at least half of the regions and recent lab confirmed influenza in the affected regions and recent lab confirmed influenza in the state.
  - Lab confirmed case = case confirmed by rapid diagnostic test, antigen detection, culture, or PCR. (At the beginning of the season, the State Epidemiologist may report “No Activity” until there is evidence of culture confirmed cases in the state regardless of rapid antigen reports.)
  - Institution includes nursing home, hospital, prison, school, etc. ILI activity can be assessed using a variety of data sources including sentinel providers, school/workplace absenteeism, and other syndromic surveillance systems that monitor ILI.
  - Region-Geographical subdivision of a state defined by the Department for Public Health (DPH). In KY, the 15 Area Development Districts (ADDs) are used. The identity of specific isolates from Kentucky and other nearby states, and information on the age of the person tested and date of collection of the isolate, are used to interpret whether outbreaks of ILI in the state actually represent influenza, and if so, what type and whether the strain is thought to be a close match to the content of the currently available vaccine.

### C. Data Publications

Data publications include *Kentucky Epidemiologic Notes and Reports* seasonal summary, weekly influenza laboratory confirmed cases charts on the website: <http://panflu.chfs.ky.gov>, *Yearly Reportable Disease Summary*, and the *Five-year Summary for Reportable Diseases*.

### D. Data Limitations

The system relies on the accuracy of reporting by the sentinel sites.

### E. Uses of Information

The activity information can be used to promote influenza immunization, let clinicians know whether the circulating strain is a match for the current vaccine; and whether it is one which will respond to antiviral chemoprophylaxis and therapy. In addition, laboratory information can be used to prepare for responding to an influenza pandemic. The public can be informed about what influenza strain is circulating, how influenza activity compares with other years, and what populations are affected. The state influenza coordinator sends a weekly activity report to the Cabinet's Communications Office and the CHR Infection Control listserv for release to the media.

**F. System Evaluation**

The system is informally evaluated in May of each year. Summary information is evaluated by the state influenza surveillance coordinator, and the coordinator determines how well the system provided answers to the frequently asked questions during the season. The system has not been formally evaluated.

## Appendix 2

### **GUIDELINES FOR SUBMITTING INFLUENZA VIRUS ISOLATES TO THE WHO COLLABORATING CENTER FOR INFLUENZA, CDC 2005-06 SEASON**

The use of rapid antigen detection methods for influenza is increasing and provides valuable information for clinicians. However, we would like to stress the importance of continuing virus isolation. The antigenic analysis of circulating strains of influenza, which is dependent upon the isolation of influenza virus, is necessary for the successful selection of each year's influenza vaccine strains. We appreciate your contributions in this critical public health effort by submitting influenza isolates for antigenic analysis. Influenza isolates of particular importance for antigenic analysis are listed below.

1. **Pre-season isolates** from persons whose influenza illness appears related to overseas travel and the first isolates of the season. These isolates can provide important information regarding the match between vaccine and circulating strains for the current year and provide information necessary for vaccine formulation for the next year. Imported cases of influenza A that cannot be subtyped may also be indicative of an imported avian influenza human infection.
2. **Isolates collected during the beginning of increased influenza activity** (usually during December and early January) and during peak activity (usually mid-January to early February). Five isolates from each time period are requested.
3. **Late season isolates**, after major outbreak activity is over. These isolates may be the harbingers of new variants that are just beginning to circulate.
4. **Isolates of a type or subtype present as a minor component** (10% or less) of the year's epidemic.
5. **Isolates that cannot be subtyped by HI testing with kit reagents.** Please telephone (404) 639-3591. Isolates of influenza A that cannot be subtyped could be indicative of avian influenza. It is important to contact the state health office and send the specimen or isolate to the CDC Influenza Laboratory.
6. **Isolates from persons receiving an antiviral agent or from their contacts who become ill.** The increased use of antiviral agents for treatment and prophylaxis of influenza has created the potential for the emergence and spread of antiviral resistant viruses.
7. **Isolates from persons who are immunized against influenza**, for example, in nursing homes where residents were immunized with the current vaccine.
8. **Isolates from cases of suspected animal-to-human transmission** of influenza virus. These are needed to monitor the characteristics of the viruses and to examine the potential for spread.

- B. See attachment- Human influenza A ( H5) domestic case screening form and instructions.
- C. See attachment -Reporting suspected avian flu cases and collection guidelines.
- C. Laboratory Algorithm for flu testing and reporting

## Influenza Testing Algorithm

### Tube Culture Influenza Isolation & Identification

#### Specimen Collection

- Step 1 Isolation swabs collection kits are provided by the DLS to sentinel Influenza sites, Health Depts, Hospitals, Health Care Clinics, and Doctor's Offices. These kits contain all the materials and Instructions for collecting and submitting flu samples to the DLS.
- Step 2 The preferred submissions are Nasal or Throat swabs that are collected and shipped overnight in the M4RT transport media provided in the kit.
- Step 3 Prepaid mailing labels are provided with the isolation kits to facilitate their shipment.

#### Day One at the DLS

- Step 1 Specimen Receipt
- Step 2 Log In
- Step 3 Swab Preparation  
Inoculation - Tube Culture
- Step 4 Lines

**Note\* - Any specimen received that meets the case definition or is highly suspected of being a possible novel (example A-H5N1) flu strain is immediately pulled for PCR flu testing to facilitate faster identification of its strain type.**

#### Day Two - Day Nine

##### Daily Tube

##### Readings

- Step 1 The tube lines are read using a light microscope for signs of CPE. (Cytopathic effect)
- Step 2 If positive CPE is observed then the specimen tubes are pulled for Resp IFA testing.
- Step 3 If the Resp IFA shows Pos for Flu A or B then a culture tube of primary Monkey or Canine Kidney is pulled for the Hemagglutination test (HA).
- Step 4 At various days of Incubation (usually 3 to 6 days) primary Monkey or Canine Kidney tubes are pulled for the HA test and performed, regardless of the presence of Positive CPE.
- Step 5 Any specimen testing positive for the HA test is considered tittered for the Hemagglutination Inhibition test (HI) to obtain flu strain typing. A positive HA test is necessary before an HI can be performed.
- Step 6 A HI test is performed on all positive HA specimens and will be identified as a flu strain type (A H3N2, A H1N1, or a B type).

- Step 7 Any specimen testing IFA pos for FLU A or HA positive that is not identified by the HI test is considered an aberrant sample and immediately sent to CDC for strain typing confirmation.
- Step 8 Any specimen deemed aberrant is then tested by the PCR flu test to identify any possible Flu A H5N1 activity.
- Step 9 Samples testing positive and identified by HI and/or PCR are resulted immediately to submitter and epidemiology.
- Step 10 At the end of Nine days of observation any specimen that shows no signs of CPE, has tested Neg by Resp IFA, and is HA negative is resulted as "NO VIRUS ISOLATED".



**Epidemiologic Risk Factors**

CDC Case ID:

<b>5. Travel/Exposures</b>					
<p>A. In the 10 days prior to illness onset, did the patient travel to any of the countries listed in the table below? <span style="float: right;"><input type="checkbox"/> Yes*    <input type="checkbox"/> No**    <input type="checkbox"/> Unknown</span>                      If yes*, please fill in arrival and departure dates for all countries that apply. <span style="float: right;"><b>**if patient did not travel outside U.S., skip to question 6.</b></span></p>					
Country	Arrival Date	Departure Date	Country	Arrival Date	Departure Date
<input type="checkbox"/> Afghanistan			<input type="checkbox"/> Myanmar (Burma)		
<input type="checkbox"/> Bangladesh			<input type="checkbox"/> Nepal		
<input type="checkbox"/> Brunei			<input type="checkbox"/> North Korea		
<input type="checkbox"/> Cambodia			<input type="checkbox"/> Oman		
<input type="checkbox"/> China			<input type="checkbox"/> Pakistan		
<input type="checkbox"/> Hong Kong			<input type="checkbox"/> Papua New Guinea		
<input type="checkbox"/> India			<input type="checkbox"/> Philippines		
<input type="checkbox"/> Indonesia			<input type="checkbox"/> Saudi Arabia		
<input type="checkbox"/> Iran			<input type="checkbox"/> Singapore		
<input type="checkbox"/> Iraq			<input type="checkbox"/> South Korea		
<input type="checkbox"/> Israel			<input type="checkbox"/> Syria		
<input type="checkbox"/> Japan			<input type="checkbox"/> Taiwan		
<input type="checkbox"/> Jordan			<input type="checkbox"/> Thailand		
<input type="checkbox"/> Laos			<input type="checkbox"/> Turkey		
<input type="checkbox"/> Lebanon			<input type="checkbox"/> Viet Nam		
<input type="checkbox"/> Macao			<input type="checkbox"/> Yemen		
<input type="checkbox"/> Malaysia					
<p>For the questions 5B to 5E,  <b>In the 10 days prior to illness onset, while in the countries listed above . . . .</b></p> <p>B. Did the patient come within 1 meter (3 feet) of any live poultry or domesticated birds (e.g. visited a poultry farm, a household raising poultry, or a bird market)? <span style="float: right;"><input type="checkbox"/> Yes*    <input type="checkbox"/> No    <input type="checkbox"/> Unknown</span>                      If Yes*</p> <p>C. Did patient touch any recently butchered poultry? <span style="float: right;"><input type="checkbox"/> Yes    <input type="checkbox"/> No    <input type="checkbox"/> Unknown</span></p> <p>D. Did the patient visit or stay in the same household with anyone with pneumonia or severe flu-like illness? <span style="float: right;"><input type="checkbox"/> Yes    <input type="checkbox"/> No    <input type="checkbox"/> Unknown</span></p> <p>E. Did the patient visit or stay in the same household with a suspected human influenza A(H5) case? <span style="float: right;"><input type="checkbox"/> Yes    <input type="checkbox"/> No    <input type="checkbox"/> Unknown</span></p> <p>F. Did the patient visit or stay in the same household with a known human influenza A(H5) case? <span style="float: right;"><input type="checkbox"/> Yes    <input type="checkbox"/> No    <input type="checkbox"/> Unknown</span></p> <p style="text-align: center;"><i>* SEE Influenza A (H5): Interim U.S. Case Definitions</i></p>					

CDC ID:

6. Exposure for Non Travelers	
For patients whom did not travel outside the U.S., <b>in the 10 days prior to illness onset</b> , did the patient visit or stay in the same household with a traveler returning from one of the countries listed above who developed pneumonia or severe flu-like illness?	<input type="checkbox"/> Yes* <input type="checkbox"/> No <input type="checkbox"/> Unknown
If yes*, was the contact a confirmed or suspected H5 case patient?	<input type="checkbox"/> Yes* <input type="checkbox"/> No <input type="checkbox"/> Unknown
If yes*:    CDC ID: _____    STATE ID: _____	

**Laboratory Evaluation**

7. State and local level influenza test results	
<b>Specimen 1</b>	
<input type="checkbox"/> NP swab <input type="checkbox"/> Bronchoalveolar lavage specimen (BAL) <input type="checkbox"/> NP aspirate <input type="checkbox"/> OP swab <input type="checkbox"/> Other _____	Date Collected: __ __ / __ __ / __ __ __ __ m m    d d    y y y y
Test Type: <input type="checkbox"/> RT-PCR <input type="checkbox"/> Direct fluorescent antibody (DFA) <input type="checkbox"/> Viral Culture <input type="checkbox"/> Rapid Antigen Test*	Result: <input type="checkbox"/> Influenza A <input type="checkbox"/> Influenza B <input type="checkbox"/> Influenza (type unk) <input type="checkbox"/> Negative <input type="checkbox"/> Pending
*Name of Rapid Test: _____	
<b>Specimen 2</b>	
<input type="checkbox"/> NP swab <input type="checkbox"/> Bronchoalveolar lavage specimen (BAL) <input type="checkbox"/> NP aspirate <input type="checkbox"/> OP swab <input type="checkbox"/> Other _____	Date Collected: __ __ / __ __ / __ __ __ __ m m    d d    y y y y
Test Type: <input type="checkbox"/> RT-PCR <input type="checkbox"/> Direct fluorescent antibody (DFA) <input type="checkbox"/> Viral Culture <input type="checkbox"/> Rapid Antigen Test*	Result: <input type="checkbox"/> Influenza A <input type="checkbox"/> Influenza B <input type="checkbox"/> Influenza (type unk) <input type="checkbox"/> Negative <input type="checkbox"/> Pending
*Name of Rapid Test: _____	
<b>Specimen 3</b>	
<input type="checkbox"/> NP swab <input type="checkbox"/> Bronchoalveolar lavage specimen (BAL) <input type="checkbox"/> NP aspirate <input type="checkbox"/> OP swab <input type="checkbox"/> Other _____	Date Collected: __ __ / __ __ / __ __ __ __ m m    d d    y y y y
Test Type: <input type="checkbox"/> RT-PCR <input type="checkbox"/> Direct fluorescent antibody (DFA) <input type="checkbox"/> Viral Culture <input type="checkbox"/> Rapid Antigen Test*	Result: <input type="checkbox"/> Influenza A <input type="checkbox"/> Influenza B <input type="checkbox"/> Influenza (type unk) <input type="checkbox"/> Negative <input type="checkbox"/> Pending
*Name of Rapid Test: _____	





# Influenza A (H5) Domestic Case Screening Form Instructions

## Q1. Reported By

**Date reported to state or local health department:** Date case was first reported to the state or local health department.

**State/local Case ID:** Case number used by local jurisdiction to identify case.

**Last name, First name, State, Affiliation, Email, Phone 1, Phone 2, Fax:** Information on how to contact the state or local official responsible for following case.

## Q2. Patient Information

**HIPPA Note:** Please note that CDC is conducting these activities in its capacity as a public health authority, as defined by the Health Insurance Portability and Accountability Act (HIPAA). Health care providers and health departments **may therefore disclose protected health information to CDC** without individual authorization. The information being requested represents the minimum necessary to carry out the public health purposes of this project pursuant to 45 CFR §164.514(d) of the Privacy Rule, and protected health information will not be disseminated. Nevertheless, individual local and state health department privacy policies may vary, and should be followed accordingly.

**Age at onset:** If patient less than one month old, round age up to one month.

**Race:** Please choose only one race. For multiracial patients indicate race they most closely identify with.

**Ethnicity:** Please answer this question **in addition** to the Race question above.

## Q3. Optional Patient Information

**Last name, First name:** Please see HIPAA note above. The patient's initials should be listed if state or local policies preclude release of the patient's name.

## Q4. Signs and Symptoms – Self-explanatory

## Q5. Travel/Exposure

**Q5A:** The list of affected countries may change. CDC will notify state and local health officials if the list of affected countries changes. In addition, a current list of affected Asian countries can be found at the World Organization for Animal Health website ([http://www.oie.int/download/AVIAN\\_INFLUENZA/A\\_AI-Asia.htm](http://www.oie.int/download/AVIAN_INFLUENZA/A_AI-Asia.htm)).

Transit through an airport (i.e., patient did not leave the airport) within an affected country **does not** count as exposure in that country. If patient **did not** travel to any countries affected by

avian influenza outbreaks within 10 days prior to illness onset, skip to Question 6 on Exposure for Non-Travelers.

**Q5E:** Clinical and epidemiologic criteria for a suspect case in an affected country:

Any person with radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness (regardless of poultry exposure)

**OR**

Any person with **all** of the following:

- 1) documented temperature of  $>100.4^{\circ}\text{F}$  ( $>38^{\circ}\text{C}$ ), **and**;
- 2) cough, sore throat, or shortness of breath; **and**;
- 3) history of contact with
  - a. poultry or domestic birds (e.g., visited a poultry farm, a household raising poultry, or a bird market) **or**
  - b. Anyone hospitalized or died of a flu-like illness.

**Q6. Exposure for Non-Travelers:** See clinical and epidemiologic criteria for influenza A(H5) above

**Q7. State and local level influenza testing section** – Check off type of specimen, date of specimen collection, type of testing and results for tests conducted at the state and/or local level.

**Q8. List Specimens sent to the CDC** – Check type(s) of specimen being sent (i.e, clinical material, extracted RNA, or viral isolate).

List specimen source (i.e., Serum (acute), serum (convalescent), nasopharyngeal (NP) swab or aspirate, bronchoalveolar lavage specimen (BAL), oropharyngeal (OP) swab, tracheal aspirate, or tissue (specify source)), and dates collected and sent.

**Note:** Please list acute and convalescent sera as separate specimens.

**Q9. Case Notes:** Please include in notes section any pertinent information not covered in the questionnaire.

## **CDC Contact Information Section – For CDC use only**

**CDC Case ID:** CDC case ID number will be automatically generated when initiating new data entry form. The number system for cases identified in the United States will start with USH5 and the two-digit year, followed by a dash and the two letter state code for the state where the case was identified and a 4 digit sequential number starting with 0501 (e.g., the first surveillance case identified in 2005 in Alabama would have CDC case ID USH505-AL0501).

**Clinical case:** Indicates the patient meets the influenza A(H5) surveillance clinical criteria (see box below). Include date patient met clinical case definition

**Influenza A positive case:** Indicates the patient meets the influenza A(H5) surveillance criteria (see box below) and has a positive influenza A test at the state or local level. Include date of positive influenza A test.

**Confirmed Case:** Indicates the patient meets the influenza A(H5) surveillance criteria and has a positive influenza A(H5) test confirmed by the CDC Influenza Lab (see box below). Include date of positive influenza A(H5) test.

**Ruled out/Non-case:** Indicates that the patient had a negative PCR or culture for influenza A, had known non-H5 human influenza (i.e., influenza A(H1), influenza A(H3), or influenza B), had an alternative diagnosis other than human influenza, or did not meet influenza A(H5) clinical or epidemiologic criteria for a suspect case. (see box below).

**Date Entered by CDC:** Date data is entered into CDC database

**CDC Contact:** Name of CDC personnel responsible for following case

**Contact Date:** Date case was first reported to the CDC

### Influenza A (H5) Surveillance Criteria

1. Patient is hospitalized and has:
  - a. radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an alternative diagnosis has not been established **and**;
  - b. a history of travel within 10 days of symptom onset to a country with documented H5N1 avian influenza infections in poultry or humans. Ongoing listings of Asian countries affected by avian influenza are available from the World Organization for Animal Health ([http://www.oie.int/download/AVIAN\\_INFLUENZA/A\\_AI-Asia.htm](http://www.oie.int/download/AVIAN_INFLUENZA/A_AI-Asia.htm)).

**OR**

2. Patient is hospitalized or ambulatory and has:
  - a. documented temperature of  $>100.4^{\circ}\text{F}$  ( $>38^{\circ}\text{C}$ ), **and**;
  - b. cough, sore throat, or shortness of breath; **and either**;
  - c. history of contact within 10 days prior to onset of symptoms with:
    - i. poultry or domestic birds (e.g., visited a poultry farm, a household raising poultry, or a bird market) in an affected country **or**
    - ii. a patient with known or suspected influenza A(H5) infection.

**OR**

- d. traveled to an affected country within 10 days prior to onset of symptoms and tests positive for influenza A

### Confirmed influenza A(H5) case

Patient is suspect case of influenza A(H5N1) and is laboratory confirmed by CDC as influenza A(H5) positive by:

- a. PCR, or
- b. viral culture, or
- c. influenza A(H5) specific serology

**Guidelines for reporting domestic suspect and confirmed human cases of avian influenza A(H5) to CDC and the collection and shipping of specimens for influenza A(H5) testing**

*Since February 3, 2004, CDC has issued several Health Alert updates requesting that local and state health departments enhance surveillance for human avian influenza A (H5) illnesses. The following document contains more detailed information on reporting and on the collection, shipping and testing of clinical specimens. A case report form and instructions are also attached.*

In collaboration with state and local health departments, CDC is collecting information on suspect and confirmed human influenza A(H5) cases in the United States. This effort is intended to enhance current influenza surveillance for early identification of patients with influenza A(H5) infection. CDC requests that state and local health departments obtain specimens for influenza virus testing on patients meeting the influenza A (H5) surveillance criteria below.

**Influenza A (H5) Surveillance Criteria**

1. Patient is hospitalized and has:
  - a. radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an alternative diagnosis has not been established **and**;
  - b. a history of travel within 10 days of symptom onset to a country with documented H5N1 avian influenza infections in poultry or humans. Ongoing listings of Asian countries affected by avian influenza are available from the World Organization for Animal Health ([http://www.oie.int/download/AVIAN\\_INFLUENZA/A\\_AI-Asia.htm](http://www.oie.int/download/AVIAN_INFLUENZA/A_AI-Asia.htm)).

**OR**

2. Patient is hospitalized or ambulatory and has:
  - a. documented temperature of >100.4°F (>38°C), **and**;
  - b. cough, sore throat, or shortness of breath; **and either**;
  - c. history of contact within 10 days prior to onset of symptoms with:
    - i. poultry or domestic birds (e.g., visited a poultry farm, a household raising poultry, or a bird market) in an affected country **or**
    - ii. a patient with known or suspected influenza A(H5) infection.

Patients meeting the influenza A (H5) surveillance criteria may be tested at the state/local level for influenza A or influenza A(H5) if laboratory capacity is available. **See Laboratory Testing Procedures section below for precautions on working with clinical specimens that potentially contain influenza A(H5).**

Specimens from persons meeting the influenza A (H5) surveillance criteria should be sent to the CDC if:

1. specific influenza A(H5) testing done at the state /local laboratory is positive (**this should be done only if the laboratory is able to test for influenza A(H5) by PCR or if they have a BSL 3 with enhancements facility for influenza A(H5) viral culture**),

**OR**

2. testing for influenza A is positive by PRC or rapid antigen detection\* and the referring jurisdiction is not equipped to test for influenza A(H5),

**OR**

3. the referring jurisdiction is not equipped to test for influenza A by PCR and is requesting testing at CDC.

State and local health departments **should not** report patients who meet the clinical and epidemiologic criteria but who have an alternative laboratory confirmed diagnosis (e.g. influenza A(H3), influenza A(H1), influenza B, or a non-influenza etiology) or who have tested negative for influenza A by PCR.

\*Because the sensitivity of commercially available rapid diagnostic tests for influenza may not always be optimal, CDC also will accept specimens from persons meeting the above clinical criteria even if they test negative by influenza rapid diagnostic testing if PCR assays are not available at the state laboratory.

A **confirmed human influenza A(H5) case** is a case meeting surveillance criteria above that is laboratory confirmed by CDC as influenza A(H5) positive by:

- a. PCR, or
- b. viral culture, or
- c. influenza A(H5) specific serology

## **HIPAA**

CDC is conducting these activities in its capacity as a public health authority, as defined by the Health Insurance Portability and Accountability Act (HIPAA). Health care providers and health departments **may therefore disclose protected health information to CDC** without individual authorization. The information being requested represents the minimum necessary to carry out the public health purposes of this project pursuant to 45 CFR §164.514(d) of the Privacy Rule, and protected health

information will not be disseminated. Nevertheless, individual local and state health department privacy policies may vary, and should be followed accordingly.

### **Reporting Suspect Cases of Human Influenza A(H5)**

**A. Initial Report:** Prior to submitting a case report form, health department officials should first contact the CDC Director's Emergency Operations Center (DEOC) at 770-488-7100. This number is available 24 hours a day, 7 days a week. DEOC staff will notify a member of the human influenza A(H5) surveillance team who will contact the health department and provide a unique CDC case ID number for each case which meets the surveillance criteria.

### **B. Written Materials**

- 1. Case Report Form:** Following the initial telephone report, health department officials should submit a completed CDC case report form. This form is available through Epi-X, or by contacting CDC DEOC at 770-488-7100.
- 2. Sending case report form to CDC:** Materials should be faxed to CDC at 888-232-1322. Please include the CDC case ID number, contact information, and a cover sheet with the header "ATTN: Influenza A(H5N1) case reporting." Rapid return of information is of high priority; complete as much of the case report form as possible and transmit to CDC within 3 to 5 business days of first contact. The remaining information can be sent as soon as it is available. CDC staff will assist local and state health departments in completing the case report forms as needed.

### **C. Laboratory Procedures, Specimen Collection and Shipment**

- 1. Laboratory precautions for influenza A (H5) testing:** Highly pathogenic avian influenza A(H5N1) is classified as a select agent and **must be** worked with under Biosafety Level (BSL) 3+ laboratory conditions.
  - a. Culture only at BSL 3 with enhancements level facilities.** This includes controlled access double door entry with change room and shower, use of respirators, decontamination of all wastes, and showering out of all personnel. Laboratories working on these viruses must be certified by the U.S. Department of Agriculture. CDC does **not recommend** that virus isolation studies on respiratory specimens from patients who meet the above criteria be conducted unless stringent BSL 3 with enhancements conditions can be met and work is separate from other human influenza A (i.e., H1 or H3) virus work. Therefore, respiratory virus cultures should not be performed in most clinical laboratories and cultures should not be ordered for patients suspected of having influenza A (H5N1) infection.

- b. PCR and rapid antigen detection:** Clinical specimens from suspect influenza A(H5) cases may be tested at the state/local public health laboratory by PCR assays using standard BSL 2 work practices in a Class II biological safety cabinet. In addition, commercial rapid antigen detection testing can be conducted under BSL 2 levels to test for influenza.
- 2.** To assist public health laboratories respiratory illness diagnostic efforts, CDC has developed real-time PCR protocols for a number of respiratory pathogens, including influenza A and B viruses, adenovirus, metapneumovirus, Legionella, *Chlamydia pneumoniae*, and *Mycoplasma pneumoniae*. **These protocols are currently available only to public health laboratories and have been posted at the APHL Members Only (password required) Web site [www.aphl.org/Members\\_Only/index.cfm](http://www.aphl.org/Members_Only/index.cfm),** under SARS. These protocols are not available in all public health laboratories, and physicians should consult with their local public health laboratory when ordering these tests.

### **3. Sample Collection and Shipping instructions**

- a. Respiratory specimens:** Aliquots of extracted RNA (for PCR positives) and/or clinical specimen (i.e., nasopharyngeal and oropharyngeal swabs, nasal washings, tracheal aspirates) should be sent through established channels (e.g., via the state laboratory) or directly to CDC for viral characterization.

Specimens should be frozen at -70° C and shipped on **dry ice** directly to CDC **overnight** to the address in Section 4d.

- b. Serum specimens:** A serum sample (5-10 cc) should be collected in a serum separator tube, centrifuged, and stored locally at -20° F. A convalescent serum sample should be drawn 2-4 weeks later and both acute and convalescent sera should be sent to the CDC for serologic testing.
  - c. 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 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:

1. Central (hilar) lung with segmental bronchi
2. Right and left primary bronchi
3. Trachea (proximal and distal)
4. 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:

1. Fixed, unprocessed tissue in 10% neutral buffered formalin, or
2. Tissue blocks containing formalin-fixed, paraffin-embedded specimens, or
3. Unstained sections cut at 3 microns placed on charged glass slides (10 slides per specimens)

Specimens should be sent at room temperature (**NOT FROZEN**)

Please include a copy of the autopsy report (preliminary or final if available), and a cover letter outlining a brief clinical history and the full name, title, complete mailing address, phone, and fax numbers of the submitter, in the event that CDC pathologists require further information. Referring pathologists may direct specific questions to CDC pathologists.

#### **4. Shipping Instructions:**

- a. Specimens should be submitted to CDC by state and local health departments. The Influenza A(H5) Epi/Surveillance Team should be contacted at 770-488-7100 before sending specimens for influenza A(H5) testing.
- b. When sending clinical specimens, please include the **specimen inventory sheet (appendix A)**, include the assigned **CDC case ID number**, and indicate **“Human Influenza A(H5) surveillance”** on all materials and specimens sent.
- c. Please 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>.

d. Address for respiratory and serum specimens:

Dr. Alexander Klimov, PhD, ScD, Chief  
Strain Surveillance Section  
Influenza Branch, CDC  
c/o DASH  
1600 Clifton Road  
Atlanta, GA 30333  
Phone: 404-639-3387 or 3591, fax: 404-639-2334, email: AKlimov@cdc.gov

Address for autopsy specimens

Dr. Sherif Zaki, MD, PhD  
Infectious Disease Pathology Activity  
Division of Viral and Rickettsial Diseases  
National Center for Infectious Diseases  
Centers for Disease Control and Prevention  
Mailstop G-32, Bldg 1, Rm 2301  
1600 Clifton Road  
Atlanta, GA 30333  
Phone: 404-639-3133  
fax: 404-639-3043  
email: SZaki@cdc.gov

**5. ADDITIONAL INFORMATION**

**Any questions regarding reporting procedures or specimen shipment can be directed to the influenza special investigations team:**

Influenza A(H5N1) Epi/Surveillance Team  
Division of Viral and Rickettsial Diseases  
National Center for Infectious Diseases  
Centers for Disease Control and Prevention  
Mailstop A-32, Bldg 6, Rm 122  
1600 Clifton Road  
Atlanta, GA 30333  
Phone: 770-488-7100, Fax: 888-232-1322  
Email: [eocinfluenza@cdc.gov](mailto:eocinfluenza@cdc.gov)

**PHONE NUMBERS**

Reporting cases and Notification of specimen shipments	770-488-7100
Fax number for case report forms	888-232-1322
Requests for specimen testing	770-488-7100
Dr. Alexander Klimov, Strain Surveillance	404-639-3387
Dr. Sherif Zaki, Infectious Disease Pathology	404-639-3133

**Appendix A**

**CDC CASE ID:**

<b>List specimens sent to the CDC</b>	
Select a SOURCE* from the following list for each specimen: Serum (acute), serum (convalescent), NP swab, NP aspirate, bronchoalveolar lavage specimen (BAL), OP swab, tracheal aspirate, or tissue	
Specimen Type #1: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: _____ Collected : ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y Date Sent: ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y
Specimen Type #2: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: _____ Collected : ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y Date Sent: ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y
Specimen Type #3: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: _____ Collected : ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y Date Sent: ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y
Specimen Type #4: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: _____ Collected : ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y Date Sent: ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y
Specimen Type #5: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: _____ Collected : ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y Date Sent: ___ ___ / ___ ___ / ___ ___ ___ ___ m m d d y y y y
Carrier:	Tracking #:

## Appendix 6

### **Specimen Collection Guidelines** **For Influenza Specimens**

1. Do collect a throat or nasopharyngeal swab.
2. Do use collection kits provided by the Division of Laboratory Services (M4RT media and Dacron swabs)
  - Also acceptable are kits specified for viral transport. Follow guidelines suggested by the manufacturer for storage of media.
  - M4RT media is stored at room temperature until use
3. Once specimen is collected it should be refrigerated.
4. Ship specimen with ice packs and in accordance with your facilities policies (Specimen may be shipped diagnostic).
5. Submit with Viral isolation form 275. If you do not have this form you may call (502) 564-4446 and one will be faxed to you.

#### **THINGS TO AVOID when submitting Influenza specimens:**

DO NOT submit in saline

DO NOT submit using cotton swabs or swabs with wooden shafts

DO NOT submit nasal aspirates

DO NOT submit specimens at room temperature

NOTE: Specimens may be submitted on dry ice but it is not necessary.

## Instructions for Collecting and Packaging Influenza Specimens

### Collection Guidelines

1. 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.
2. Use kits supplied by the Division of Laboratory Services.
  - Kits specified for viral transport are also acceptable. Follow manufacture's guidelines for storage of media.
  - M4RT media supplied by DLS is stored at room temperature until use.
3. Collect a nasopharyngeal swab.
  - a. To obtain a nasopharyngeal swab, insert a swab into the nostril parallel to the palate.
  - b. Leave the swab in place for a few seconds to absorb secretions.
4. Once specimen is collected it should be refrigerated.

### Safety Precautions

<http://www.cdc.gov/flu/professionals/infectioncontrol/healthcarefacilities.htm>

<http://www.cdc.gov/flu/avian/professional/infect-control.htm>

### Seasonal Influenza

Standard Precautions plus Droplet Precautions are recommended for the care of patients infected with human influenza.

### Avian Influenza

#### Standard Precautions

-Pay careful attention to hand hygiene before and after all patient contact or contact with items potentially contaminated with respiratory secretions.

#### Contact Precautions

- Use gloves and gown for all patient contact.
- Use dedicated equipment such as stethoscopes, disposable blood pressure cuffs, disposable thermometers, etc.
- Eye protection (i.e., goggles or face shields)
- Wear when within 3 feet of the patient.

#### Airborne Precautions

- Place the patient in an airborne isolation room (AIR). Such rooms should have monitored negative air pressure in relation to corridor, with 6 to 12 air changes per hour (ACH), and exhaust air directly outside or have recirculated air filtered by a high efficiency particulate air (HEPA) filter. If an AIR is unavailable, contact the health-care facility engineer to assist or use portable HEPA filters (see Environmental Infection Control Guidelines) to augment the number of ACH.
- Use a fit-tested respirator, at least as protective as a National Institute of Occupational Safety and Health (NIOSH)-approved N-95 filtering facepiece (i.e., disposable) respirator, when entering the room.

### Packaging Guidelines



#### Kit Components:

- 2- Freezer Blocks
- 1- 95kPa bag
- 1- Swab Pack
- 1- M4RT Media
- 1- Lab Form 275

Kits can be ordered by calling (502) 564-4446 or  
by using the Requisition for Lab Kits at  
<http://chfs.ky.gov/dph/info/lab>



Break off swab into  
transport media



Place tube inside bag  
with absorbent



Place sample bag on top of frozen  
freezer blocks and replace styrofoam lid.



Place Lab Form 275 on top  
of closed styrofoam box



Close box and place appropriate  
label on top of the box

## Appendix 7

### Laboratory and Surveillance Key Personnel

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## Appendix 9

### **KY Electronic Death Registry Implementation Plan**

In a continuing effort to modernize Kentucky's Office of Vital Statistics (OVS), OVS and the Office of Information Technology (OIT) have partnered to conceive of and implement an overarching automated system called the Kentucky Vital Events Tracking System (KVETS). The system will help effectively and efficiently create, track, and maintain all vital records in the commonwealth. Joined by the Public Health Preparedness Branch, the responsible entities recognize the importance of possessing a statewide mechanism which would quickly and easily integrate vital record registrations, certifications, and health statistics. Such a mechanism would be especially crucial in the event of a surge in deaths which might be caused by an influenza pandemic.

Fortunately, the three groups collaborating on this project have a long history of working together and are all well-placed within the infrastructure of the Kentucky Cabinet for Health and Family Services to continue effective collaboration. OVS and the Public Health Preparedness Branch are strategically located side-by-side under the aegis of the Division of Epidemiology & Health Planning, within the Department for Public Health. OIT, a trusted partner, has been instrumental in assisting in the development of a number of electronic data systems for the division, including the Disease Surveillance Module of the Kentucky Electronic Public Health Records System and a prototype of the K-HELPS system (Kentucky Health Emergency Listing of Professionals for Surge) which registers and credentials medical volunteers for disasters.

As a current grantee of the Public Health Emergency Cooperative Agreement, Kentucky is in an excellent position to fully optimize an award for this demonstration project because: 1) the state's medium size and commonly shared demographics would make a successful project here generalizable to a wide range of other states, 2) electronic mortality reporting is the next logical step of progression in implementing the state's vital events systems plan, 3) the state legislature has already paved the way for the acceptance of electronic signatures and documents, and 4) the groundwork has been laid for input and future cooperation from stakeholders in the process who would ultimately determine the project's success.

Over 4.2 million people live in Kentucky, making the state the 26th most populous in the nation. Seventeen other states and Puerto Rico have similar-sized populations that vary from 2-6 million. In terms of the age group that has the highest death rate, about 12.8 percent of the population is age 65 years and older, which is just slightly higher than the national average. The state experiences nearly 40,000 deaths each year and issues about 230,000 certified copies of death certificates yearly, placing its volume in the mid-range as compared to other states. All deaths are registered and certified in a central vital records office at the state capital, known as the Office of Vital Statistics (OVS). This consolidation of work processes through a single authority lends itself well to maintaining control of processes, which will be required when instituting a new statewide electronic reporting system.

From a geographic perspective, the state contains both urban, industrialized centers (over half of the state's citizens live within the "golden triangle" formed by the three metro areas) and sprawling rural areas that are sparsely populated, creating a spectrum of conditions that could make Kentucky's demonstration project more readily replicable in other states. In addition, the state is uniquely situated in the heartland of the country and borders 7 other states, which provides greater opportunities for shared information and information systems across jurisdictional lines.

Kentucky hopes to take advantage of an award from this grant opportunity by continuing to utilize the latest electronic technology to achieve the next logical progression in our scheme: accurate and timely collection, tracking and registration of deaths. The initial phase of our plan to build a vital events tracking system began with the electronic transference of birth data from birthing hospitals in September 2006. At that time OIT collaborated with OVS to implement a web-based Internet application, named the Kentucky Certificate of Birth, Hearing, Immunization and Lab Data (KY-CHILD), in all 56 birthing hospitals throughout the state. This module is used by birthing facilities to electronically capture and submit a variety of data pertaining to the birth of a newborn. Due to the joint efforts of the Cabinet's technology and vital records teams, the software application received national recognition in June 2007 when it won a coveted 2007 Intergovernmental Solution Award from the American Council for Technology at its annual Management of Change Conference.

Since the development of KY-CHILD, CHFS OIT and OVS teams have not rested on their laurels. In January 2008, they jointly implemented the foundational component of a single integrated web-based application for vital records. Known as the Kentucky Vital Events Tracking System (KVETS), phase one of KVETS sets the stage for the development and implementation of independent but well integrated modules for electronic registration of birth, death, divorce and marriage on a single platform. Carrying out the first phase of KVETS has already modernized OVS's birth registration system even further by providing significant improvements in electronic searches, printing of certificates, amendments and accounting.

Shortly after KVETS was put in place, the Kentucky team worked closely with the National Association of Public Health Statistics and Information Systems (NAPHSIS) to implement the association's Electronic Verification of Vital Events (EVVE) system. This web-based system now allows for inter-jurisdictional data exchanges of Kentucky's birth data, in addition to allowing Kentucky to access birth data from other states that are also connected to EVVE.

Development and execution of these recent web-based applications has allowed Kentucky to form a knowledgeable task force that is adept at developing and implementing modernized web-based applications and databases for OVS. In addition, these efforts have helped establish a robust and scalable hardware infrastructure that is well equipped to accommodate and support additional OVS applications. Thus, in terms of both infrastructure and experience, Kentucky CHFS/OVS is optimally positioned for the development and implementation of the proposed EDRS.

Fortunately, the state legislature has assisted by creating a climate that is favorable to developing and operating an EDRS. During the 2000 legislative session, the Kentucky General Assembly enacted Kentucky Revised Statute (KRS) 369.107 which permits the acceptance of electronic signatures on official documents. Moreover, the 2005 General Assembly again addressed electronic signatures in KRS 369.118 by giving the state's own information technology architects the authority to specify the manner and format in which electronic signatures are to be administered. In summary, then, the legislature's foresight removed any previously existing or potential legal barriers to realizing electronic death registration in the state.

Kentucky's plan is to replace the current paper-based death registration system with a fully functional, secure, Public Health Information Network (PHIN)-compliant Electronic Death Registration System (EDRS). This concept could be adapted by other states. The EDRS will be developed using state-of-the-art web based technology with advanced data validation techniques and real-time data interface capabilities. Realization of a fully functional EDRS will improve the efficiency and effectiveness of the electronic mortality reporting by improving timeliness of receipt of death data by NCHS and others as well as strengthening data quality. Kentucky's vision of an EDRS comprises a web-based solution with two distinct components. These include 1) an Internet application for funeral directors and medical certifiers that allows for electronic collection and transmission of death data to OVS and 2) an Intranet system to be utilized by OVS personnel for electronic processing of death data.

Role-based security will be implemented to allow different user groups comprised of funeral directors and medical certifiers to access the EDRS, in order to perform their unique functions. Using the electronic death reporting module, the state's funeral directors and medical certifiers will be able to directly enter information on a decedent into a web-based Internet application that would contain system-wide edits for improving data completeness and quality. Various electronic capabilities, including e-mail and automatic workflows associated with each user group will be provided for transmission and submission of death related data so that data can be shared and tracked by all parties. The state's approximately 9,300 physicians, 2,100 licensed funeral directors and 425 coroners could access the EDRS module via the use of web services from any home or business computer. Kentucky estimates that the vast majority of funeral directors and certifiers have Internet access in a commonly frequented venue.

Via the web-based EDRS, death data would be instantaneously transmitted to the central office of OVS for processing by OVS personnel, once the data are ready for submission by funeral directors and medical certifiers. OVS personnel could immediately access this data electronically via the EDRS module of the KVETS application within seconds of its submission. The EDRS module would also allow OVS personnel to electronically review and approve death certificates prior to assignment of a State File Number (SFN). An automatic printing process is anticipated for printing of death certificates. In addition, OVS personnel will have the capability to electronically reject erroneous certificates. These rejections will be seamlessly and instantaneously transmitted to the funeral

directors or medical certifiers for electronic corrections and re-submissions of the death certificates via the Internet application.

To this end, the process of networking with and creating buy-in among the primary stakeholders--- funeral directors, medical certifiers and OVS staff-- has already begun. In May 2007, a “Death Registration Stakeholders Workgroup” was created at the behest of state administration officials. The group was charged with bringing together a diverse collection of stakeholders including the Kentucky Funeral Directors Association, the Kentucky Coroners Association, the Kentucky Medical Association, cabinet legal staff, and internal OVS staff, in order to set about “modernizing the death registration process to include electronic records transference and tracking.” Representatives from NAPHSIS and NCHS also attended the first meeting of the group. In addition to supporting the formal workgroup and its subgroups, OVS and OIT personnel have also participated in several stakeholder meetings consisting of funeral directors and medical certifiers in an effort to better understand and document their current business processes. As a result, tangible progress has been made in developing a united approach that is embodied in the current EDRS plan. A foundation has also been laid for future steps, which will include the marketing of EDRS to stakeholders and use by them.

With the capability of electronic submission at the fingertips of the frontline users, transmission of data on cause of death and demographics of death occurrences becomes an invaluable tool in the reporting, classification, and intervention of deadly outbreaks like pandemic influenza. This proposed web-based solution will dramatically improve the timeliness and accuracy of death data reporting in the commonwealth. For death certificates filed electronically, OVS could deem them official within two days, compared to the average of twelve days under the current process/system. Overall, the processing time from death to entry into an electronic file would be reduced from an average of five weeks to less than four days.

Moreover, the time savings in processing would also result in much earlier notification of federal partners about the number and causes of deaths in a pandemic. The quality and standardization of death data for NCHS reporting and disease surveillance would be improved, too--- through the built-in editorial features described above and adherence to PHIN standards. PHIN vocabulary standards for vital records will be incorporated into the EDRS once standards are published by the CDC. To assure that proper data validation rules in accordance with NCHS are implemented within the EDRS, OIT and OVS personnel have been working very closely with NAPHSIS to define validation and edit rules for a Public Health Information Network (PHIN)-compliant EDRS. Among other validation rules, the proposed EDRS will provide real time interfacing capabilities with the Social Security Administration (SSA) via a NAPHSIS application to ensure proper validation of social security numbers. Thankfully Kentucky already has a strong ongoing working relationship with the National Association for Public Health Statistics and Information Systems (NAPHSIS) and will continue to rely on NAPHSIS guidance. Once the State and Territorial Exchange of Vital Events System (STEVE) is deployed nationally, death data could be transmitted from Kentucky’s EDRS to NCHS via that interface during a pandemic.

By achieving all these efficiencies and improving accuracy, OVS would also be infinitely more equipped to handle pandemic death surges with fewer employees and might even be able to redirect resources during a disaster to focus on helping to speed up data tracking and the relationships between funeral directors and medical certifiers. If available, staff time could also be used to smooth the transition to bring a new group of medical certifiers on-board. Though according to Kentucky law, licensed physicians, dentists, chiropractors and coroners can all serve as medical certifiers for completing and signing the death certificate, in practice only physicians and coroners usually perform this function. Anticipating a future pandemic, however, the state's Public Health Preparedness Branch is exploring providing pre-event training on medical certification of death certificates via EDRS to dentists and chiropractors, so that the pool of certifiers could easily be expanded within EDRS in case of a death surge.

Finally, the rapid communication mechanism created by EDRS will allow faster response to specific geographical areas within the state that might be most impacted by a pandemic. The accumulation of the data from this statewide initiative provides an opportunity to decrease the time needed to detect and classify deaths in regional areas, facilitating the initiation of mass fatality plans. Faster and more accurate communication about deaths also could speed reaction and countermeasure support by first responders. Perhaps most importantly, EDRS could further serve as the foundation for restoring pre-event levels in health services and public safety by reducing the time to process decedents' paperwork, identifying areas that are experiencing declines in deaths, and providing data that would direct recovery efforts.

Although the grant award is not expected to cover the maintenance period that will ensue after the EDRS is fully employed, provisions for on-going sustainability of the system have been made as part of Kentucky's approach. Resources that will be saved from scaling back a third-party contract currently required for death entry will be used instead to help maintain the EDRS. Automation of processes brought about by the EDRS would also allow OVS to operate with fewer personnel. Savings from salaries could be used towards on-going maintenance costs.

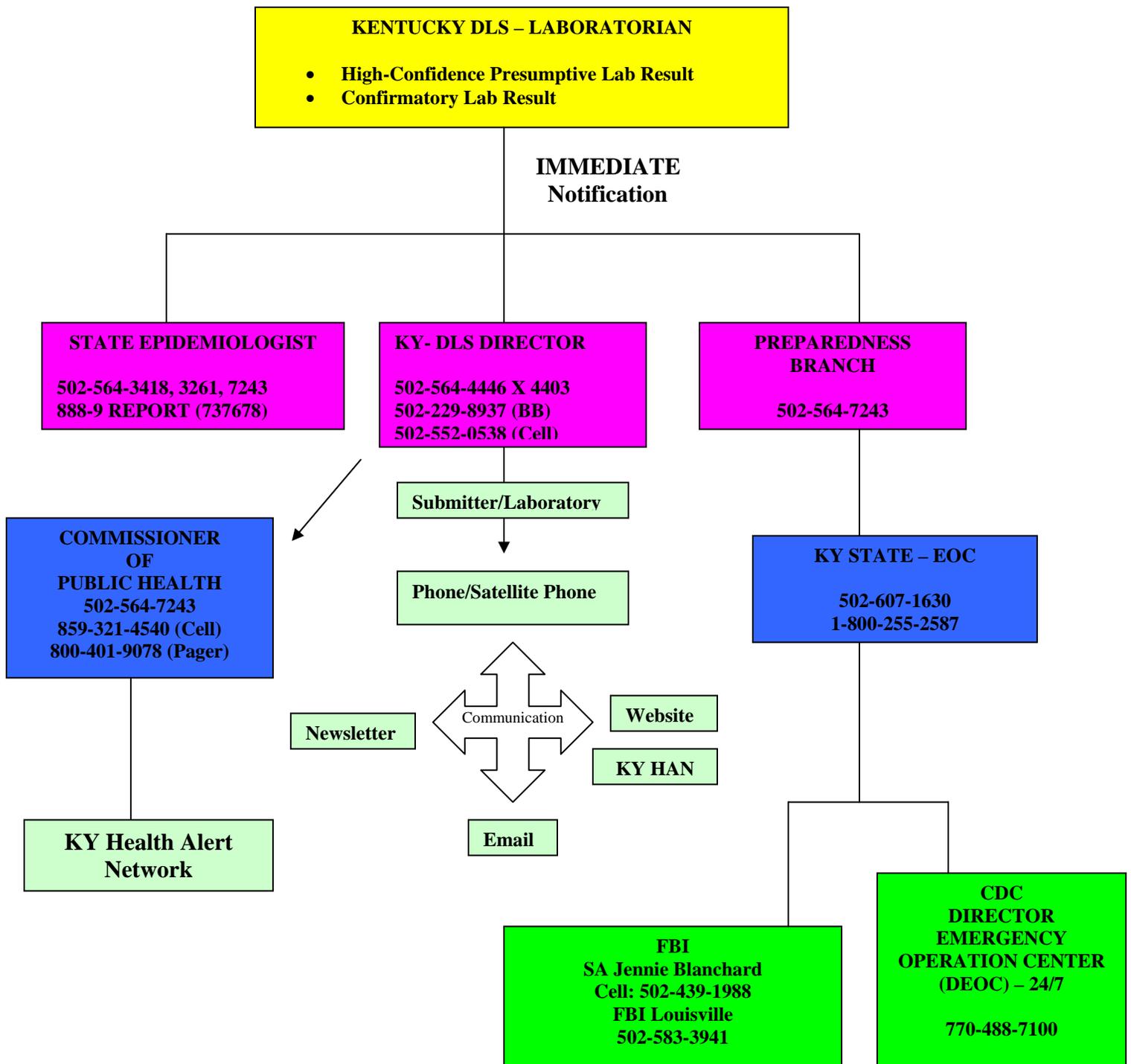
Appendix 10

Laboratory Call-Down Procedure for KY CHFS, DPH, DLS

**NOTIFICATION PLAN FOR POTENTIAL PUBLIC HEALTH INCIDENTS**

The Kentucky DLS has a collaborative partnership with CDC’s Laboratory Response Network (LRN) sharing their strategy to provide a timely response to potential bioterrorism threats or public health emergencies and to provide rapid notification to public health officials of significant laboratory results for biological threat agents. The LRN defines a potential public health threat “as an emergency situation or any other testing of credible suspect material requiring use of LRN algorithms, assays, and reagents.” Below is the Kentucky DLS notification algorithm for Kentucky public health incidents.

**PUBLIC HEALTH INCIDENT RESPONSE – NOTIFICATION ALGORITHM**



**Appendix 11**

**KY Sentinel Laboratories**

NAME		ADDRESS	CITY	PHONE	FAX	CONTACT PERSON	EMAIL ADDRESS
BT 8/1/02	Appalachian Regional Healthcare	103 Medical Center Drive	HAZARD 41701	606-487-7452 Lab-606-487-7461	606-487-7458	Larry Johnson	<a href="mailto:ljohnson@arh.org">ljohnson@arh.org</a> <a href="mailto:mpotter@arh.org">mpotter@arh.org</a>
	Baptist Hospital East	4000 Kresege	LOUISVILLE 40207-4676	502-896-7056	502-897-8051	Karen Bartlett	<a href="mailto:Karen.bartlett@bhsi.com">Karen.bartlett@bhsi.com</a> <a href="mailto:Betty.curry@bhsi.com">Betty.curry@bhsi.com</a>
BT 7/18/02 11/21/02 P	Baptist Hospital Northeast  No longer does micro	1025 New Moody Ln PO BOX 20164	LAGRANGE 40031	502-222-3365	502-222-3401	Judy Lawhorn	<a href="mailto:jlawhorn@bhsi.com">jlawhorn@bhsi.com</a>
BT 4/24/02 5/9/02	Baptist Regional Medical Center	1 Trillium Way	CORBIN 40701	606-523-8534 528-1212 (4503) Leila	606-523-8725	Carolyn Yaden  Leila Cromer	<a href="mailto:cvaden@bhsi.com">cvaden@bhsi.com</a> <a href="mailto:lcromer@bhsi.com">lcromer@bhsi.com</a>
	Blanchfield Community Hospital	650 Joel Drive	Fort Campbell 42223-5349	270-798-8785	270-798-8544	Annie Baker	<a href="mailto:Annie.baker@se.amedd.army.mil">Annie.baker@se.amedd.army.mil</a> <a href="mailto:Chery.watson@se.amedd.army.mil">Chery.watson@se.amedd.army.mil</a>
BT 11/21/02	Bowling Green Med. THE MEDICAL CENTER, CLINICAL LAB	P.O. BOX 90010  250 Park Street	BOWLING GREEN 42101-1760	270-745-1313	270-745-1325	Jean Craig	<a href="mailto:JECRAIG@MCBG.ORG">JECRAIG@MCBG.ORG</a>
BT 7/18/02	Breckinridge Memorial Hospital	1011 Old HWY 60	HARDINBURG 40143	270-756-6541	270-756-6591	Ken Walden	<a href="mailto:kwalden@breckhealth.org">kwalden@breckhealth.org</a> <a href="mailto:dlewis@breckhealth.org">dlewis@breckhealth.org</a>
BT 11/07/02 P	Caldwell Co. Hospital	101 Hospital Dr.	PRINCETON 42445-2301	270-365-0456	270-365-0453	Marlene Thorpe	<a href="mailto:mthorpe@caldwellhosp.org">mthorpe@caldwellhosp.org</a>
BT 7/25/02 8/1/02 P	Caritas Medical Center (St. Mary and Elizabeth)	1850 Bluegrass Ave.	LOUISVILLE 40215	502-361-6526  6496	502-361 6579	Kim Sipes	<a href="mailto:Kim.sipes@jhsnh.org">Kim.sipes@jhsnh.org</a>

**Appendix 11**

**KY Sentinel Laboratories**

<i>NAME</i>		<i>ADDRESS</i>	<i>CITY</i>	<i>PHONE</i>	<i>FAX</i>	<i>CONTACT PERSON</i>	<i>EMAIL ADDRESS</i>
BT 5/8/02 11/14/02 P	Caverna Memorial Hospital	PO BOX 120  1501 South Dixie Hwy	HORSE CAVE 42749	270-786-2191 EXT.67	270-786-5086	James Jolly	<a href="mailto:jamesjolly@scrtc.com">jamesjolly@scrtc.com</a>
BT 5/9/02 P	Central Baptist Hospital	1740 Nicholasville Rd.	LEXINGTON 40503	859-260-5139 859-260-6192	859-260-6930	BJ Correll Cheryl Colliver	<a href="mailto:bcorrell@bhsi.com">bcorrell@bhsi.com</a>
BT 6/10/03	Clark Regional Medical Center	1107 W. Lexington Ave.	WINCHESTER 40391-1169	859-745-3436	859-745-3676	Amy Kinney	
BT 11/7/02 P	Crittenden Health System	PO Box 386 HWY60 South	MARION 42064	270-965-1058	270-965-1088	Shawna Sunderland	<a href="mailto:shawnas@crittenden-health.org">shawnas@crittenden-health.org</a>
BT 4/24/02 11/7/02 P	Cumberland Medical Laboratory	PO Box 3310  (205 Professional Plaza)	SOMERSET 42564-3310	606-678-8800	606-679-5238	Charlotte Leis	<a href="mailto:Cleis1@newwavecomm.net">Cleis1@newwavecomm.net</a>
BT 11/7/02 P	Ephraim McDowell Regional Med. Center	217 S. Third St.	DANVILLE 40422	859-239-2262  859-239-1000 General	859-239-6737	Connie Denny	<a href="mailto:rscott@emrmc.org">rscott@emrmc.org</a> <a href="mailto:codenny@emrmc.org">codenny@emrmc.org</a>
BT 5/09/02 P	Flaget Memorial Hospital	4305 New Shepardsville Rd. Bardstown, KY 40004	BARDSTOWN 40004	502-350-5115	502-350-5116	Mary Ann Schentrup	<a href="mailto:mas@flaget.com">mas@flaget.com</a>
BT 6/03/03 6/10/03	Frankfort Regional Medical Center	299 Kings Daughter Dr.	FRANKFORT 40601	502-226-7585	502-226-7939	Carole Hackett	<a href="mailto:Carole.Hackett@hcahealthcare.com">Carole.Hackett@hcahealthcare.com</a>
BT 7/25/02 8/1/02 P	Georgetown Comm. Hospital	1140 Lexington Rd.	GEORGETOWN 40324	502-868-1280	502-868-1283	Debbie Rodgers	<a href="mailto:Debbie.Rodgers@lifepointhospitals.com">Debbie.Rodgers@lifepointhospitals.com</a>

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BT 5/8/02 11/14/02 P	Hardin Memorial Hospital Main Lab	913 N Dixie Ave.	Elizabethtown 42701	270-706-1582	270-706-1035	Gwen Wilkins	<a href="mailto:gwilkins@hmh.net">gwilkins@hmh.net</a>
BT 4/24/02	Harrison Memorial Hospital	Millersburg Pike	CYNTHIANA 41031	859-235-3681	859-235-3601	Shawna Goble	<a href="mailto:sgoble@hmhosp.org">sgoble@hmhosp.org</a>
BT 8/1/02	Highlands Regional Medical Center	US 23 North PO BOX 668	PRESTONBURG 41653	606-886-8511	606-886-7779	Rachel Crider	<a href="mailto:rcrider@hrmc.org">rcrider@hrmc.org</a>
BT 6/03/03 P	Ireland Army Hospital	851 Ireland Dr.. MCXM-LAB-DP	FORT KNOX 40121	502-624-9380	502-624-9706	Debbie Denton  Mike Young	<a href="mailto:deborah.denton@na.amedd.army.mil">deborah.denton@na.amedd.army.mil</a>  <a href="mailto:Michael.young3@na.amedd.army.mil">Michael.young3@na.amedd.army.mil</a>
	Jackson Purchase Medical Center	1099 Medical Center Circle	Mayfield 42066	270-251-4115	270-251-4118	Bruce Rives Donna Moses	<a href="mailto:Bruce.rives@lpnt.net">Bruce.rives@lpnt.net</a> <a href="mailto:Donna.moses@lpnt.net">Donna.moses@lpnt.net</a>
BT 5/09/02 6/03/03	James B Haggin Memorial Hospital	464 Linden Ave.	HARRODSBURG 40330	859-7345-441	859-733-4844	Kim Russell	<a href="mailto:krussell@hagginhosp.org">krussell@hagginhosp.org</a>
BT 7/18/02 P LRN	Jennie Stuart Medical Center	320 West 18 <sup>th</sup> Street	HOPKINSVILLE 42240	270-887-0113	270-887-0149	Eddie Gross Gina Hester	<a href="mailto:egross@jsmc.org">egross@jsmc.org</a>
BT 4/24/02 P	Jewish Hospital	100 Abraham Flexner Way	LOUISVILLE 40202	502-587-4339 502-587-2878(Lab)	502-587-4865	Tommee Clark	
BT 7/18/02 6/03/03	Kindred Hospital Louisville	1313 St. Anthony Place	LOUISVILLE 40204	502-627-1247	502-627-1687	Michelle Hall	<a href="mailto:michelle_hall@kindredhealthcare.com">michelle_hall@kindredhealthcare.com</a>

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BT 5/9/02 11/21/02 P	King's Daughter Memorial Hospital	2201 Lexington Ave.	ASHLAND 41101	606-408-4604  Dick - 4033	606-408-4738	Bill Kitchen  Dick Edgington	<a href="mailto:Bill.kitchen@kdmc.net">Bill.kitchen@kdmc.net</a>  <a href="mailto:Dick.edgington@kdmc.net">Dick.edgington@kdmc.net</a>
BT 8/01/02 P	Knox Co. Hospital	80 Hospital Drive	BARBOURVILLE 40906	606-546-4175 ext.4093	606-545-5570	Stephanie Mosley	<a href="mailto:smosley@knoxcohospital.com">smosley@knoxcohospital.com</a>
BT 8/01/02	Lake Cumberland Regional Hospital	305 Langdon Street	SOMERSET 42501	606-678-3163	606-678-3516	Danny Stephens	
	Lourdes	1530 Lone Oak Rd.	PADUCAH 42003	270-444-2140	270-4442343	Milissa Haygood	<a href="mailto:mhavgood@lourdes-pad.org">mhavgood@lourdes-pad.org</a>
BT 7/25/02 11/21/02	Manchester Memorial Hospital	201 Marie Langdon Drive	MANCHESTER 40962	606-598-5104 X3140	606-598-1894	Martha Smith	<a href="mailto:martha.smith@ahss.org">martha.smith@ahss.org</a>
BT 5/09/02 11/14/02	Mary Breckinridge Hospital	130 Kate Ireland Drive	HYDEN 41749	606-672-2901 EXT.1153	606-672-3704	Tammy Collett	
BT 6/10/03	Marymount Hospital	East 9 <sup>TH</sup> Street	LONDON 40741	606-877 3781, 3780	606-877-3777	Gale Boggs Vaunene Greene	<a href="mailto:gboggs@marvmount.com">gboggs@marvmount.com</a>
BT 6/03/03 L	Meadowview Regional Medical Center	989 Medical Park Drive	MAYSVILLE 41056-8700	606-759 3158/9	606-759-5211	Elica Barbour  Polly White	<a href="mailto:Elica.Barbour@lpnt.net">Elica.Barbour@lpnt.net</a>  <a href="mailto:Polly.white@lpnt.net">Polly.white@lpnt.net</a>
Book quiz given	Methodist Hospital	1305 N. Elm St.	HENDERSON 42420	270-827-7140	270-827-7404	Jim Butler	<a href="mailto:jbutler@methodisthospital.net">jbutler@methodisthospital.net</a>
	Methodist Hospital Union County	4604 US 60 West	Morganfield 42437	270-389-5165	270-389-5164	Sherri Reneer	<a href="mailto:sreneer@methodisthospital.net">sreneer@methodisthospital.net</a>
BT 11/21/02	Monroe Co. Medical Center	529 Cap Harlan Rd.	TOMPKINSVILL E 42167	270-487-9231- ext.186 Lab 1185	270-487-5707	Vicky Barnette	<a href="mailto:lab@mcmccares.com">lab@mcmccares.com</a>
	Muhlenberg Community Hospital	440 Hopkinsville St.	Greenville 42345	270-338-8366	270-338-8155	Janice Strader	<a href="mailto:mchlab@muhlon.com">mchlab@muhlon.com</a>

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BT 8/01/02	Murray Calloway County Hospital	803 Poplar Street	MURRAY 42071	270-762-1120	270-767-3608	Pam Keller	<a href="mailto:pkeller@murrayhospital.org">pkeller@murrayhospital.org</a>
BT 11/14/02	Norton Healthcare Laboratory	200 East Chestnut St.	LOUISVILLE 40202	502-629-7864 L-7825	502-629-7832	Dr. George Buck Donna Thacker	<a href="mailto:Donna.thacker@nortonhealthcare.org">Donna.thacker@nortonhealthcare.org</a>
BT 4/24/02 5/8/02 P	Ohio Co. Hospital	1211 Main St.	HARTFORD 42347	270-298-5419	270-298-5167	Sara Hall	<a href="mailto:shall@ohiocountyhospital.com">shall@ohiocountyhospital.com</a>
BT 8/1/02	Owensboro Medical Health System	811 E Parrish Ave.  PO Box 20007	OWENSBORO 42303 If using PO Box use 42304-0007	270-688-2558  L-2946	270-688-2938	Rhonda Harris	<a href="mailto:rharris@omhs.org">rharris@omhs.org</a>
BT 11/7/02	Pattie A Clay Regional Med. Center	801 Eastern ByPass	RICHMOND 40475	859-625-3250	859-625-3597	Wendy Alford	<a href="mailto:wendvalford@pattieaclay.org">wendvalford@pattieaclay.org</a>
BT 11/21/02	Paul B. Hall Regional Medical Center	625 James S. Trimble Blvd.	PAINTSVILLE 41240	606-789-3511 EXT.1239	606-788-6425	Scott Souther	<a href="mailto:Scott.Souther@PBHRMC.hmc-corp.com">Scott.Souther@PBHRMC.hmc-corp.com</a>
BT 11/7/02	Pikeville Medical Center	911 South Bypass Road	PIKEVILLE 41501	606-437-3514 ext.3260	606-437-2339	Don Williamson  Nina Reynolds	<a href="mailto:Don.Williamson@pikevillehospital.org">Don.Williamson@pikevillehospital.org</a>  Nina.Reynolds@pikevillehospital.org
BT 11/21/02	Pineville Community Hospital	850 Riverview Ave.	PINEVILLE 40977	606-337-4288	606-337-4289	Patricia Brown	<a href="mailto:pbrownpch@bellsouth.net">pbrownpch@bellsouth.net</a>
BT 6/03/03	Quest Diagnostics	2277 Charleston Dr.	LEXINGTON 40505	800-366-7522 ext.7340	859-293-7406	Randall Cheek	<a href="mailto:Randall.W.Cheek@questdiagnostics.com">Randall.W.Cheek@questdiagnostics.com</a>
BT 11/14/02	Rockcastle Hospital Laboratory	145 Newcomb Ave. PO Box 1310	MT VERNON 40456	606-256-2195	606-256-7711	Ruth Blanton	

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BT 8/1/02 11/21/02 6/10/03 P	Russell Co. Hospital	153 Dowell Rd. PO Box 1610	RUSSELL SPRINGS 42642	270-866-4141- ext.519	270-866-6632	Lisa Johnson	<a href="mailto:lrjohnson@russellcohospital.org">lrjohnson@russellcohospital.org</a>
BT 5/08/02	Samaritan Hospital	310 South Limestone Street	LEXINGTON 40508	859-226-7090	859-226-7093	Vicky Norton	<a href="mailto:Vicky.norton@samaritanhospital.com">Vicky.norton@samaritanhospital.com</a>
BT 8/1/02 P	ST Claire Regional Medical Center	222 Medical Circle Dr.	MOREHEAD 40351	606-783-6721	606-783-6726	Donna Fannin	<a href="mailto:dmfannin@st-claire.org">dmfannin@st-claire.org</a>
BT 5/08/02 P	ST Elizabeth Medical Center South Laboratory	1 Medical Village Drive	EDGEWOOD 41017	859-301-2012	859-301-5560	Terry McSorley	<a href="mailto:tmcsorl@stelizabeth.com">tmcsorl@stelizabeth.com</a>
BT 5/9/02 P	ST Joseph Hospital	ONE St. Joseph Drive	LEXINGTON 40504	859-313-1803	859-313-3057	Jamie Adkisson	<a href="mailto:Jamie_m_adkisson@sjhlex.org">Jamie_m_adkisson@sjhlex.org</a>
BT 6/03/03	Taylor Regional Hospital	1700 Old Lebanon Rd.	CAMPBELLSVIL LE 42718-9662	270-789-5802	270-789-5870	Wallace Feese  Charles Morrison	<a href="mailto:wfeese@tchosp.org">wfeese@tchosp.org</a>
BT 5/9/02	Three Rivers Medical Center	PO Box 769	LOUISA 41230-0769	606-638-1504	606-638-1517	Diane Martin	<a href="mailto:Diane_martin@chs.net">Diane_martin@chs.net</a>
BT 11/07/02 6/10/03	TJ Samson Community Hospital	1301 North Race St.	GLASGOW 42141	270-651-4162 sc-4400 jb-4165	270-651-1747	James Brown  Sondra Cook-Lab Manager	Prefer to fax <a href="mailto:sccook@tjsamson.org">sccook@tjsamson.org</a>
	Trover Foundation Lab	900 Hospital Drive	Madisonville 42431	270-825-5137	270-825-5826	Sheryl Stockton	<a href="mailto:sstockto@trover.org">sstockto@trover.org</a>
BT 7/18/02 7/25/02	University of Kentucky Clinical Micro Lab	800 Rose Street HA638	LEXINGTON 40536	859-323-8950	859-323-5054	Sue Overman  Beth Fountain	<a href="mailto:Soverma@email.uky.edu">Soverma@email.uky.edu</a>

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BT 11/7/02 06/10/03	University of Louisville Hospital Laboratory	530 South Jackson	LOUISVILLE 40202	502-562-3353	502-562-4218	Karen George	<a href="mailto:Kareng@ulh.org">Kareng@ulh.org</a>
BT 11/7/02	VA Medical Center Louisville	800 Zorn Ave.	LOUISVILLE 40206	502-287-5536	502-287-6265	Mark Heckman	<a href="mailto:Mark.heckman@med.va.gov">Mark.heckman@med.va.gov</a>
BT 8/1/02	Wayne Co. Hospital	166 Hospital Street	MONTICELLO 42633-2416	606-340-3223	606-340-3271	Frances Mercer	<a href="mailto:fmercerc@waynehospital.org">fmercerc@waynehospital.org</a>
BT 7/25/02 P	Western Baptist Hospital	2501 Kentucky Ave.	PADUCAH 42003	270-575-2796	270-575-2616	Suzanne Thomas	<a href="mailto:sthamas1@bhsi.com">sthamas1@bhsi.com</a>
BT 5/8/02 P	Westlake Regional Hospital (CLINICAL LAB)	901 Westlake Dr. P.O. Box 1269	COLUMBIA 42728	270-384-4753 EXT.134	270-384-1608	Doris Critz	<a href="mailto:dcritz@duo-county.com">dcritz@duo-county.com</a>

**KENTUCKY PANDEMIC INFLUENZA PREPAREDNESS PLAN  
HEALTHCARE PLANNING SUPPLEMENT II**

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## I. RATIONALE/OVERVIEW

All state and local governments, as well as healthcare facilities, are required to have an emergency response plan that addresses all hazards. However, pandemic influenza is likely to pose unique and long-standing challenges that may not be addressed in current emergency response plans. For example, in a pandemic emergency situation, it is expected that notification and response will be initiated at the national or international level, followed by state and, finally, local levels. Because of these unique challenges, the emergency response plans of hospitals, nursing homes, and other healthcare settings should incorporate a pandemic influenza plan as an appendix to their existing plans or have a separate pandemic influenza plan. It is also recommended that physician practices develop plans to manage the anticipated large numbers of patients seeking care. Considerations include: telephone triage, separate entrances, and segregated seating for patients with ILI (Influenza-Like Illnesses).

In addition, healthcare settings may prepare by developing lists of patients, using the CDC priority groups for vaccination as a guide. Lessons learned from Hurricanes Katrina and Rita demonstrate that special populations are at risk for accessing and utilizing emergency services both in the private and public sectors. Pre-pandemic planning efforts must be made to identify special populations, as well as mechanisms to ensure community delivery of resources exist or are considered.

Much of the healthcare planning necessary for a pandemic influenza response is being met through the cooperative planning efforts of the 14 statewide Kentucky Healthcare Planning Regions . Each region consists of health partners from hospitals, local health departments, EMS, mental health, long-term care facilities and other health-related stakeholders.

The purpose of this plan is to provide guidance to health systems in their response to pandemic influenza. Guidance is given during each phase of a pandemic and is broken down into specific sectors of the healthcare systems' response, including Healthcare Planning Regions, Community Mental Health Centers and other congregate facilities with special populations.

## II. GUIDELINES FOR HEALTHCARE SYSTEMS RESPONSE (Interpandemic and Pandemic Alert Periods)

### A. Healthcare System Response

The Healthcare System Response, utilizing the 14 regions throughout the state, in conjunction with other public and private sector stakeholders as appropriate, will:

1. Update and/or inventory state, regional and local medical supplies.
2. Collaborate with the appropriate agencies outside the healthcare system to inventory and identify statewide resources necessary for a pandemic influenza response.

**Comment [J1]:** Planning Checklist: Test the operational plan for the healthcare sector that address safe and effective 1) healthcare of persons with influenza during a pandemic 2) legal issues(NEED TO ADDRESS) 3) continuity of services for other patients 4) protection of healthcare workforce and 5) medical supply contingency plans.

**Comment [J2]:** Planning Checklist: Test the plan provision for mortuary services during a pandemic.

**Comment [J3]:** Planning Checklist: Test the operational plan for surge capacity of healthcare services workforce, and supplies to meet the needs of the jurisdiction during a pandemic.

**Comment [J4]:** Planning Checklist: Ensure all components of the healthcare delivery network (e.g., hospitals, long-term care, home care, emergency care) are included in the operational plan and that the special needs of vulnerable and hard-to-reach patients are addressed.

3. Ensure that all partners in the healthcare system (i.e., hospitals, health departments, EMS, mental health centers, long-term care facilities and other health related stakeholders) have pandemic influenza plans and protocols in place.
4. Develop and coordinate recommendations on health issues related to pandemic influenza. Multiple stakeholders, including state agencies and regional/local health care systems, meet no less than quarterly to discuss pandemic influenza planning and other response issues through the HEALTHCARE regions, with most meeting on a monthly basis.
5. Review major elements of the health sector and essential non-health sector response plans.
6. Collaborate as needed with infectious disease and influenza experts to develop and revise recommendations on health-related issues.
7. Develop, based on the disease epidemiology, protective action recommendations specific to the disease to be implemented during the pandemic.
8. Estimate the impact of pandemic influenza on essential services.
9. Develop and maintain an inventory of available beds in healthcare facilities, including hospitals, nursing facilities and non-traditional settings that might serve to house sick patients as hospital overflow.
10. Alert local hospitals, health departments, EMS, long-term facilities, local health authorities, schools, community mental health centers, county emergency management coordinators and other community health partners to pandemic potential.
11. Meet at least quarterly to review the existing Pandemic Influenza Plan. The HEALTHCARE regions are responsible for assuring maintenance, updates and annual review of the plan. Healthcare members with responsibility for particular sections of the plan are responsible for coordinating the review of their sections.
12. With input from multiple stakeholders (including local and regional bioterrorism planning groups), the HEALTHCARE regions will ensure that pandemic influenza is included in planned scenarios for exercising and training purposes.
13. Conduct regular tabletop exercises to include partners outside the healthcare system as training for an all hazards/pandemic event according to Homeland Security Exercise and Evaluation Program (HSEEP) standards. Also, participate in other local/regional tabletop, functional or full functional exercises that include a pandemic scenario. An After Action Report (AAR) should be done for every exercise that reviews the strengths and weaknesses in the execution of the plan.
14. Update regional and local authorities, other public and private sector stakeholders, including special populations and the general public, with current information and non-pharmaceutical prevention strategies.

## B. HEALTHCARE Regions

HEALTHCARE Regional Groups with assistance of appropriate healthcare stakeholders will:

1. Coordinate data collection, collect data from appropriate sources, and adjust for data duplication to maintain a regional inventory of:

a. Medical personnel, including but not limited to, currently licensed physicians, physician assistants, registered nurses, licensed practical nurses, medical assistants, and others who may be trained in the event of an emergency (those with previous patient care experience who currently work outside of patient care or retired healthcare personnel). This is done through the K HELPS System. See Appendix 3 of this Supplement.

b. Beds (hospital and long-term care)

c. ICU capacity

d. Ventilators

e. Pharmacies and pharmacists

f. Laboratories

g. PPE (e.g., masks, gloves)

h. Specimen collection and transport materials

i. Contingency medical facilities (within jurisdiction)

j. Mortuary and funeral services

k. Social services, disaster mental health services, and faith-based services

l. Sources of medical supplies (syringes, gloves)

m. Interpreter services

2. Analyze surge capacity in public and private sectors to determine potential needs.

3. Ensure private healthcare systems have pandemic influenza plans and protocols and provide assistance where deficiencies are found. Healthcare agencies should be planning for provision of care to include: hospital surveillance, education and training, triage,

**Comment [J5]:** Planning Checklist: Ensure that plan provides for real-time situational awareness of patient visits, hospital bed and intensive care needs, medical supply needs, and medical staffing during a pandemic.

**Comment [J6]:** Planning Checklist: Determine what constitutes a medical staff emergency and exercise the operational plan to obtain credentials of volunteer healthcare personnel (including in-state, out of state, international, returning retired, and non-medical volunteers) to meet staffing needs during a pandemic.

**Comment [J7]:** Planning Checklist: Maintain a current roster of all active and formerly active healthcare personnel available for emergency healthcare services.

clinical evaluation, admission procedures, facility access, occupational health, use and administration of vaccines and antiviral drugs, surge capacity, security, and mortuary issues.

4. Estimate the impact of pandemic influenza on healthcare services and special populations for providing and reinforcing preventive action recommendations to communities and determining pre-event health-related needs.

5. Identify locations of relative quiet/calm to be used for overflow patient care including those presenting with anxiety, psychosomatic or stress-related/induced symptoms, and strategies for the management of overflow locations (i.e., advance-planning protocols to triage overflow locations).

6. Request hospitals and community service providers, such as police and utilities, to develop and maintain contact lists of essential community services personnel (including work and home communication information) whose absence would pose a serious threat to public safety, critical infrastructure, or would significantly interfere with the ongoing response. The list should also include back-up and replacements personnel. Retired personnel may also be utilized.

### **C. Community Mental Health/Mental Retardation Centers**

Community Mental Health/Mental Retardation Centers will:

1. Review internal emergency response plans and Disaster Mental Health Appendix to the Regional/Local Emergency Management Plan. Review shelter-in-place and evacuation procedures.

2. Update and/or inventory medical supplies.

3. Identify medical staff including back-up personnel with special emphasis on non-traditional volunteers. Identify and maintain lists of essential medical and service staff (including work and home contact information) whose absence would significantly interfere with the response and/or patient care.

4. Estimate the impact of pandemic influenza on service provision.

**D. Congregate facilities** serving special needs populations should follow the same recommendations as section C above.

## **III. GUIDELINES FOR HEALTHCARE SYSTEMS RESPONSE (Pandemic Period)**

### **A. International identification**

1. HEALTHCARE Regional Groups with assistance of appropriate healthcare stakeholder will:

- a. Encourage hospitals and congregate facilities to review and update pandemic influenza plans.
- b. Collaborate with regional and local emergency management coordinators to maintain a high level of awareness and preparedness among emergency responders and healthcare providers to include mental health.
- c. Coordinate notification of appropriate agencies, infection control practitioners, local laboratories, emergency rooms, community health providers, and community health workers within their own jurisdictions.
- d. With federal and state guidance, provide public and private healthcare providers with updated case definitions, protocols, and algorithms to assist with case finding, management, infection control, and surveillance reporting.

**B. National/Kentucky Identification**

1. HEALTHCARE Regional Groups with assistance of appropriate healthcare stakeholders will:

- a. Activate emergency/pandemic influenza response plans
- b. Collaborate with regional and local emergency management coordinators to maintain a high level of awareness and preparedness among emergency responders and healthcare providers to include mental health.
- c. Coordinate notification of appropriate agencies, infection control practitioners, local laboratories, and emergency rooms within their own jurisdictions.
- d. With federal and state guidance, provide public and private healthcare providers with updated case definitions, protocols, and algorithms to assist with case finding, management, infection control, and surveillance reporting.

**IV. GUIDELINES FOR HEALTHCARE SYSTEM RESPONSE  
(Postpandemic Period)**

**A. International Circulation**

1. HEALTHCARE Regional Groups with assistance of appropriate healthcare stakeholders will:

- a. Continue to collaborate with regional and local emergency management coordinators to maintain a high level of awareness and preparedness among emergency responders and healthcare providers to include mental health.

**B. National/Kentucky Circulation**

1. HEALTHCARE Regional Groups with assistance of appropriate healthcare stakeholders will:
  - a. Notify involved agencies of change of status to the Postpandemic Period.
2. Mental Health will:
  - a. Coordinate the assessment of the impact on mental health facilities.
  - b. It is expected that the psychosocial and financial effects of a pandemic will be felt for months if not years, hampering personal, community and agency recovery. It is the expectation that crisis counseling program services will be available for a period of at least one-year post declaration date.

## Appendix 1: Planning Guidance Update July 2008

- *Form community-wide coalitions to include hospitals, urgent care facilities, other ambulatory care facilities, public health, long term care facilities, nursing homes, home health care agencies, community health centers, primary care offices, mental health and substance abuse treatment facilities, EMS, and other first responders to accommodate surge in patients expected from pandemic influenza.*

Since the inception of the Hospital Preparedness Program, the Commonwealth has been divided into regional health and medical emergency planning committees (known in Kentucky as Healthcare Planning Coalitions) to plan for response to health and medical events. Partnerships have grown and evolved over the last few years since 2002. To date, coalitions include: hospitals, public health, long term care facilities, nursing homes, home health providers, community health centers, primary care, mental health, EMS, and other first responders. Other stakeholders mentioned above can be invited at any time to participate in the coalition planning efforts.

- *Assist healthcare facilities in conducting exercises and drills to test health care response issues and build partnerships among health care and public health officials, community leaders, and emergency response workers.*

Through Hospital Preparedness funding, healthcare planning coalitions receive funding each year to conduct community exercises with health and medical response partners. A specific pandemic influenza exercise is currently being planned for each HPC during the FY 2008 funding cycle.

- *Address the medical concerns and needs of at-risk individuals and populations*

There are many facets to Kentucky's approach to vulnerable populations. The Kentucky Outreach and Information Network (KOIN) is a communication tool developed by KDPH to break communication barriers with at-risk individuals. This tool can be utilized to communicate with hard to reach populations. In addition to the KOIN, KDPH and KHA have invested in pictograms to assist in impromptu communications at the healthcare setting.

KDPH is in process of developing special medical needs shelter (SpNS) capacity. KDPH, along with local health departments, are currently identifying roles necessary to staff a special medical needs shelter. In addition, local communities are also using preparedness funding to purchase equipment for use in a SpNS. Kentucky is currently struggling with identifying numbers of individuals that might have special needs during an event. A special needs registry pilot project is currently underway. If successful, this project will continue statewide.

*Assist non-hospital community-based providers for at-risk individuals (e.g. day psychosocial treatment centers, advocacy organizations with recreational programs, and facilities managing congregate living in the local community) in participating in exercises and drills to test at-risk response issues and build partnerships among providers and public health officials, community leaders, and emergency response workers.*

Limited mental health participation has occurred within the state. An exercise is planned for July, 2008 to exercise ESF-8 and the NDMS program. Special needs individuals will be used as patients during this exercise.

- *Develop an interoperable communications infrastructure to facilitate and ensure the timely dissemination and transfer of information between health care and other sectors (such as emergency management, public safety, EMS, service providers for at-risk individuals, etc.).*

Through Hospital Preparedness funding, Kentucky has invested heavily in a satellite radio/phone that links all hospitals, health departments, and regional emergency management agencies together. Additionally, select local EMS providers and local Emergency Management agencies are on the network.

While services providers are not directly connected into the satellite radio/phone program, KDPH does have the ability to communicate to these service providers through the Kentucky Outreach and Information Network (KOIN).

- *Address legal and ethical issues that can affect staffing and patient care (such as credentialing issues and providing care with scarce medical resources).*

Work is being done through the K HELPS program to increase surge capacity issues. Some legal issues have been addressed and clarified. For example, through a partnership with Kentucky Emergency Management, workers compensation benefits can now be extended to K HELPS volunteers. Additionally, professional liability coverage is addressed through the insurance policy for some volunteers such as nurses, paramedics and EMTs.

Legal and ethical issues for patient care regarding antivirals are outlined in the Community Containment Supplement. Kentucky has adopted the federal guidelines on priority groups for antiviral and vaccine distribution.

- *Assist the health care community with planning for provision of care in hospitals to include: hospital surveillance, education and training, triage, clinical evaluation, admission procedures, facility access, occupational health, use and administration of vaccines and antiviral drugs, surge capacity, security, and mortuary issues.*

KDPH has partnered with the University of Louisville to provide training, education and planning assistance to every Healthcare Planning Region in Kentucky on evacuation and natural

death surge issues. The work will result in tabletop exercises done in every region in the state to address these issues. In the Healthcare Planning Supplement, recommendations to healthcare agencies include these areas. A regional pandemic influenza tabletop exercise is being made available to regional planning coalitions.

- *Assist the health care community with planning for provision of care in non-hospital settings to include non-hospital health care facilities (e.g. long term care facilities, dialysis centers, nursing homes, mental health and substance abuse treatment facilities, Federally Qualified Health Centers (FQHCs), etc.), home healthcare networks and/or alternative care sites.*

Long term care facilities and nursing homes are becoming integrated into the healthcare planning structure. Participating facilities are planning for providing healthcare in alternative care locations. In addition, FQHCs and home healthcare providers are members of the HPCs and participate in community planning efforts.

During the FY 2007 HPP grant cycle, hospitals are developing alternate care site location plans and beginning to develop operational plans (per Joint Commission requirement).

KDPH is in process of developing special medical needs shelter (SpNS) capacity. KDPH, along with local health departments, are currently identifying roles necessary to staff a special medical needs shelter. In addition, local communities are also using preparedness funding to purchase equipment for use in a SpNS.

- *Anticipate needs for medical supplies and equipment to treat complications of pandemic influenza and determine how supplies will be maintained.*

Beginning with the FY 2002 HPP grant cycle, and influenced by the HEALTHCARE program emphasis on isolation and quarantine, many hospitals acquired HEPA-based PAPRs and have subsequently developed either additional isolation/quarantine, or temporary isolation/quarantine using portable negative air systems.

Kentucky Department for Public Health (KDPH) and Kentucky Hospital Association (KHA) have partnered to develop several regional stockpiles of biological PPE items. In regionally located warehouses significant quantities of tie-on surgical masks (adult and pediatric style) have been stockpiled. In a secure central warehouse folding N-95 masks (>900,000), liquid hand sanitizer (>70,000), tie-on surgical masks (>12,000,000), and PAPR systems (>180) are currently in storage.

While healthcare facilities and HPC regions have developed limited caches of biological PPE, these are likely to be inadequate to meet the demand during a pandemic. There is, therefore, a need to consider increasing PPE stockpiles with the following items:

- Fluid-resistant gowns (Tyvek or equivalent)
- Nitrile gloves (selected to be less tear-prone; likely to last longer in storage than latex)
- Eye protection (face shields, glasses, etc.).

There is also a need, as an on-going expense, to extend the lease for the central warehouse storage space for the state stockpiled pandemic supplies that have been acquired through previous HPP grant cycles.

In addition to the PPE currently in storage, Kentucky participated in the HHS antiviral subsidy contract. Through this contract the state has purchased 194,592 treatment courses of Tamiflu and 21,632 treatment courses of Relenza. Kentucky entered into a partnership/contract with the Kentucky Pharmacist Association (KPhA) for the long-term secure and environmentally appropriate storage of the states stockpile of antiviral medications.

***Additional considerations for the Department of Veterans Affairs (VA) and the Indian Health Service (IHS)***

- *Are VA and IHS beneficiaries included in the State numbers for PPE, antiviral drugs, vaccine, etc.?*

Kentucky does not have Indian Health Service.

In Kentucky, there are two VA Hospitals in Lexington and Louisville and four nursing homes. The hospitals are actively engaged in the regional planning coalitions. The VA does maintain a small stockpile of PPE and other disaster related materials. Kentucky's veterans are included in the count of the general population (approximately 10% of Kentucky's population) when planning for mass dispensing. (See VA Appendix in Supplement 10: Other Governmental Agencies)

- *Have States encouraged local planners to establish a communication network with local VA and IHS facilities?*

Yes, VAs are an important component to our healthcare planning coalitions. The VA hospitals in Lexington and Louisville are both actively engaged in the regional planning coalitions.

- *Have State planners included State and federal VA partners in their planning process? Yes, the VA is written into ESF-8 operations through use of the NDMS program. Further inclusion should be considered.*

- *Do State planners understand the VA and IHS roles in the National Response Framework?*

(See VA Appendix in Supplement 10: Other Governmental Agencies)

- *Do State planners understand the process for requesting VA and IHS assistance? Below is the contact information for the VA Area Emergency Manager.*

A summary of the ways in which the VA is included in the National Response Framework can be found VA Appendix in Supplement 10: Other Governmental Agencies.

Gerald Cartier  
110 Veteran's Drive  
Lexington, KY 40502  
(859) 281-3811  
Cell: (859) 333-3814

## **Appendix 2: National Hospital Available Beds for Emergencies and Disasters (HAvBED) System (HAvBED) System in Kentucky**

Kentucky utilizes EMResource program from EMSsystem to manage hospital beds status tracking, interfacility messaging, diversion management, and document sharing since FY 2003. The program started in the Louisville metropolitan area as an activity of the Jefferson County Medical Society's EMS Committee, and was then taken statewide as a management system for all regions.

When the HA vBED requirement was added to the HPP program in 2006, EMSsystem was one of the pilot systems used in the national demonstration projects. During the period of time between Hurricanes Katrina and Rita, EMSsystem was used to gather national information for HHS on the status of hospitals, and this information was then shared nationally.

EMSsystem is configured and prepared to gather and transmit HA vBED information to ASPR once the final interface standards are released. During the past four months Kentucky has been conducting regular training and HA vBED tests with its user base to gain familiarity with the HA vBED process. The results are steadily improving, and we should be in a good position to transmit HA vBED data when ASPR is ready to receive.

### **Appendix 3: Kentucky Health Emergency Listing of Professionals for Surge (K HELPS)**

Kentucky will have a functional ESAR-VHP to meet the requirements set forth in the Interim Technical and Policy Guidelines, Standards, and Definitions by August 8, 2008. Kentucky has made great strides in the development of an ESAR-VHP over the previous two years. To date, Kentucky has developed an ESAR-VHP Advisory Committee, renamed ESAR-VHP to Kentucky Health Emergency Listing of Professionals for Surge (K HELPS), purchased the Global Secure Volunteer Mobilizer, completed system design, and established Level III credentialing for a number of healthcare professions. Kentucky is a Phase III ESAR-VHP state therefore no exercises have yet been conducted. However, a statewide exercise is planned for July 2008. It will alert volunteers and test some of the information taught in the Orientation course on volunteer activation.

Unique partnerships have been formed with the Medical Reserve Corps (MRC) program to allow local MRC Unit Leaders access to the K HELPS volunteers in their jurisdiction in order to complete the credentialing, training, administration of ID badges and final approval for volunteers. In addition, Kentucky Community Crisis Response Board also has access for credentialing, training, and administration of ID badges for mental health professionals. ID badges have been developed to meet FIPS 201 guidelines.

ESAR VHP Program Manager has met with HPP Regional Leadership to discuss utilization of volunteers in hospitals for surge capability. Local MRC Coordinators (K HELPS local leads) have been encouraged to work closely with their Healthcare Planning Coalition and local hospitals so regions may utilize both K HELPS and MRC as a resource for surge capacity. A partnership with the VA Hospital has also been established. The online registry now contains a question to determine if the volunteer is a current, past, or retired employee of the VA Hospital. VA would like to develop teams of these individuals due to their specialized training.

A training matrix has been developed to include the minimal amount of training necessary to approve a volunteer. The training plan is based on the National Competency Matrix developed by the Medical Reserve Corps Program Office. Five (5) training courses are complete to date and available on line via the Kentucky TRAIN system. Completion of IS 700 National Incident Management System (NIMS) and an orientation course are both mandatory in order to meet NIMS compliance. Continuing education credit for the trainings has been established both for online trainings and trainings offered face to face with volunteers by local MRC Unit Leaders.

A marketing plan was done in 2007 to include: a letter mailed from the Commissioner of Public Health to all physicians and nurses in the state encouraging their participation; a radio public service announcement (PSA) campaign that ran two (2) weeks in September 2007 and had the potential to reach 75% of adults in most areas of the state; promotional items including magnets and lanyards for volunteers; brochures, flyers, posters; the creation of a logo specifically for K HELPS; and a display board for use at the State Fair. The 2008 marketing plan includes additional direct mails to other professions required by ESAR-VHP as well as the development of local and regional marketing tools.

Legislative and administrative issues were initially addressed in 2007. Kentucky House Bill 287 became law in early 2007. This bill gives legitimacy to the program and makes the CHFS responsible for health volunteers in the state. A partnership has been formed with Kentucky Emergency Management to provide Workers Compensation benefits to volunteers

registered in K HELPS. However, professional liability coverage continues to be a problem for the state.

Kentucky has developed a MRC Unit Leader Guide that explains many components of how MRC and K HELPS work together. Additionally, a template for local MRC Unit Leaders to develop a volunteer handbook has been established and was presented to Unit Leaders in December 2007. One of the MRC Units in the state has offered to help develop a K HELPS/MRC annex to the local EOP.

Future initiatives are underway at this time. A goal of 2,000 registered volunteers was set and was reached long before the August 2008 date projected. The K HELPS administrator is exploring the viability of hosting the state's special needs registry on the Volunteer Mobilizer system, thus further integrating ESAR-VHP, MRC, and the special needs community. Additionally, the system might be used by CERT programs in the future for database management.

#### **Appendix 4: Non Hospital/Alternate Care Site**

During FY 2008 each of the 14 HPP Regional Planning Coalitions will be tasked with evaluating and identifying potential facilities for special needs shelters. It is acknowledged that the special needs shelter may be co-located with an American Red Cross Shelter or a general shelter run by another organization. These facilities will be listed in the Regional HPP Plan and in the Emergency Resource Inventory Listing (ERIL) of the county emergency operations plan.

During FY 2007, KDPH in partnership with HPC Region 3 developed the following ACS planning tools for rural areas:

- Site Selection Matrix
- Staffing Algorithm
- Equipment Listing
- Just in Time and Preplanned Trainings for volunteers
- Medical Surge Tabletop Exercise

Many planning needs still exist in the Alternate Care Site sub-capability. An Alternate Care Site Selection matrix should be distributed to each of the 14 HPC regions. Each region, based upon the matrix, needs to identify ACS facilities for hospitals and other healthcare facilities. Each of the identified sites need to be cross referenced to ensure no overlap in planning assumption and each list needs to be incorporated into the local emergency management Emergency Operations Plan (EOP). In addition, KDPH should develop guidance for the Federal Medical Stations that the Strategic National Stockpile holds for deployment. Each region needs to identify possible locations for reception of the FMS.

# KENTUCKY PANDEMIC INFLUENZA PREPAREDNESS PLAN INFECTION CONTROL SUPPLEMENT III

*(This supplement is primarily based on the HHS Infection Control Supplement, but has been reviewed and accepted by infection control providers in the State of Kentucky.)*

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## **I. 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 possible near-range exposure to aerosols (airborne transmission)—the relative clinical importance of each of these modes of transmission is not known.

Information contained in the Infection Control Supplement is based on the known science at the time this supplement was last updated (September 2006).

## **II. OVERVIEW**

The Infection Control Supplement provides guidance to healthcare and public health partners on basic principles of infection control for limiting the spread of pandemic influenza. These principles (summarized in Box 1, page 19) are common to the prevention of other infectious agents spread by respiratory droplets. The Infection Control Supplement also includes guidance on the selection and use of personal protective equipment (PPE); hand hygiene and safe work practices; cleaning and disinfection of environmental surfaces; handling of laboratory specimens; and post-mortem care. The guidance also covers infection control practices related to the management of infectious patients, the protection of persons at high-risk for severe influenza or its complications, and issues concerning occupational health.

The Infection Control Supplement also provides guidance on how to adapt infection control practices in specific healthcare settings, including hospitals, nursing homes and other long-term care facilities, pre-hospital care (emergency medical services [EMS]), medical offices and other ambulatory care settings, and during the provision of professional home healthcare services. The section on hospital care covers detection of entering patients who may be infected with pandemic influenza; implementation of control measures to limit virus dissemination from respiratory secretions of infected individuals; hospitalization of pandemic influenza patients; and detection and control of nosocomial transmission.

In addition, The Infection Control Supplement includes guidance on infection control procedures for pandemic influenza patients in the home or in alternative care sites that may be established if local hospital capacity is overwhelmed by a pandemic. Finally, it includes recommendations on infection control in schools, workplaces, and community settings.

The Infection Control Supplement does not address the use of vaccines and antivirals in the control of influenza transmission in healthcare settings and the community. These issues are addressed in other supplements of the plan.

## **III. RECOMMENDATIONS FOR INFECTION CONTROL IN HEALTHCARE SETTINGS**

*The recommendations for infection control described below are generally applicable throughout the different pandemic phases. In some cases, as indicated, recommendations may be modified as the situation progresses from limited cases to widespread community illness.*

## **A. 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, outpatient facilities, residential care facilities, and homes). Details of how these principles may be applied in each healthcare setting follow.

### ***Limit contact between infected and non-infected persons***<sup>1</sup>

- 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 mask<sup>2</sup> for close contact with infectious patients.
- Consider using contact and airborne precautions, including the use of N95 respirators, when appropriate (e.g., during aerosol generating procedures such as intubation and bronchoscopy).
- Wear gloves for all contact.
- Wear gowns when physical contact with patient and/or respiratory secretions or stool can be anticipated.
- Perform hand hygiene after contact with infectious patients and after removal of gloves and other PPE such as gowns, masks, or face shields.

### ***Contain infectious respiratory secretions:***

- Instruct persons who have “flu-like” symptoms (see below) to use respiratory hygiene/cough etiquette (See Box 2, page 21).
- Promote use of masks<sup>3</sup> 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).

**Symptoms of influenza** include sudden onset of fever, chills, headache, diffuse myalgias, prostration, sore throat, and non-productive 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

<sup>1</sup> During the early stages of a pandemic, laboratory-confirmation of influenza infection is recommended when possible.

<sup>2</sup> 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.

<sup>3</sup> Coughing persons may wear either a surgical or procedure mask. However, only procedure masks come in both adult and pediatric sizes.

## **B. Management of infectious patients**

### **1. 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 etiquette.

The elements of respiratory hygiene/cough etiquette include:

- 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.
- Control measures for ill persons (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; teaching that it is important to cough into sleeve instead of hands).
- Hand hygiene after contact with respiratory secretions.
- Spatial separation, ideally at least 3 feet, of persons with respiratory infections from other persons in common waiting areas when possible.

### **2. Droplet precautions and patient placement**

Patients with known or suspected pandemic influenza should be placed on droplet precautions for a minimum of 5 days from the onset of symptoms. Because children and immunocompromised patients may shed virus for longer periods, they may be placed on droplet precautions for the duration of their illness. Healthcare personnel should wear appropriate PPE to include eye protection. The placement of patients will vary depending on the healthcare setting

(see setting-specific guidance). If the pandemic virus is associated with diarrhea, contact precautions (i.e., gowns and gloves for all patient contact) should be added. CDC will update these recommendations if changes occur in the anticipated pattern of transmission ([www.cdc.gov/flu](http://www.cdc.gov/flu)).

## **C. 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 (Box 1) 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.

### **1. Personal protective equipment**

#### **a) 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 (Box 1). 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 [http://www.cdc.gov/ncidod/dhqp/gl\\_isolation.html](http://www.cdc.gov/ncidod/dhqp/gl_isolation.html).

##### **Masks (surgical or procedure)**

- Wear a mask when entering a patient's room. A mask should be worn once and then discarded. Other PPE (e.g., gloves, gown) must be removed between patients and hand hygiene immediately 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, stool 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 clothing 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. 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**

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 or can be reasonably anticipated, 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>.

### **b) 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 consider use of higher level of respiratory protection. 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.

### c) 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 removal of PPE is also important. (See <http://www.cdc.gov/ncidod/dhqp/ppe.html>).
- Contaminating environmental surfaces that are not directly related to patient care (e.g., door knobs, light switches).

## 2. Hand hygiene

Hand hygiene is the single most important practice to reduce the transmission of infectious agents in healthcare settings and is an essential element of standard precautions. The term “hand hygiene” includes both handwashing with soap (either non-antimicrobial or antimicrobial) and water or 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 soap (either non-antimicrobial or antimicrobial) 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/>.

### **3. Disposal of solid waste**

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

- Contain and dispose of contaminated regulated medical waste in accordance with facility-specific procedures and/or local or state regulations for handling and disposal of regulated 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.

### **4. Linen and laundry**

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

- 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 ([http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Enviro\\_guide\\_03.pdf](http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Enviro_guide_03.pdf)).

### **5. 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 ([http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Enviro\\_guide\\_03.pdf](http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Enviro_guide_03.pdf)).
- 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. Perform hand hygiene after removal of gloves.

## 6. 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. Perform hand hygiene after removal of gloves.
- 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.

## 7. 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.

### a) Cleaning and disinfection of patient-occupied rooms

(See [http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Enviro\\_guide\\_03.pdf](http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/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. Perform hand hygiene after removal of gloves.
- 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 ([http://www.cdc.gov/ncidod/dhqp/gl\\_isolation.html](http://www.cdc.gov/ncidod/dhqp/gl_isolation.html)).

### b) 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.

## **8. Postmortem care**

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

## **9. Laboratory specimens and practices**

Follow standard facility and laboratory practices for the collection, handling, and processing of laboratory specimens. (See Laboratory and Surveillance Supplement I)

## **D. 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.
- Healthcare personnel who have recovered from pandemic influenza 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.

## **E. 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, and postpone nonurgent medical care).

## **F. Healthcare setting-specific guidance**

All healthcare facilities should follow the infection control guidance above. The following guidance is intended to address setting-specific infection control issues that should also be considered.

## 1. Hospitals

### a) Detection of persons entering the facility who may have pandemic influenza

- Post visual alerts (in appropriate languages) at the entrance to hospital outpatient facilities (e.g., emergency departments, outpatient clinics) instructing persons with respiratory symptoms (e.g., patients, persons who accompany them) to:
  - Inform reception and healthcare personnel when they first register for care, and
  - Practice respiratory hygiene/cough etiquette. Sample visual alerts are available at <http://www.cdc.gov/germstopper/materials.htm> and <http://www.cdc.gov/flu/protect/covercough.htm>
- Triage patients calling for medical appointments for influenza symptoms:
  - Discourage unnecessary visits to medical facilities.
  - Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.

As the scope of the pandemic escalates locally, consider setting up a separate triage area for persons presenting with symptoms of respiratory infection. Because not every patient presenting with symptoms will have pandemic influenza, infection control measures will be important in preventing further spread.

- During the peak of a pandemic, emergency departments and outpatient offices may be overwhelmed with patients seeking care. A “triage officer” may be useful for managing patient flow, including deferral of patients who do not require emergency care.
- Designate separate waiting areas for patients with influenza-like symptoms. If this is not feasible, the waiting area should be set up to enable patients with respiratory symptoms to sit as far away as possible (at least 3 feet) from other patients.

### b) Control measures to limit dissemination of influenza virus from respiratory secretions of ill persons

- Post signs that promote respiratory hygiene/cough etiquette in common areas (e.g., elevators, waiting areas, cafeterias, lavatories) where they can serve as reminders to all persons in the healthcare facility. Signs should instruct ill persons 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. Samples of visual alerts are available at: <http://www.cdc.gov/flu/protect/covercough.htm>.
- Facilitate adherence to respiratory hygiene/cough etiquette by ensuring the availability of materials in waiting areas for patients and visitors.
  - Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used tissue disposal.
  - Provide conveniently located dispensers of alcohol-based hand rub.
  - Provide soap and disposable towels for handwashing where sinks are available.
- Promote the use of masks and spatial separation by persons with symptoms of influenza.
  - Offer and encourage the use of either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties or elastic) by symptomatic persons to limit dispersal

- of respiratory droplets.
- Encourage coughing persons to sit as far away as possible (at least 3 feet) from other persons in common waiting areas.

### **c) Hospitalization of pandemic influenza patients**

#### **Patient placement**

- Limit admission of influenza patients to those with severe complications of influenza who cannot be cared for outside the hospital setting.
  - Admit patients to either a single-patient room or an area designated for cohorting of patients with influenza.
- Cohorting
  - Designated units or areas of a facility should be used for cohorting patients with pandemic influenza.<sup>6</sup> During a pandemic, other respiratory viruses (e.g., non-pandemic influenza, respiratory syncytial virus, parainfluenza virus) may be circulating concurrently in a community. Therefore, to prevent cross-transmission of respiratory viruses, whenever possible assign only patients with confirmed pandemic influenza to the same room or same cohort unit. At the height of a pandemic, laboratory testing to confirm pandemic influenza is likely to be limited, in which case cohorting should be based on having symptoms consistent with pandemic influenza.
  - Personnel (clinical and non-clinical) assigned to cohorted patient care units for pandemic influenza patients should not “float” or otherwise be assigned to other patient care areas. The number of personnel entering the cohorted area should be limited to those necessary for patient care and support.
  - Personnel assigned to cohorted patient care units should be aware that patients with pandemic influenza may be concurrently infected or colonized with other pathogenic organisms (e.g., *Staphylococcus aureus*, *Clostridium difficile*) and should adhere to infection control practices (e.g., hand hygiene, changing gloves between patient contact) used routinely, and as part of standard precautions, to prevent nosocomial transmission.
  - Because of the high patient volume anticipated during a pandemic, cohorting should be implemented early in the course of a local outbreak.

#### **Patient transport**

- Limit patient movement and transport outside the isolation area to medically necessary purposes.
- Consider having portable x-ray equipment available in areas designated for cohorting influenza patients.
- If transport or movement is necessary, ensure that the patient wears a surgical or procedure mask. If a mask cannot be tolerated (e.g., due to the patient’s age or deteriorating respiratory status), apply the most practical measures to contain respiratory secretions. Patients should perform hand hygiene before leaving the room.

#### **Visitors**

- Screen visitors for signs and symptoms of influenza before entry into the facility and exclude persons who are symptomatic.
- Family members who accompany patients with influenza-like illness to the hospital are assumed to have been exposed to influenza and should wear masks.
- Limit visitors to persons who are necessary for the patient's emotional well-being and care.
- Instruct visitors to wear surgical or procedure masks while in the patient's room.
- Instruct visitors on hand-hygiene practices.

#### **Pediatrics**

- Place pediatric patients in droplet precautions for the duration of illness
- Consider gowns for healthcare workers caring for infants in their arms. Aprons would not provide sufficient protection

#### **d) Control of nosocomial pandemic influenza transmission**

- Once patients with pandemic influenza are admitted to the hospital, nosocomial surveillance should be heightened for evidence of transmission to other patients and healthcare personnel. (Once pandemic influenza is firmly established in a community this may not be feasible or necessary.)
- If limited nosocomial transmission is detected (e.g., has occurred on one or two patient care units), appropriate control measures should be implemented. These may include:
  - Cohorting of patients and staff on affected units
  - Restriction of new admissions (except for other pandemic influenza patients) to the affected unit(s)
  - Restriction of visitors to the affected unit(s) to those who are essential for patient care and support
- If widespread nosocomial transmission occurs, controls may need to be implemented hospital wide and might include:
  - Restricting all nonessential persons
  - Stopping admissions not related to pandemic influenza and stopping elective surgeries

<sup>6</sup> During the early stages of a pandemic, laboratory-confirmation of influenza infection is recommended when possible before cohorting patients.

## **2. Nursing homes and other residential facilities**

Residents of nursing homes and other residential facilities will be at particular risk for transmission of pandemic influenza and disease complications. Pandemic influenza can be introduced by facility personnel and visitors. Once a pandemic influenza virus enters such facilities, controlling its spread is problematic. Therefore, as soon as pandemic influenza has been detected in the region, nursing homes and other residential facilities should implement aggressive measures to prevent introduction of the virus.

### **a) Prevention or delay of pandemic influenza virus entry into the facility**

Control of visitors

- Post visual alerts (in appropriate languages) at the entrance to the facility restricting entry by persons who have been exposed to or have symptoms of pandemic influenza.
- Enforce visitor restrictions by assigning personnel to verbally and visually screen visitors for respiratory symptoms at points of entry to the facility.
- Provide a telephone number where persons can call for information on measures used to prevent the introduction of pandemic influenza.

#### Control of personnel

- Implement a system to screen all personnel for influenza-like symptoms before they come on duty.
- Symptomatic personnel should be sent home until they are physically able to return to duty.

### **b) Monitoring patients for pandemic influenza and instituting appropriate control measures**

Despite aggressive efforts to prevent the introduction of pandemic influenza virus, persons in the early stages of pandemic influenza could introduce it to the facility. Residents returning from a hospital stay, outpatient visit, or family visit could also introduce the virus. Early detection of the presence of pandemic influenza in a facility is critical for ensuring timely implementation of infection control measures.

- Early in the progress of a pandemic in the region, increase resident surveillance for influenza-like symptoms. Notify state or local health department officials if a case(s) is suspected.
- If symptoms of pandemic influenza are apparent, implement droplet precautions for the resident and roommates, pending confirmation of pandemic influenza virus infection. **Patients and roommates should not be separated or moved out of their rooms unless medically necessary.** Once a patient has been diagnosed with pandemic influenza, roommates should be treated as close contacts.
- Cohort residents and staff on units with known or suspected cases of pandemic influenza.
- Limit movement within the facility (e.g., temporarily close the dining room and serve meals on nursing units, cancel social and recreational activities).

### **3. Prehospital care (emergency medical services)**

Patients with severe pandemic influenza or disease complications are likely to require emergency transport to the hospital. The following information is designed to protect EMS personnel during transport.

- Screen patients requiring emergency transport for symptoms of influenza.
- Follow standard and droplet precautions when transporting symptomatic patients.
- Consider routine use of surgical or procedure masks for all patient transport when pandemic influenza is in the community.
- If possible, place a procedure or surgical mask on the patient to contain droplets expelled during coughing. If this is not possible (i.e., would further compromise respiratory status, difficult for the patient to wear), have the patient cover the

mouth/nose with tissue when coughing, or use the most practical alternative to contain respiratory secretions.

- Oxygen delivery with a non-rebreather face mask can be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation bag-valve mask.
- Unless medically necessary to support life, aerosol-generating procedures (e.g., mechanical ventilation) should be avoided during prehospital care.
- Optimize the vehicle's ventilation to increase the volume of air exchange during transport. When possible, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area.
- Notify the receiving facility that a patient with possible pandemic influenza is being transported.
- Follow standard operating procedures for routine cleaning of the emergency vehicle and reusable patient care equipment.

#### **4. Home healthcare services**

Home healthcare includes health and rehabilitative services performed in the home by providers including home health agencies, hospices, durable medical equipment providers, home infusion therapy services, and personal care and support services staff. The scope of services ranges from assistance with activities of daily living and physical and occupational therapy to wound care, infusion therapy, and chronic ambulatory peritoneal dialysis (CAPD). Communication between home healthcare providers and patients or their family members is essential for ensuring that these personnel are appropriately protected.

When pandemic influenza is in the community, home health agencies should consider contacting patients before the home visit to determine whether persons in the household have an influenza-like illness.

- If patients with pandemic influenza are in the home, consider:
  - Postponing nonessential services
  - Assigning providers who are not at increased risk for complications of pandemic influenza to care for these patients
  - Home healthcare providers who enter homes where there is a person with an influenza-like illness should follow the recommendations for standard and droplet precautions described above. Professional judgment should be used in determining whether to don a surgical or procedure mask upon entry into the home or only for patient interactions. Factors to consider include the possibility that others in the household may be infectious and the extent to which the patient is ambulating within the home.

#### **5. Outpatient medical offices**

Patients with nonemergency symptoms of an influenza-like illness may seek care from their medical provider. Implementation of infection control measures when these patients present for care will help prevent exposure among other patients and clinical and nonclinical office staff.

##### **a) Detection of patients with possible pandemic influenza**

- Post visual alerts (in appropriate languages) at the entrance to outpatient offices instructing persons with respiratory symptoms (e.g., patients, persons who accompany them) to:
  - Inform reception and healthcare personnel when they first register for care
  - Practice respiratory hygiene/cough etiquette (see [www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm](http://www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm)) Sample visual alerts may be found on CDC's SARS Web site: <http://www.cdc.gov/flu/protect/covercough.htm>
- Triage patients calling for medical appointments for influenza symptoms:
  - Discourage unnecessary visits to medical facilities.
  - Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.

#### **b) Control measures for ill persons**

- Post signs that promote cough etiquette in common areas (e.g., elevators, waiting areas, cafeterias, lavatories) where they can serve as reminders to all persons in the healthcare facility. Signs should instruct persons 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.
- Facilitate adherence to respiratory hygiene/cough etiquette. Ensure the availability of materials in waiting areas for patients and visitors.
  - Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used tissue disposal.
  - Provide conveniently located dispensers of alcohol-based hand rub.
  - Provide soap and disposable towels for hand washing where sinks are available.
- Promote the use of procedure or surgical masks and spatial separation by persons with symptoms of influenza.
  - Offer and encourage the use of either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties or elastic) by symptomatic persons to limit dispersal of respiratory droplets.
  - Encourage coughing persons to sit at least 3 feet away from other persons in common waiting areas.

#### **c) Patient placement**

- Where possible, designate separate waiting areas for patients with symptoms of pandemic influenza. Place signs indicating the separate waiting areas.
- Place symptomatic patients in an evaluation room as soon as possible to limit their time in common waiting areas.

### **6. Other ambulatory settings**

A wide variety of ambulatory settings provide chronic (e.g., hemodialysis units) and episodic (e.g., freestanding surgery centers, dental offices) healthcare services. When pandemic influenza is in the region, these facilities should implement control measures similar to those

recommended for outpatient physician offices. Other infection control strategies that may be utilized include:

- Screening patients for influenza-like illness by phone or before coming into the facility and rescheduling appointments for those whose care is nonemergency
- Canceling all nonurgent services when there is pandemic influenza in the community

### **G. 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.

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

#### **2. 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.

#### **3. Infection control measures in the home**

- All persons in the household should carefully follow recommendations for hand hygiene (i.e., handwashing with soap (either non-antimicrobial or antimicrobial) 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.

#### **H. 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.

#### **IV. 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.

#### **V. RECOMMENDATIONS FOR INFECTION CONTROL IN COMMUNITY SETTINGS**

Infection control in the community should focus on “social distancing” to decrease exposure to others and promoting respiratory hygiene/cough etiquette and hand hygiene. 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.

<b>Box 1. Summary of infection control recommendations for care of patients with pandemic influenza</b>	
<b>COMPONENT</b>	<b>RECOMMENDATIONS</b>
<b>Standard Precautions</b>	See <a href="http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html">http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html</a>
Hand Hygiene	Perform hand hygiene after touching blood, body fluids, secretions, excretions, and contaminated items; after removing gloves; and between patient contacts. Hand hygiene includes both handwashing with soap (either non-antimicrobial or antimicrobial) and water or use of alcohol-based products (gels, rinse, foams) that contain an emollient and do not require the use of water. If hands are visibly soiled or contaminated with respiratory secretions, they should be washed 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 soap (either non-antimicrobial or antimicrobial) and water because of their superior microbicidal activity, reduced drying of the skin, and convenience.
Personal Protective Equipment (PPE) <ul style="list-style-type: none"> <li>❖ Gloves</li> <li>❖ Gown</li> <li>❖ Face/eye protection (e.g., surgical or procedure mask and goggles or a face shield)</li> </ul>	<p>For touching blood, body fluids, secretions, excretions, and contaminated items; for touching mucous membranes and nonintact skin</p> <p>During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated</p> <p>During procedures and patient care activities likely to generate splash or spray of blood, body fluids, secretions, excretions (i.e. patient coughing)</p>
Safe Work Practices	Avoid touching eyes, nose, mouth, or exposed skin with contaminated hands (gloved or ungloved), avoid touching surfaces with contaminated gloves and other PPE that are not directly related to patient care (e.g., door knobs, keys, light switches).
Patient Resuscitation	Avoid unnecessary mouth-to-mouth contact, use mouthpiece, resuscitation bag, or other ventilation devices to prevent contact with mouth and oral secretions.
Soiled Patient Care Equipment	Handle in a manner that prevents transfer of microorganisms to oneself, other and environmental surfaces, wear gloves if visibly contaminated: perform hand hygiene after handling equipment.
Soiled Linen and Laundry	Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces; wear gloves (gown if necessary) when handling and transporting soiled linen and laundry; and perform hand hygiene.
Needles and other Sharps	Use devices with safety features when available; do not recap, bend, break or hand-manipulate used needles; if recapping is necessary, use a one-handed scoop technique, place used sharps in a puncture-resistant container.

<b>Box 1. Summary of infection control recommendations for care of patients with pandemic influenza (cont.)</b>	
<b>COMPONENT</b>	<b>RECOMMENDATIONS</b>
<b>Standard Precautions (cont'd)</b>	See <a href="http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html">http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html</a>
Environmental Cleaning & Disinfection	Use EPA-registered hospital detergent-disinfectant: follow standard facility procedures for cleaning and disinfection of environmental surfaces, emphasize cleaning/disinfection of frequently touched surfaces (e.g., bed rail, phones, lavatory surfaces).
Disposal of Solid Waste	Contain and dispose of solid waste (regulated medical and non-medical) in accordance with facility procedures and/or local or state regulations, wear gloves when handling waste, wear gloves when handling containers, perform hand hygiene.
Respiratory hygiene/cough etiquette <i>Source control measures for persons with symptoms of a respiratory infection; implement at first point of encounter (e.g., triage/reception areas) within a healthcare setting</i>	Cover the mouth/nose when sneezing/coughing; use tissues and dispose in no-touch receptacles; perform hand hygiene after contact with respiratory secretions; wear a mask (procedure or surgical) if tolerated; sit or stand as far away as possible (more than 3 feet) from persons who are not ill.
<b>Droplet Precautions</b>	See <a href="http://www.cdc.gov/ncidod/dhqp/gl_isolation_droplet.html">http://www.cdc.gov/ncidod/dhqp/gl_isolation_droplet.html</a>
Patient Placement	Place patients with influenza in a private room or cohort with other patients with influenza.* Keep door closed or slightly ajar; maintain room assignments of patients in nursing homes and other residential settings; and apply droplet precautions to all persons in the room.  *During the early stages of a pandemic, infection with influenza should be laboratory-confirmed, if possible.
Personal Protective Equipment	Wear a surgical or procedure mask for entry into patient room, wear other PPE as recommended for standard precautions.
Patient Transport	Limit patient movement outside of room to medically necessary purposes, have patient wear a procedure or surgical mask when outside the room.
Other	Follow standard precautions and facility procedures for handling linen, laundry, dishes and eating utensils, and for cleaning/disinfection of environmental surfaces and patient care equipment, disposal of solid waste, and postmortem care.
<b>Aerosol-Generating Procedures</b>	During procedures that may generate small particles of respiratory secretions (e.g., endotracheal intubation, bronchoscopy, nebulizer treatment, suctioning), healthcare personnel should wear gloves, gown, face/eye protection, and consider higher level of respiratory protection.

## **Box 2. Respiratory hygiene/cough etiquette**

To contain respiratory secretions, all persons with signs and symptoms of a respiratory infection, regardless of presumed cause, should be instructed 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/materials.

Healthcare facilities should ensure the availability of materials for adhering to respiratory hygiene/cough etiquette in waiting areas for patients and visitors:

- Provide tissues and no-touch receptacles for used tissue disposal.
- Provide conveniently located dispensers of alcohol-based hand rub.
- Provide soap and disposable towels for handwashing where sinks are available.

### **Masking and separation of persons with symptoms of respiratory infection**

During periods of increased respiratory infection in the community, persons who are coughing should be offered either a procedure mask (i.e., with ear loops) or a surgical mask (i.e., with ties) to contain respiratory secretions. Coughing persons should be encouraged to sit as far away as possible (at least 3 feet) from others in common waiting areas. Some facilities may wish to institute this recommendation year-round.

# KENTUCKY INFLUENZA PANDEMIC RESPONSE PLAN CLINICAL GUIDELINES SUPPLEMENT IV

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## SUMMARY OF PUBLIC HEALTH ROLES AND RESPONSIBILITIES FOR CLINICAL GUIDELINES

### Interpandemic and Pandemic Alert Periods

#### Healthcare providers should:

- Be aware of case definitions.
- Know procedures for influenza screening and laboratory testing.
- Know appropriate infection control measures.
- Know appropriate antiviral regimens for influenza A (H5N1) and other novel viruses.
- Notify health departments about suspected or confirmed novel influenza cases and fatalities.
- Collect and forward specimens to designated state and federal laboratories for the diagnosis of novel influenza strains.
- Follow public health recommendation on administration of influenza vaccine.

#### KDPH and local health department:

- Help educate healthcare providers about novel and pandemic influenza.  
The Division of Epidemiology and Health Planning (DEHP) Influenza Coordinator will send guidelines for suspect avian influenza cases to hospital Infection Control Professionals, Local Health Department Surveillance Contacts, Local Health Department and Health Care Provider sentinel sites. Guidelines for reporting and instructions for submitting specimens will be posted on the KDPH Web site, the Health Alert Network, and published in *Kentucky Epidemiologic Notes and Reports*.

- Provide or facilitate testing and investigation of suspected novel influenza cases.  
The DEHP will coordinate with the Division of Laboratory Services (DLS) to have specimens sent to the State Public Health Laboratory for testing. If the individual's condition meets the screening criteria, the State Influenza Coordinator will advise the healthcare provider to send the specimen to the State Public Health Laboratory. The State Influenza Coordinator will advise the DLS Virus Laboratory that a specimen is being sent. The DLS will test the specimen by PCR. Specimens will be sent to CDC, if necessary.
- Conduct follow-up of suspected novel influenza cases.  
The State Influenza Coordinator will request a faxed copy of the screening form from the healthcare provider, and will facilitate an investigation through the Regional Epidemiologist and the Local Health Department Surveillance Contact, for the purpose of obtaining a detailed history of the suspected case and to identify contacts.

#### HHS agencies:

- Develop and disseminate recommendations on the use of influenza diagnostic tests, antiviral drugs, and vaccines during an influenza pandemic.
- Develop a national stockpile of antiviral drugs for use during a pandemic.
- Work with state and local health departments to investigate and manage suspected cases of human infection with avian influenza A (H5N1) or other novel strains of influenza.
- Establish case definition and reporting mechanisms.

## **Pandemic Period**

### **Healthcare providers will:**

- Regularly review updates on case definitions, screening, laboratory testing, and treatment algorithms for pandemic influenza.
- Follow recommendations on antiviral and vaccine use from federal, state, and local health agencies.
- Choose antiviral treatment appropriate for circulating influenza strains.
- When antiviral supplies are limited, prescribe antivirals for persons in priority groups where the need and benefit are the greatest.
- Report pandemic influenza cases or fatalities as requested by health departments.
- Collect and forward specimens for ongoing pandemic influenza surveillance as requested to designated state and federal laboratories.
- Report atypical cases, breakthrough infections while on prophylaxis, or any other abnormal cases throughout the duration of the pandemic to public health agencies.
- Follow public health recommendation on administration of influenza vaccine.

### **KDPH and local health departments:**

State and local public health agencies will:

- Update providers regularly as the influenza pandemic unfolds.  
DEHP will provide information to the Cabinet's Communications Office to be used at their discretion. Suggested information is a weekly county chart and map indicating the location and number of cases.
- Provide or facilitate testing and investigation of pandemic influenza cases.  
The DEHP and DLS will coordinate facilitation of testing. The DEHP State Influenza Coordinator will facilitate an investigation in collaboration with the Regional Epidemiologists and the Local Health Department Surveillance Contacts.
- Work with CDC to investigate and report special pandemic situations.  
Regional Epidemiologists and Local Health Department Surveillance Contacts will report their findings to the State Influenza Coordinator, who will communicate these findings to the CDC. The DEHP State Influenza Coordinator will contact and fax screening forms to the CDC DEOC, and obtain an assigned ID/State Number for purposes of tracking information.
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications.

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### **HHS responsibilities:**

- Update and disseminate national guidelines on influenza diagnostic testing and use of antiviral drugs and vaccines during the pandemic.
- Develop a pandemic influenza vaccine.
- Work with healthcare partners to refine clinical management guidelines and issue regular updates on treatment issues.
- Conduct studies to investigate pandemic influenza pathogenesis.
- Monitor pandemic influenza cases for antiviral resistance.
- Monitor antiviral drug use and inventories.
- Collect information on clinical features, outcomes, and treatments.

## **I. RATIONALE**

Healthcare providers play an essential role in the detection of an initial case of novel or pandemic influenza in a community. Early identification and isolation of cases may help slow the spread of influenza. Clinical awareness of novel or pandemic influenza disease can also benefit the individual patient, as rapid initiation of treatment can avert potentially severe complications.

Currently there is a lack of specific clinical findings and commercially available laboratory tests to rapidly distinguish novel or pandemic influenza from seasonal influenza. In addition, it is difficult ahead of time to fully predict the clinical characteristics of a novel or pandemic influenza virus strain or the groups at highest risk for complications.

However, clinical management of patients during pandemic influenza will follow many of the same principles of patient care in cases of interpandemic (i.e. “normal”) seasonal strains of influenza. Health care workers will need to know 1) the symptoms of an influenza-like illness, 2) the strains that are circulating in the community, 3) the appropriate tests to diagnose influenza, 4) the appropriate infection control precautions, 5) how to select the correct antiviral medicine, 6) the side effects of the antiviral medicines, and 7) how to prescribe antivirals for prophylaxis (see Vaccine and Antiviral Supplement).

Additional difficulties in managing pandemic influenza include 1) differentiating seasonal strains of influenza from pandemic strains, 2) deciding which antiviral medicine would be most appropriate to use, 3) selecting the populations that would benefit most from antivirals in the face of great demands for a limited supply of antivirals, and 4) selecting the populations that would benefit most from influenza vaccine for the pandemic strain in the face of great demands for a limited supply of that influenza vaccine.

The management of influenza is based primarily on sound clinical judgment regarding the individual patient as well as the availability of local resources, such as rapid diagnostic tests, antiviral drugs, influenza vaccine, and hospital beds. Healthcare providers who are well trained in managing seasonal influenza will be better able to effectively diagnose and care for patients with pandemic influenza.

## **II. OVERVIEW**

The Clinical Guidelines Supplement focuses on the initial screening, assessment, and management of patients who present from the community with fever and/or respiratory symptoms during the Interpandemic, Pandemic Alert, and Pandemic Periods (Box 1, page 13, defines these periods). Boxes, figures, tables, and appendices are incorporated from the November 2005 HHS Pandemic Influenza Plan (<http://www.hhs.gov/pandemicflu/plan/pdf/HHSPandemicInfluenzaPlan.pdf>).

The Appendices add additional information on the clinical presentation and complications of influenza, the clinical features of human infection with avian influenza A (H5N1) virus, and management of secondary bacterial pneumonia during a pandemic. The appendices also contain Clinician Fact Sheets about influenza and antivirals and a respiratory etiquette poster.

During the Interpandemic and Pandemic Alert Periods, early recognition of illness caused by a novel influenza A virus strain will rely on a **combination of clinical and epidemiologic features**.

During periods in which no human infections with a novel influenza A virus strain have occurred anywhere in the world (Interpandemic Period, phases 1 or 2), or when sporadic cases of animal-to-human transmission or rare instances of limited human-to-human transmission of a novel influenza A virus strain have occurred in the world (Pandemic Alert Period, phases 3 or 4), the risk to travelers is low.

Therefore, when a traveler who is returning from an affected area and develops severe respiratory disease or an influenza-like illness, the likelihood of novel influenza A virus infection is **very low**. In this situation, the possibility of infection with seasonal human influenza viruses in returning travelers is much higher and should be considered, since human influenza A and B viruses circulate worldwide among humans year-round.

However, once local person-to-person transmission of a novel influenza A virus strain has been confirmed (Pandemic Alert Period: Phase 5), the potential for novel influenza A virus infection will be higher in an ill person who has a strong epidemiologic link to the affected area.

During the Pandemic Period (in a setting of high community prevalence), diagnosis will be more **clinically oriented** because the likelihood will be high that any severe febrile respiratory illness is pandemic influenza.

This Clinical Guidelines Supplement is current as of January 2006, and is subject to change as experience is gained. Updates will be provided, as needed, on the Kentucky Department for Public Health Web site (<http://chfs.ky.gov/dph>) and the CDC Web site ([www.cdc.gov/flu/](http://www.cdc.gov/flu/)).

Other supplements in the pandemic plan may also cover topics of potential interest to clinicians.

### III. CLINICAL GUIDELINES FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS

During Interpandemic and Pandemic Alert Periods, the primary goal is to quickly identify and contain cases of novel influenza. To limit evaluating an overwhelming number of patients, screening criteria should rely on a combination of clinical and epidemiologic features.

Febrile respiratory illnesses are one of the most common reasons for medical evaluation during the winter. Therefore, during the interpandemic and pandemic alert period, febrile illnesses caused by novel influenza strains are expected to be rare. Laboratory testing should be done for those with severe respiratory illness, such as pneumonia. The main features of case detection and clinical management during the Interpandemic and Pandemic Alert Periods are outlined in Figure 1.

#### A. Criteria for evaluation of patients with possible novel influenza

During the Pandemic Alert Period, human infections with novel influenza A viruses will be uncommon. Therefore, **both clinical and epidemiologic criteria should be met**. The criteria will be updated as needed and posted at [www.cdc.gov/flu](http://www.cdc.gov/flu).

#### 1. Clinical criteria

Any suspected cases of human infection with a novel influenza virus must meet the criteria for influenza-like illness (ILI): **temperature of >100.4°F (>38°C) plus one of the following: sore throat, cough, or dyspnea.**

Because of the large number of ILI cases during a typical influenza season, during the Interpandemic and Pandemic Alert Periods laboratory evaluation for novel influenza A viruses is recommended **only** for:

- a) Hospitalized patients with severe ILI, including pneumonia, who meet the epidemiologic criteria (see below), or
- b) Non-hospitalized patients with ILI and with strong epidemiologic suspicion of novel influenza virus exposure (e.g., direct contact with ill poultry in an affected area, or close contact with a known or suspected human case of novel influenza within 10 days prior to onset of symptoms.).

Recommendations for the evaluation of patients with respiratory illnesses are provided in Box 2. Exceptions to the current clinical criteria are provided in Box 3.

## **2. Epidemiologic criteria**

Epidemiologic criteria for evaluation of patients with possible novel influenza focus on the **risk of exposure** to a novel influenza virus with pandemic potential. Although the incubation period for seasonal influenza ranges from 1 to 4 days, the incubation periods for novel types of influenza are currently unknown and might be longer. Therefore, the maximum interval between potential exposure and symptom onset is set conservatively at 10 days.

**Exposure risks** — Exposure risks fall into two categories: a) travel and b) occupational.

**a) Travel risks:** Persons have a travel risk if they have, within 10 days prior to onset of symptoms:

- 1) recently visited or lived in an area affected by highly pathogenic avian influenza A outbreaks in domestic poultry or where a human case of novel influenza has been confirmed, **and**
- 2) either had direct contact with poultry, **or**
- 3) had close contact with a person with confirmed or suspected novel influenza. Updated listings of areas affected by avian influenza A (H5N1) and other current/recent novel strains are provided on the Web sites of the OIE ([http://www.oie.int/eng/en\\_index.htm](http://www.oie.int/eng/en_index.htm)), WHO ([www.who.int/en/](http://www.who.int/en/)), and CDC ([www.cdc.gov/flu/](http://www.cdc.gov/flu/)).

**Direct contact with poultry** is defined as: 1) touching birds (well-appearing, sick, or dead), or 2) touching poultry feces or surfaces contaminated with feces, or 3) consuming uncooked poultry products (including blood) in an affected area. Close contact with a person from an infected area with confirmed or suspected novel influenza is defined as being within 3 feet (1 meter) of that person during their illness. Because specific testing for human infection with avian influenza A (H5N1) might not be locally available in an affected area, persons reporting close contact in an affected area with a person suffering from a severe, yet unexplained, respiratory illness should also be evaluated.

Human influenza viruses circulate worldwide and year-round, including in countries with outbreaks of avian influenza A (H5N1) among poultry. Therefore, during the Interpandemic and Pandemic Alert Periods, human influenza virus infection can be a cause of ILI among returned travelers at any time of the year, including during the summer in the United States. This includes travelers returning from areas affected by poultry outbreaks of highly pathogenic avian influenza

A (H5N1) in Asia. As of May 2006, such persons are currently more likely to have infection with human influenza viruses than with avian influenza A (H5N1) viruses.

#### **b) Occupational risks**

Persons at occupational risk for infection with a novel strain of influenza include:

- 1) persons who work on farms or live poultry markets
- 2) persons who process or handle poultry infected with known or suspected avian influenza viruses
- 3) workers in laboratories that contain live animal or novel influenza viruses
- 4) healthcare workers in direct contact with a suspected or confirmed novel influenza case.

Information on limiting occupational risk is provided on the Occupational Health and Safety Administration (OSHA) Web site at: [www.osha.gov/dsg/guidance/avian-flu.html](http://www.osha.gov/dsg/guidance/avian-flu.html).

During the Interpandemic and Pandemic Alert Periods, when there is no sustained human-to-human transmission of any novel influenza viruses, **direct contact** with animals such as poultry in an affected area or close contact with a case of suspected or confirmed human novel influenza is **required** for further evaluation.

During the Pandemic Alert Period, Phases 3 and 4, the majority of human cases of novel influenza will result from avian-to-human transmission (see Box 1). Therefore, a history of direct contact with poultry (well-appearing, sick, or dead), consumption of uncooked poultry or poultry products, or direct exposure to environmental contamination with poultry feces in an affected area will be important to ascertain.

During the Pandemic Alert Period, Phase 5, a history of close contact with an ill person suspected or confirmed to have novel influenza in an affected area will be even more important.

#### **Other avian influenza A viruses**

Although the epidemiologic criteria for novel influenza are based on recent human cases of avian influenza A (H5N1), they are intended for use in the evaluation of suspected cases of infection with any novel influenza A virus strain.

Other avian influenza A viruses that have caused human disease include the highly pathogenic viruses H7N7 and H7N3 and the low pathogenic viruses H9N2 and H7N2. Some of these human cases have occurred in Europe (Netherlands) and North America (Canada and the United States). Therefore, the same high-risk exposures defined above for avian influenza A (H5N1) also apply to other avian influenza A viruses.

A strong epidemiologic link to an avian influenza outbreak in poultry, even in areas that have not experienced poultry outbreaks of avian influenza A (H5N1), may raise the index of suspicion for human infection with avian influenza A viruses.

In the future, other animal hosts (in addition to poultry) or novel influenza A virus subtypes (in addition to H5N1) might become significantly associated with human disease. If such events occur, this guidance will be updated.

### **B. Initial management of patients who meet the criteria for novel influenza**

When a patient meets both the clinical and epidemiologic criteria for a suspected case of novel influenza, healthcare personnel should initiate the following activities:

1. Implement infection control precautions for novel influenza, including Respiratory Hygiene/Cough Etiquette. Patients should be placed on **Droplet Precautions** for a **minimum of 5 days** unless there is full resolution of illness or another etiology has been identified before that period has elapsed. Healthcare personnel should wear surgical or procedure **masks** on entering a patient's room, as per Droplet Precautions. They should also wear **gloves, eye protection and gowns when indicated** for Standard Precautions (See Infection Control supplement III Table 1). Patients should be admitted to a single-patient room, and patient movement and transport within the hospital should be limited to medically necessary purposes (see also Infection Control Supplement).
2. **Notify the local health department or KDPH.** Report each patient who meets the clinical and epidemiologic criteria for a suspected case of novel influenza to the state or local health department as quickly as possible to facilitate initiation of public health measures (see Laboratory and Surveillance Supplement). Designate one person as a point of contact to update public health authorities on the patient's clinical status.
3. **Obtain clinical specimens** for novel influenza A virus testing and notify the local and state health departments to arrange testing. Testing of suspected novel or pandemic influenza will be directed by public health authorities (see Laboratory and Surveillance Supplement for more detailed guidelines).
  - a. Where feasible, collect of the following respiratory specimens for novel influenza A virus testing: 1) nasopharyngeal swab; 2) throat swab; 3) tracheal aspirate (for intubated patients); and 4) nasal swab, aspirate or wash.
  - b. Store specimens at 4°C in viral transport media until transported or shipped for testing. Acute (within 7 days of illness onset) and convalescent serum specimens (2–3 weeks after the acute specimen and at least 3 weeks after illness onset) should be obtained and refrigerated at 4°C or frozen at minus 20–80°C. Serological testing for novel influenza virus infection can be performed only at CDC.
  - c. Immediately notify their local health departments of their intention to ship clinical specimens from suspected cases of human infection with a novel influenza A virus, to ensure that the specimens are handled under proper biocontainment conditions.
  - d. Novel influenza A viruses can be confirmed by RT-PCR or virus isolation from tissue cell culture with subtyping. However, RT-PCR for testing of novel influenza viruses cannot be performed by a hospital laboratory and is available only at state public health laboratories and CDC. Viral culture of specimens from suspected novel influenza cases should be attempted **only** in laboratories that meet the biocontainment conditions for BSL-3 with enhancements or higher.
  - e. Rapid influenza diagnostic tests and immunofluorescence (indirect fluorescent antibody staining [IFA] or direct fluorescent antibody staining [DFA]) may be used to detect seasonal influenza, but **should not be used to confirm or exclude novel influenza during the Pandemic Alert Period**. Rapid influenza tests have relatively low sensitivity for detecting seasonal influenza, and their ability to detect novel influenza subtypes is unknown. Such tests can identify influenza A viruses but cannot distinguish between human infection with seasonal and novel influenza A viruses. A negative rapid influenza test result does **not** necessarily

exclude human infection with either seasonal or novel influenza A viruses. A positive rapid influenza test result could be a false positive or represent infection with either seasonal or novel influenza A viruses. Therefore, both negative and positive rapid influenza test and immunofluorescence results should be interpreted with caution, and RT-PCR testing for influenza viruses should be performed. (See Laboratory and Surveillance Clinical Guidelines Supplement for further information on rapid diagnostic testing).

- f. Acute and convalescent serum samples and other available clinical specimens (respiratory, blood, and stool) should be saved and refrigerated or frozen for additional testing until a specific diagnosis is made.
4. **Evaluate alternative diagnoses.** An alternative diagnosis should be based only on laboratory tests with high positive-predictive value (e.g., blood culture, viral culture, PCR, Legionella urinary antigen, pleural fluid culture, transthoracic aspirate culture). If an alternate etiology is identified, the possibility of **co-infection** with a novel influenza virus may still be considered if there is a strong epidemiologic link to exposure to novel influenza.
  5. **Decide on inpatient or outpatient management.** The decision to hospitalize a suspected novel influenza case will be based on the physician's clinical assessment and assessment of risk and whether adequate precautions can be taken at home to prevent the potential spread of infection.
    - a. Patients cared for at home should be separated from other household members as much as possible.
    - b. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed with other household waste (Box 4).
    - c. 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.
    - d. Separation of eating utensils for use by a patient with influenza is not necessary, as long as they are washed with warm water and soap (Box 4).
  6. **Initiate antiviral treatment as soon as possible**, even if laboratory results are not yet available. Clinical trials have shown that these drugs can decrease the illness due to seasonal influenza duration by several days when they are initiated **within 48 hours of illness onset**. The clinical effectiveness of antiviral drugs for treatment of novel influenza is unknown, but it is likely that the earlier treatment is initiated, the greater the likelihood of benefit. During the Pandemic Alert Period, available virus isolates from any case of novel influenza will be tested for resistance to the currently licensed antiviral medications. (See Vaccine and Antiviral Supplement for antiviral information).
  7. **Assist public health officials with identifying exposed contacts.** After consulting with KDPH or local public health officials, clinicians might be asked to help identify persons exposed to the suspected novel influenza case-patient (particularly healthcare workers). In general, persons in close contact with the case-patient at any time beginning one day before the onset of illness are considered at risk. Close contacts might include household and social contacts, family members, workplace or school contacts, fellow travelers, and/or healthcare providers.

### **C. Management of patients who test positive for novel influenza**

If a patient is confirmed to have an infection with a novel influenza virus:

1. Continue antiviral treatment
2. Continue all isolation and infection control precautions
3. Isolate patients with novel influenza from seasonal influenza patients.

In addition to prior vaccination against seasonal influenza, such measures may decrease the risk of co-infection and viral genetic reassortment.

### **D. Management of patients who test positive for seasonal influenza**

Many people who are suspected to have a novel influenza will be found to have seasonal human influenza, particularly during the winter season. It should be recognized that human influenza viruses circulate among people worldwide throughout the year, including in affected areas with poultry outbreaks of avian influenza A viruses.

For patients with confirmed seasonal influenza, maintain Standard and Droplet Precautions, and continue appropriate antiviral treatment for a full treatment course (e.g., 5 days).

### **E. Management of patients who test negative for novel influenza**

The sensitivity of the currently available tests for detecting novel influenza viruses in clinical specimens has not been thoroughly evaluated, so false-negative test results may occur. Therefore, if test results are negative but the clinical and epidemiologic suspicion for a novel influenza virus remains high, continue antiviral treatment and isolation procedures. Test results could be negative for influenza viruses for several reasons:

1. Some patients may have an alternate etiology to explain their illness. The general work-up for febrile respiratory illnesses described below should evaluate the most common alternate causes.
2. A certain number of truly infected cases might also test falsely negative, due to specimen collection conditions, to viral shedding that is not detectable, or to sensitivity of the test.

Interpretation of negative testing results should be tailored to the individual patient in consultation with hospital infection control and infectious disease specialists, as well as the state or local health department and CDC. In hospitalized patients who test negative for novel influenza but have no alternate diagnosis established, novel-influenza-directed management should be continued if clinical suspicion is high and there is a strong epidemiologic link to exposure to novel influenza.

When influenza tests are negative and an alternative diagnosis is established, isolation precautions and antiviral drug therapy for novel influenza may be discontinued based on clinician's assessment if:

1. There is no strong epidemiologic link
2. An alternative diagnosis is made using a test with a high positive-predictive value
3. The clinical manifestations are explained by the alternative diagnosis.

## **IV. CLINICAL GUIDELINES FOR THE PANDEMIC PERIOD**

During the Pandemic Period, the primary goal of rapid detection is to appropriately identify and triage cases of pandemic influenza. During this period, outpatient clinics and emergency departments might be overwhelmed with suspected cases, restricting the time and laboratory

resources available for evaluation. In addition, if the pandemic influenza virus exhibits transmission characteristics similar to those of seasonal influenza viruses, illnesses will likely spread throughout the community too rapidly to allow the identification of obvious exposures or contacts.

Evaluation will therefore focus predominantly on **clinical** and **basic laboratory** findings, with less emphasis on laboratory diagnostic testing (which may be in short supply) and **epidemiologic criteria**. Nevertheless, clinicians in communities without pandemic influenza activity might consider asking patients about recent travel from a community with pandemic influenza activity or close contact with a suspected or confirmed pandemic influenza case. The main features of clinical management during the Pandemic Period are outlined in Figure 2.

## **A. Criteria for evaluation of patients with possible pandemic influenza**

### **1. Clinical criteria**

Suspected cases of pandemic influenza virus infection should meet the criteria for an ILI: **temperature of >100.4°F (>38°C) plus one of the following: sore throat, cough, or dyspnea.**

Although past influenza pandemics have most frequently resulted in respiratory illness, the next pandemic influenza virus strain might present with a different clinical syndrome (see Appendix 1 and Appendix 2). During a pandemic, updates on other clinical presentations will be provided at: [www.pandemicflu.gov](http://www.pandemicflu.gov) and [www.cdc.gov/flu/](http://www.cdc.gov/flu/).

Recommendations for general evaluation of patients with ILI are provided in Box 2. Exceptions to the clinical criteria are provided in Box 3.

### **2. Epidemiologic criteria**

During the Pandemic Period, an exposure history will be marginally useful for clinical management when disease is widespread in a community. In addition, there will be a relatively high likelihood that any case of ILI during that time period will be pandemic influenza. Once pandemic influenza has arrived in a particular locality, **clinical criteria will be sufficient** for classifying the patient as a **suspected** pandemic influenza case.

## **B. Initial management of patients who meet the criteria for pandemic influenza**

When a patient meets the criteria for a suspected case of pandemic influenza, healthcare personnel should initiate the following activities:

1. **Report** according to local and state health department recommendations for patients who meet the criteria for pandemic influenza. See Clinical Guidelines Supplement 1 for guidance on case reporting during the Pandemic Period.
2. If the patient is hospitalized, implement **infection control precautions** for pandemic influenza, including Respiratory Hygiene/Cough Etiquette (see Infection Control Supplement, Box 2).
  - a. Place the patient on Droplet Precautions for a minimum of 5 days from the onset of symptoms.
  - b. Healthcare personnel should wear surgical or procedure masks on entering a patient's room, as per Droplet Precautions
  - c. Healthcare personnel should wear gloves and gowns, when indicated, as per Standard Precautions (Box 1, Infection Control Supplement 3).

- d. Patients should be admitted to either a single-patient room or an area designated for cohorting of patients with influenza.
  - e. Patient movement and transport outside the isolation area should be limited to medically necessary purposes (see Table 1, Infection Control).
3. **Limit hospital admission** of patients should be limited to those with severe complications who cannot be cared for outside the hospital setting, especially once a pandemic is underway.
4. Obtain **clinical specimens**, as clinically indicated (see Box 2).
  - a. Once pandemic influenza has arrived in a community, influenza testing will likely not be needed for most patients.
  - b. Work in conjunction with health departments to perform laboratory testing in a subset of pandemic influenza cases, as part of ongoing virologic surveillance (see Laboratory and Surveillance Supplement).
  - c. Influenza diagnostic testing should be considered before initiating treatment with antivirals (see Vaccine and Antiviral Supplement).
  - d. See Laboratory and Surveillance Supplement for guidelines for pandemic influenza virus testing.
  - e. As with seasonal influenza, RT-PCR and virus isolation from tissue culture will be the most accurate methods for diagnosing pandemic influenza.
  - f. Specimens should generally include combined nasopharyngeal aspirates or nasal swabs, and throat swabs, stored at 4°C in viral transport media.
  - g. BSL-2 conditions should be sufficient for viral culture of clinical specimens from suspected pandemic influenza patients during the Pandemic Period.
5. **Know how to properly use rapid diagnostic tests** for influenza
  - a. Rapid tests and immunofluorescence may be helpful for initial clinical management, including cohorting and treatment, but have relatively low sensitivity for detecting seasonal influenza, and their ability to detect pandemic influenza viruses is unknown.
  - b. The sensitivity of rapid diagnostic tests will likely be higher in specimens collected within two days of illness onset, in children, and when tested at clinical laboratories that perform a high volume of testing.
  - c. During a pandemic a negative rapid test may be a false negative. Therefore test results need to be interpreted within the overall clinical context. For example, it may not be optimal to withhold antiviral treatment from a seriously ill high-risk patient on the basis of a negative test; however, in a setting of limited antiviral drug availability, treatment decisions in less high-risk situations could be based on test results.
  - d. The risk of a false-negative test also must be taken into account in making cohorting decisions.
  - e. Rapid diagnostic testing should not preclude more reliable testing, if available.
  - f. See Laboratory and Surveillance Clinical Guidelines Supplement for further information on rapid diagnostic testing.
6. **Decide on inpatient or outpatient management.** The decision to hospitalize a suspected pandemic influenza case will be based on the physician's clinical assessment of the patient as well as the availability of hospital beds and personnel. Guidelines on cohorting and infection control for admitted patients can be found in Infection Control Supplement.

- a. High priority for admission
  - i. An unstable patient.
  - ii. Patients with high-risk conditions (see Appendix 1) might also warrant special attention, such as observation or close follow-up, even if disease is mild.
- b. Appropriate for home management with follow-up.
  - i. Well-appearing young children with fever alone.
- c. See Vaccine and Antiviral Supplement for inpatient and outpatient antiviral treatment strategies.

#### 7. Infection control for home care

- a. Patients cared for at home should be separated from other household members as much as possible.
- b. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed with other household waste (Box 4).
- c. Infection within the household may be minimized if a primary caregiver is designated. The primary caregiver would ideally be someone who does not have an underlying condition that places them at increased risk of severe influenza disease.
- d. Using a surgical or procedure mask by the patient or caregiver during interactions may be of benefit.
- e. Separation of eating utensils for use by a patient with influenza is not necessary, as long as they are washed with warm water and soap (Box 4).

### C. Clinical management of pandemic influenza patients

See Vaccine and Antiviral Supplement for current antiviral information and treatment strategies. In addition to the use of antivirals, clinical management of severe influenza should address supportive care and the rapid identification and treatment of secondary complications.\*

1. Provide CDC with virus isolates from persons who fail treatment or antiviral prophylaxis, as these strains may more likely be drug resistant.
  2. Do not give aspirin or other salicylate-containing product to children aged < 18 years with suspected or confirmed pandemic influenza because of an increased risk of Reye syndrome in this age group (characterized by acute encephalopathy and liver failure).
  3. Monitor for complications. Complications related to seasonal human influenza occur more commonly in persons with certain underlying medical conditions, such as chronic respiratory or cardiovascular disease and extremes of age, and are described in Appendix 1. Limited data are available on risk factors and complications related to infection with novel influenza viruses, and these may change as individual strains evolve.
  4. Review the summary of the clinical presentations and complications associated with recent influenza A (H5N1) viruses in Appendix 2.
  5. Be aware that post-influenza community-acquired pneumonia will likely be a commonly encountered complication, and be aware of recommended methods for diagnosis and treatment. Guidance on the management of influenza-related pneumonia is in Appendix 3.
- Ribavirin and immunomodulatory therapies, such as steroids, are not approved by the FDA for treatment of severe influenza of any type and are investigational at this time.

These agents frequently have severe adverse effects, such as bone marrow and hepatic toxicity, while the benefits of these therapies are unknown.

**Box 1. Risk of Novel Influenza in Persons with Severe Respiratory Disease or Influenza-like Illness during the Interpandemic and Pandemic Alert Periods**

Clinicians should recognize that human influenza A and B viruses and other respiratory viruses circulate year-round among people throughout the world, including in countries affected by outbreaks of avian influenza A viruses in poultry. Seasonal human influenza A and B community outbreaks occur in temperate climates of the northern and southern hemisphere, and human influenza activity may occur year-round in subtropical and tropical regions. Outbreaks of human influenza can occur among travelers during any time of the year, including periods of low influenza activity in the United States (e.g., summer)

**Phases 1, 2: Interpandemic Period**

A novel influenza A virus has been detected in animals but not in humans. During these phases, the risk of human infection with a novel influenza A virus strain is extremely low. The risk of human infection with human influenza viruses or other viruses is much higher in persons living in or traveling to affected areas.

**Phases 3, 4: Pandemic Alert Period**

A novel influenza A virus has been detected in humans through sporadic animal-to-human transmission in an affected area (e.g., direct contact with infected poultry), and few cases of limited, local human-to-human transmission have occurred (small clusters of cases). During these phases, the risk of human infection with a novel influenza A virus strain is very low. The risk of human infection with human influenza viruses or other viruses is much higher in persons living in or traveling to affected areas

**Phase 5: Pandemic Alert Period**

A novel influenza A virus has been detected in humans in larger clusters in an affected area, suggesting that the virus is becoming better adapted to spread among people. During this period, the risk of human infection with a novel influenza A virus strain is higher, depending on specific exposures, in persons living in or traveling to affected areas. Human infection with human influenza viruses or other viruses will occur and should still be considered.

## Box 2. Clinical Evaluation of Patients with Influenza-like Illness during the Interpandemic and Pandemic Alert Periods

- Patients who require hospitalization for an influenza-like illness for which a definitive alternative diagnosis is not immediately apparent\* should be questioned about: 1) travel to an area affected by avian influenza A virus outbreaks in poultry, 2) direct contact with poultry, 3) close contact with persons with suspected or confirmed novel influenza, or 4) occupational exposure to novel influenza viruses (such as through agricultural, health care, or laboratory activities).
- Patients may be screened on admission for recent seasonal influenza vaccination and pneumococcal vaccination. Those without a history of immunization should receive these vaccines before discharge, if indicated.
- Patients meeting the epidemiologic criteria for possible infection with a novel strain of influenza should undergo a routine diagnostic work-up, guided by clinical indications. Appropriate personal protective equipment should be used when evaluating patients with suspected novel influenza, including during collection of specimens.\*\*
- Diagnostic testing for a novel influenza A virus should be initiated as follows:
  - Collect all of the following specimens: nasopharyngeal swab, nasal swab, wash, or aspirate, throat swab, and tracheal aspirate (if intubated), and place into viral transport media and refrigerate at 4°C until specimens can be transported for testing.
  - Immediately contact the local and state health departments to report the suspected case and to arrange novel influenza testing by RT-PCR.

RT-PCR testing is not available in hospital laboratories and must be performed at a qualified laboratory such as a state health department laboratory or the CDC Influenza Laboratory. Viral culture should be performed only at biosafety level 3 [BSL-3] with enhancements (see Laboratory Supplement).

- Depending on the clinical presentation and the patient's underlying health status, other initial diagnostic testing might include:
  - Pulse oximetry
  - Chest radiograph
  - Complete blood count (CBC) with differential
  - Blood cultures
  - Sputum (in adults), tracheal aspirate, and pleural effusion aspirate (if an effusion is present) Gram stain and culture
  - Antibiotic susceptibility testing (encouraged for all bacterial isolates)
  - Multivalent immunofluorescent antibody testing or PCR of nasopharyngeal aspirates or swabs for common viral respiratory pathogens, such as influenza A and B, adenovirus, parainfluenza viruses, and respiratory syncytial virus, particularly in children
  - In adults with radiographic evidence of pneumonia, *Legionella* and pneumococcal urinary antigen testing
  - If clinicians have access to rapid and reliable testing (e.g., PCR) for *M. pneumoniae* and *C. pneumoniae*, adults and children <5 yrs with radiographic pneumonia should be tested.
  - Comprehensive serum chemistry panel, if metabolic derangement or other end-organ involvement such as liver or renal failure is suspected.

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\*Further evaluation and diagnostic testing should also be considered for outpatients with strong epidemiologic risk factors and mild or moderate illness (see Box 3).

\*\*Healthcare personnel should wear surgical or procedure masks on entering a patient's room (Droplet Precautions), as well as gloves and gowns, when indicated (Standard Precautions) (see Table and Infection Control Supplement).

### **Box 3. Special Situations and Exceptions to the Clinical Criteria**

Persons with a high risk of exposure—For persons with a high risk of exposure to a novel influenza virus (e.g., poultry worker from an affected area,\* caregiver of a patient with laboratory-confirmed novel influenza, employee in a laboratory that works with live novel influenza viruses), epidemiologic evidence might be enough to initiate further measures, even if clinical criteria are not fully met. In these persons, early signs and symptoms—such as rhinorrhea, conjunctivitis, chills, rigors, myalgia, headache, and diarrhea—in addition to cough or sore throat, may be used to fulfill the clinical criteria for evaluation.

High-risk groups with atypical symptoms—Young children, elderly patients, patients in long-term care facilities, and persons with underlying chronic illnesses might not have typical influenza-like symptoms, such as fever. When such patients have a strong epidemiologic risk factor, novel influenza should be considered with almost any change in health status, even in the absence of typical clinical features. Conjunctivitis has been reported in patients with influenza A (H7N7) and (H7N3) infections. In young children, gastrointestinal manifestations such as vomiting and diarrhea might be present. Infants may present with fever or apnea alone, without other respiratory symptoms, and should be evaluated if there is an otherwise increased suspicion of novel influenza.

\*Updated lists of affected areas are provided at the Web sites of the OIE ([http://www.oie.int/eng/en\\_index.htm](http://www.oie.int/eng/en_index.htm)), WHO ([www.who.int/en/](http://www.who.int/en/)), and CDC ([www.cdc.gov/flu/](http://www.cdc.gov/flu/)).

#### **Box 4. Home Care Infection Control Guidance for Pandemic Influenza Patients and Household Members**

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

##### **Management of influenza patients in the home**

- Physically separate the patient with influenza from non-ill persons living in the home as much as possible.
- Patients should not leave the home during the period when they are most likely to be infectious to others (i.e., 5 days after onset of symptoms). When movement outside the home is necessary (e.g., for medical care), the patient should follow respiratory hygiene/cough etiquette (i.e., cover the mouth and nose when coughing and sneezing) and should wear a mask.

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##### **Management of other persons in the home**

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

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##### **Infection control measures in the home**

- All persons in the household should carefully follow recommendations for hand hygiene (i.e., hand washing with soap and water or use of an alcohol-based hand rub) after contact with an influenza patient or the environment in which they are receiving care.
- Although no studies have assessed the use of masks at home to decrease the spread of infection, using a surgical or procedure mask by the patient or caregiver during interactions may be beneficial.
- Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.

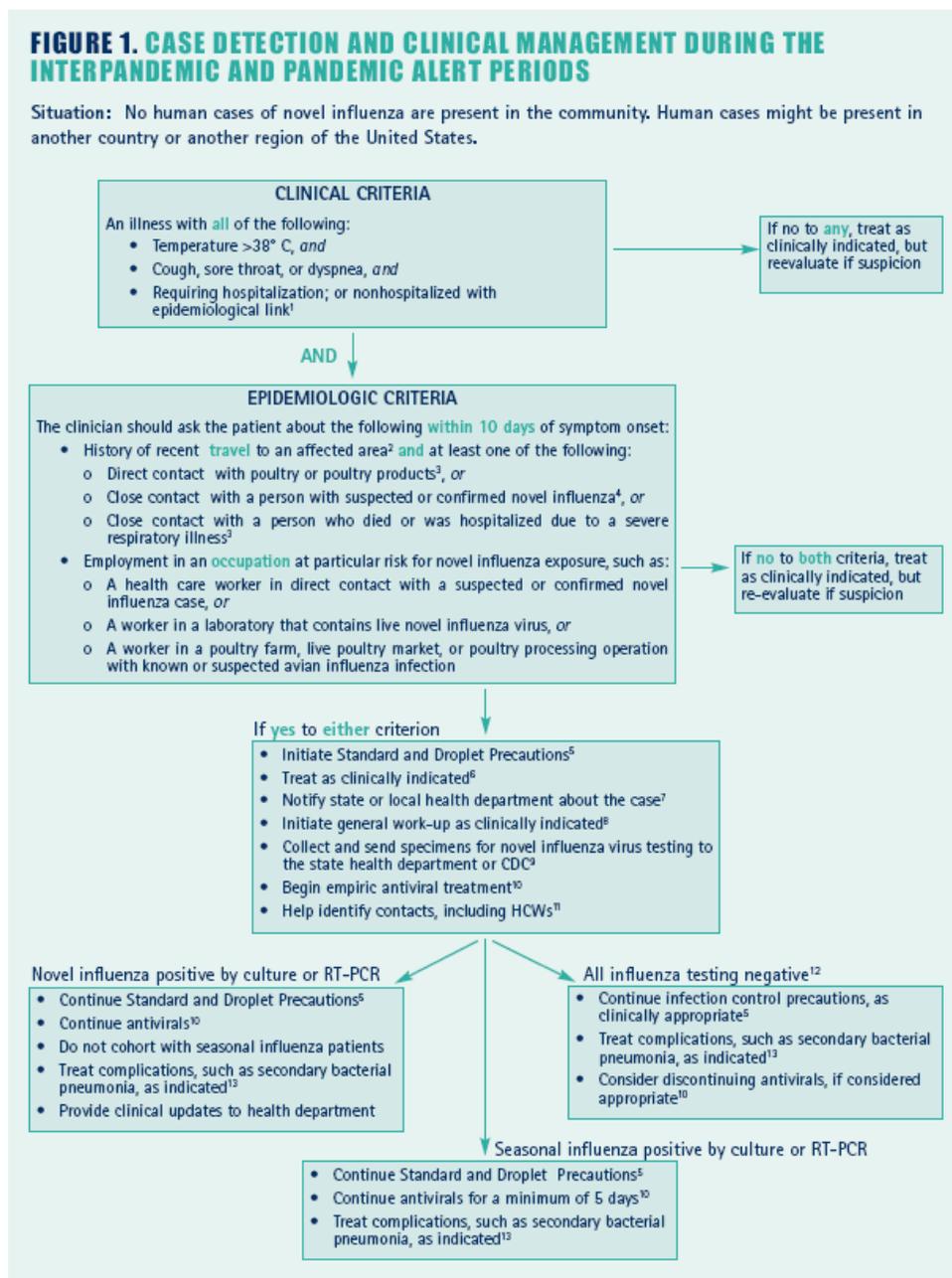
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**Box 4. Home Care Infection Control Guidance for Pandemic Influenza Patients and Household Members – con.**

- Laundry may be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry. Care should be used when handling soiled laundry (i.e., avoid “hugging” the laundry) to avoid self-contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed of with other household waste. Consider placing a bag for this purpose at the bedside.
- Environmental surfaces in the home should be cleaned using normal procedures

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**Figure 1. Case Detection and Clinical Management during the Interpandemic and Pandemic Alert Periods**



**Footnotes to Figure 1:**

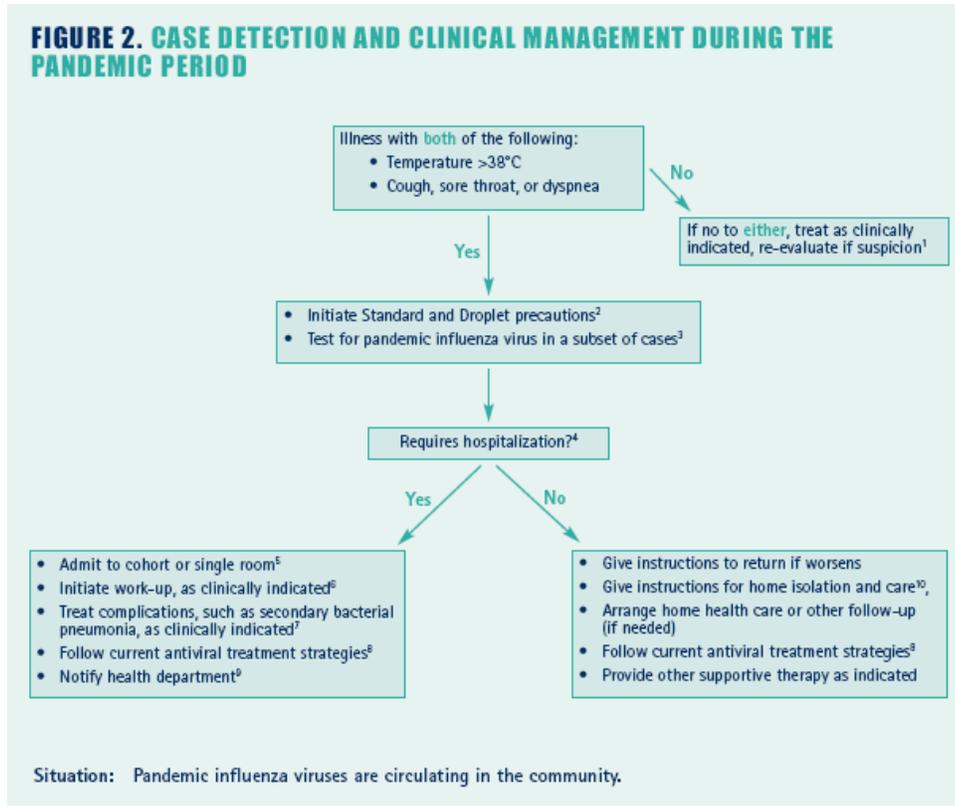
1. Further evaluation and diagnostic testing should also be considered for outpatients with strong epidemiologic risk factors and mild or moderate illness. (See Box 2).
2. Updated information on areas where novel influenza virus transmission is suspected or documented is available on the CDC Web site at [www.cdc.gov/travel/other/avian\\_flu\\_ah5n1\\_031605.htm](http://www.cdc.gov/travel/other/avian_flu_ah5n1_031605.htm) and on the WHO Web site at [www.who.int/en/](http://www.who.int/en/).
3. For persons who live in or visit affected areas, close contact includes touching live poultry (well-appearing, sick or dead) or touching or consuming uncooked poultry products, including blood. For animal or market workers, it includes touching surfaces contaminated with bird feces. In recent years, most instances of human infection with a novel influenza A virus having pandemic potential, including influenza A (H5N1), are thought to have occurred through direct transmission from domestic poultry. A small number of cases are also thought to have occurred through limited person-to-person transmission or consumption of uncooked poultry products. Transmission of novel influenza viruses from other infected animal populations or by contact with surfaces contaminated with feces remains a possibility. These guidelines will be updated as needed if alternate sources of novel influenza viruses are suspected or confirmed.
4. Close contact includes direct physical contact, or approach within 3 feet (1 meter) of a person with suspected or confirmed novel influenza.
5. Standard and Droplet Precautions should be used when caring for patients with novel influenza or seasonal influenza (See Infection Control Supplement). Information on infection precautions that should be implemented for all respiratory illnesses (i.e., Respiratory Hygiene/Cough Etiquette) is provided at: [www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm](http://www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm)
6. Hospitalization should be based on all clinical factors, including the potential for infectiousness and the ability to practice adequate infection control. If hospitalization is not clinically warranted, and treatment and infection control is feasible in the home, the patient may be managed as an outpatient. The patient and his or her household should be provided with information on infection control procedures to follow at home (Box 3). The patient and close contacts should be monitored for illness by local public health department staff.
7. Guidance on how to report suspected cases of novel influenza is provided in Laboratory and Surveillance Supplement.
8. The general work-up should be guided by clinical indications. Depending on the clinical presentation and the patient's underlying health status, initial diagnostic testing might include:
  - Pulse oximetry
  - Chest radiograph
  - Complete blood count (CBC) with differential
  - Blood cultures
  - Sputum (in adults), tracheal aspirate, pleural effusion aspirate (if pleural effusion is present) Gram stain and culture
  - Antibiotic susceptibility testing (encouraged for all bacterial isolates)
  - Multivalent immunofluorescent antibody testing or PCR of nasopharyngeal aspirates or swabs for common viral respiratory pathogens, such as influenza A and B, adenovirus, parainfluenza viruses, and respiratory syncytial virus, particularly in children
  - In adults with radiographic evidence of pneumonia, *Legionella* and pneumococcal urinary antigen testing

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- If clinicians have access to rapid and reliable testing (e.g., PCR) for *M. pneumoniae* and *C. pneumoniae*, adults and children <5 yrs with radiographic pneumonia should be tested.
  - Comprehensive serum chemistry panel, if metabolic derangement or other end-organ involvement, such as liver or renal failure, is suspected See Box 2 for additional details.
9. Guidelines for novel influenza virus testing can be found in Laboratory and Surveillance Supplement. All of the following respiratory specimens should be collected for novel influenza A virus testing: nasopharyngeal swab; nasal swab, wash, or aspirate; throat swab; and tracheal aspirate (for intubated patients), stored at 4° C in viral transport media; and acute and convalescent serum samples.
  10. Strategies for the use of antiviral drugs are provided in Vaccine and Antiviral Supplement.
  11. Guidelines for the management of contacts in a healthcare setting are provided in Healthcare Planning Supplement.
  12. Given the unknown sensitivity of tests for novel influenza viruses, interpretation of negative results should be tailored to the individual patient in consultation with the local health department. Novel influenza directed management may need to be continued, depending on the strength of clinical and epidemiologic suspicion. Antiviral therapy and isolation precautions for novel influenza may be discontinued on the basis of an alternative diagnosis. The following criteria may be considered for this evaluation:
    - Absence of strong epidemiologic link to known cases of novel influenza
    - Alternative diagnosis confirmed using a test with a high positive-predictive value
    - Clinical manifestations explained by the alternative diagnosis
  13. Guidance on the evaluation and treatment of suspected post-influenza community-associated pneumonia is provided in Appendix 3.

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**Figure 2. Case Detection and Clinical Management during the Pandemic Period**



**Footnotes to Figure 2:**

1. Antiviral therapy and isolation precautions for pandemic influenza should be discontinued on the basis of an alternative diagnosis only when both the following criteria are met:
  - Alternative diagnosis confirmed using a test with a high positive-predictive value, and
  - Clinical manifestations entirely explained by the alternative diagnosis
2. Standard and Droplet Precautions should be used when caring for patients with novel influenza or seasonal influenza (Table 4 in Infection Control Supplement). Information on infection precautions that should be implemented for all respiratory illnesses (i.e., Respiratory Hygiene/Cough Etiquette) is provided at: [www.cdc.gov/flu/professionals/infectioncontrol/resphgiene.htm](http://www.cdc.gov/flu/professionals/infectioncontrol/resphgiene.htm)
3. Guidance on laboratory testing during the Pandemic Period can be found in Laboratory and Surveillance Supplement. Generally, specimens should include respiratory samples (e.g., nasopharyngeal wash/aspirate; nasopharyngeal, nasal or oropharyngeal swabs, or tracheal aspirates) stored at 4°C in viral transport media.

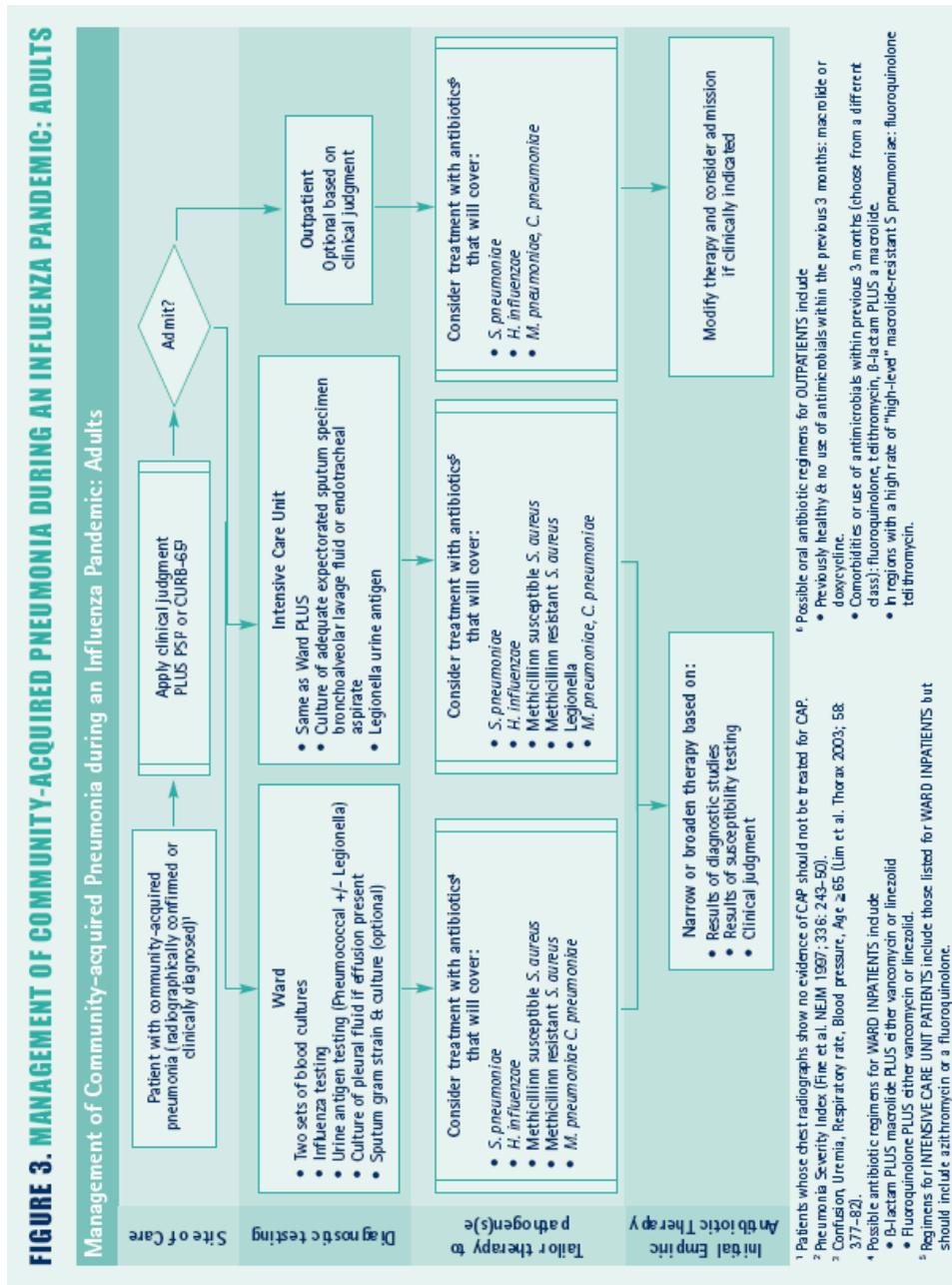
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Routine laboratory confirmation of clinical diagnoses will be unnecessary as pandemic activity becomes widespread in a community. CDC will continue to work with state health laboratories to conduct virologic surveillance to monitor antigenic changes and antiviral resistance in the pandemic virus strains throughout the Pandemic Period.

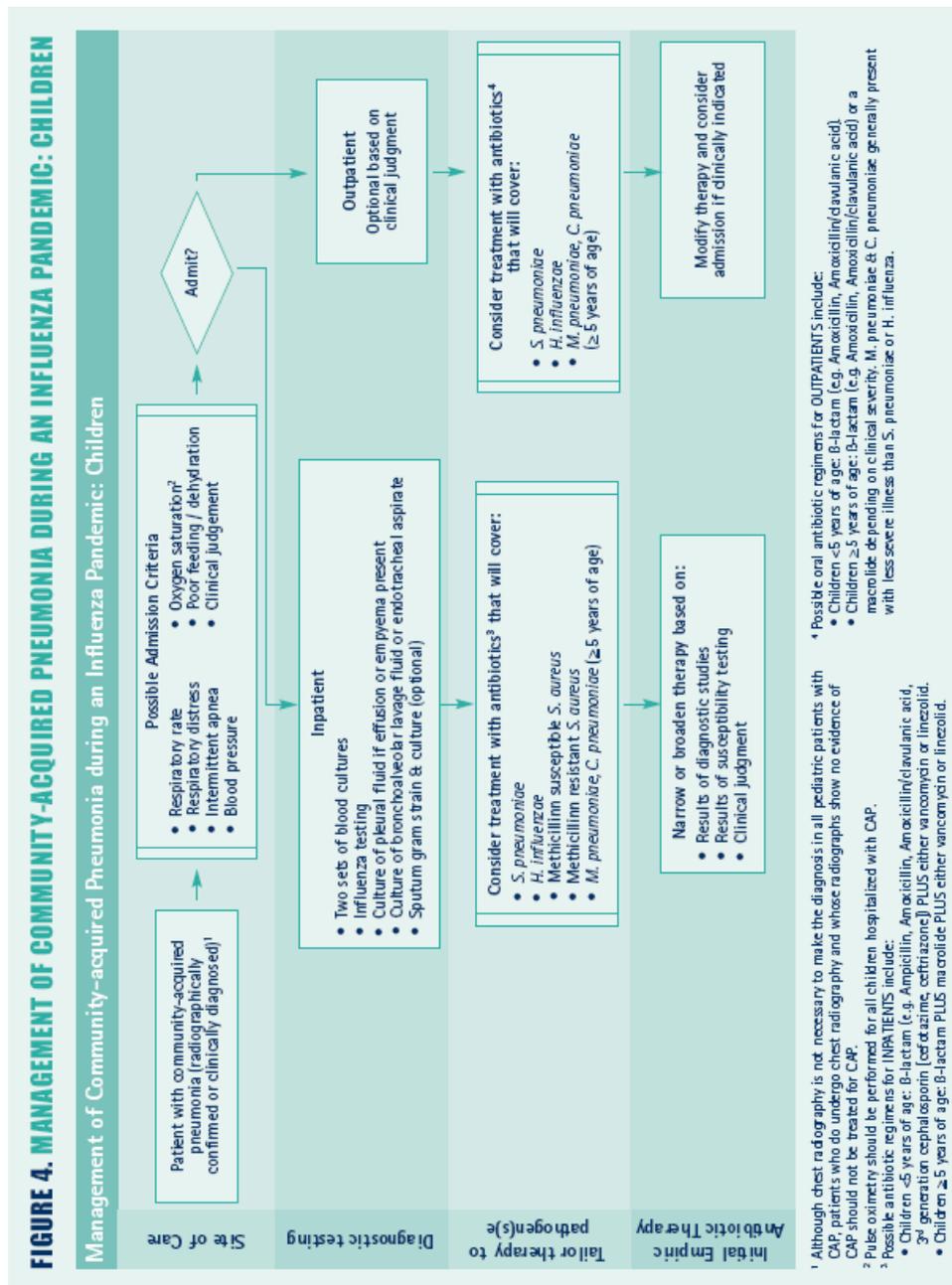
4. The decision to hospitalize should be based on a clinical assessment of the patient and the availability of hospital beds and personnel.
5. Guidelines on cohorting can be found in Infection Control Supplement. Laboratory confirmation of influenza infection is recommended when possible before cohorting patients.
6. The general work-up should be guided by clinical indications. Depending on the clinical presentation and the patient's underlying health status, initial diagnostic testing might include:
  - Pulse oximetry
  - Chest radiograph
  - Complete blood count (CBC) with differential
  - Blood cultures
  - Sputum (in adults) or tracheal aspirate Gram stain and culture
  - Antibiotic susceptibility testing (encouraged for all bacterial isolates)
  - Multivalent immunofluorescent antibody testing of nasopharyngeal aspirates or swabs for common viral respiratory pathogens, such as influenza A and B, adenovirus, parainfluenza viruses, and respiratory syncytial virus, particularly in children
  - In adults with radiographic evidence of pneumonia, *Legionella* and pneumococcal urinary antigen testing
  - If clinicians have access to rapid and reliable testing (e.g., PCR) for *M. pneumoniae* and *C. pneumoniae*, adults and children <5 yrs with radiographic pneumonia should be tested.
  - Comprehensive serum chemistry panel, if metabolic derangement or other end-organ involvement, such as liver or renal failure, is suspected See Box 2 for additional details.
7. Guidance on the evaluation and treatment of community acquired pneumonia and suspected post-influenza community-acquired bacterial pneumonia are provided in Appendix 3.
8. Strategies for the use of antiviral drugs are provided in Vaccine and Antiviral Supplement.
9. Guidance on the reporting of pandemic influenza cases is found in Laboratory and Surveillance Supplement.
10. Patients with mild disease should be provided with standardized instructions on home management of fever and dehydration, pain relief, and recognition of deterioration in status. Patients should also receive information on infection control measures to follow at home (Box 4). Patients cared for at home should be separated from other household members as much as possible. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed of with other household waste. 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, using a surgical or procedure mask by the patient or caregiver during interactions may be beneficial. Separation of eating utensils for use by a patient with influenza is not necessary, as long as they are washed with warm water and soap. Additional information on measures to limit the spread of pandemic influenza in the home and community can be found in Infection Control and Disease Transmission Supplements.

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**Figure 3. Management of Community-Acquired Pneumonia during an Influenza Pandemic: Adults**



**Figure 4: Management of Community Acquired Pneumonia during an Influenza Pandemic: Children**



## **Appendix 1.**

### **Clinical Presentation and Complications of Seasonal Influenza**

Although often quite characteristic, the clinical picture of seasonal influenza can be indistinguishable from illness caused by other respiratory infections. The frequent use of non-specific terms such as "flu" and "influenza-like illness" makes the clinical diagnosis of influenza even more indefinite. Even when the diagnosis of influenza is confirmed, management can be challenging, as influenza virus infection can result in subclinical infection, mild illness, uncomplicated influenza, or exacerbation of underlying chronic conditions to fulminant deterioration, and can result in a wide variety of complications.

This appendix provides a brief description of the common presentations and complications of seasonal human influenza. Novel and pandemic influenza viruses might, however, cause quite different clinical syndromes than seasonal influenza. For instance, seasonal influenza-related complications more commonly affect those at the extremes of age, whereas previous pandemics resulted in disproportionate morbidity and mortality in young and previously healthy adults. It will be essential to describe and disseminate the clinical features of novel or pandemic influenza cases as soon as they are identified.

#### **Presentation of Seasonal Influenza**

- A typical case of uncomplicated seasonal influenza begins abruptly and is manifested by systemic symptoms such as fever, chills, myalgias, anorexia, headache, and extreme fatigue. Fever typically lasts 2–3 days and usually reaches 38–40°C, but can be higher (particularly in children).
- Respiratory tract symptoms such as nonproductive cough, sore throat, and upper respiratory congestion occur at the same time, although these may be overshadowed by systemic complaints.
- Physical examination typically reveals fever, weakness, mild inflammation of the upper respiratory tract, and rare crackles on lung examination, but none of these findings is specific for influenza.
- In uncomplicated illness, major symptoms typically resolve after a limited number of days, but cough, weakness, and malaise can persist for up to 2 weeks.
- In the elderly and in infants, the presenting signs can include respiratory symptoms with or without fever, fever only, anorexia only, lassitude, or altered mental status. In children, fevers are often higher than in adults and can lead to febrile seizures. Gastrointestinal manifestations (e.g., vomiting, abdominal pain, and diarrhea) occur more frequently in children. Fever or apnea without other respiratory symptoms might be the only manifestations in young children, particularly in neonates.

At times, influenza can be difficult to distinguish from illnesses caused by other respiratory pathogens on the basis of symptoms alone. Fever and cough, particularly in combination, are modestly predictive of influenza in unvaccinated adults, as is the combination of fever, cough, headache, and pharyngitis in children.

Other constitutional signs and symptoms, such as chills, rigors, diaphoresis, and myalgias, are also suggestive. The positive predictive value of any clinical definition is strongly dependent on the level of influenza activity and the presence of other respiratory pathogens in the community.

### **Routine laboratory findings for seasonal influenza**

No routine laboratory test results are specific for influenza. Leukocyte counts are variable. Severe leukopenia and thrombocytopenia have been described in fulminant cases. Leukocytosis of >15,000 cells/mL should raise suspicion for a secondary bacterial process. Comprehensive laboratory testing might reveal other influenza-related complications (see Complications below).

### **Differential diagnosis**

The fever and respiratory manifestations of seasonal influenza are not specific and can occur with several other pathogens, such as respiratory syncytial virus (RSV), parainfluenza viruses, adenoviruses, human metapneumovirus, rhinoviruses, coronaviruses, and *Mycoplasma pneumoniae*.

In contrast to influenza, most of these pathogens do not usually cause severe disease, particularly in previously healthy adults. However, RSV and parainfluenza viruses can lead to severe respiratory illness in young children and the elderly and should be considered in the differential diagnosis if circulating in the community. Even if an alternate etiology is determined, viral or bacterial co-infections can still be a possibility.

Often the clinician can diagnose seasonal influenza with reasonable certainty in the absence of laboratory testing due to the tendency for influenza to occur in community epidemics and to affect persons of all ages. Nevertheless, a definitive diagnosis requires laboratory testing.

Rapid influenza diagnostic tests and immunofluorescence testing using a panel of respiratory pathogens aid in the clinical management of patients with suspected influenza. Further information on diagnostic testing for influenza can be found at <http://www.cdc.gov/flu/professionals/labdiagnosis.htm>.

### **Complications**

#### **Groups at risk for complications of influenza**

The following groups are currently recognized to be at higher risk for complications of seasonal influenza (e.g., hospitalization; death) compared to healthy older children and younger adults (see Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2005; 54: 1-40 <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm>).

- Persons aged 65 years and older
- Residents of nursing homes and other chronic-care facilities that house persons of any age who have chronic medical conditions
- Adults and children who have chronic disorders of the pulmonary or cardiovascular systems, including asthma
- Adults and children who required regular medical follow-up or hospitalization during the previous year because of chronic metabolic diseases (including diabetes mellitus), renal

dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications or by infection with human immunodeficiency virus [HIV])

- Children and adolescents (aged 6 months–18 years) who are receiving long-term aspirin therapy (and are therefore at risk for Reye syndrome)
- Pregnant women
- All children aged <2 years
- All persons with conditions that can compromise respiratory function or the handling of respiratory secretions, or that can increase the risk of aspiration

Excluding the last group, in 2003 approximately 85 million persons in the United States belonged to one or more of these target groups.

### **Types of influenza complications**

1. Respiratory exacerbations. Worsening of underlying chronic diseases are the most common serious complications of influenza. Complications are frequently related to underlying respiratory disease, such as chronic obstructive pulmonary disease (COPD). In some cases, typical influenza symptoms might be brief or minimal compared to the exacerbation of the underlying disease, particularly in the elderly.
2. Secondary bacterial pneumonia. This common complication is characterized by an initial improvement in influenza symptoms over the first few days followed by a return of fever, along with a productive cough and pleuritic chest pain. Findings include lobar consolidation on chest x-ray and, in adults, sputum smears positive for leukocytes and bacteria. The most commonly isolated pathogens are *Streptococcus pneumoniae*, *Staphylococcus aureus*, group A Streptococcus, and *Haemophilus influenzae*.
3. Primary influenza viral pneumonia. A prominent feature of previous influenza pandemics, primary influenza viral pneumonia is currently a relatively rare outcome of seasonal influenza in adults. In contrast, children with pneumonia are more likely to have a viral etiology, including influenza than a bacterial cause. Primary influenza pneumonia usually begins abruptly, with rapid progression to severe pulmonary disease within 1–4 days. Physical and radiologic findings are consistent with diffuse interstitial and/or alveolar disease, including bilateral inspiratory crackles on auscultation and diffuse pulmonary infiltrates on chest radiographs. Hypoxia and hemoptysis indicate a poor prognosis, and recovery can take up to 1–2 weeks.
4. Mixed viral-bacterial pneumonia. This is slightly more common than primary viral pneumonia, and, although mixed pneumonia may have a slower progression, the two are often indistinguishable. Bacterial pathogens in mixed infections are similar to those found in secondary bacterial pneumonias.
5. Bronchiolitis due to influenza. This occurs more commonly in children, with a clinical picture similar to that of RSV or parainfluenza virus infections.
6. Croup. Influenza can cause croup (laryngotracheobronchitis) in children, and, although influenza viruses are a less common etiology than other respiratory viruses, the illness can be more severe.

7. Otitis media & sinusitis. Children with influenza can also develop otitis media, due to either direct viral infection or secondary bacterial involvement. Similarly, bacterial sinusitis can develop in older children and adults with influenza.
8. Cardiovascular complications. A range of cardiovascular problems can occur, most commonly as an exacerbation of an underlying condition such as congestive heart failure. Pregnant women and children with congenital heart defects can also experience worsening cardiac function during an influenza illness. Cardiac inflammation, such as myocarditis and pericarditis, can be found occasionally, although clinical manifestations are rare. Available reports suggest that myocarditis might have occurred more frequently during pandemic years. Influenza virus is not typically identified in heart tissue, suggesting that the host inflammatory response might play a role. Although influenza has been associated in rare instances with sudden death possibly due to cardiac arrhythmia, this outcome has been difficult to investigate.
9. Gastrointestinal symptoms. Gastrointestinal involvement is uncommon in adults with seasonal influenza; it is more commonly reported in children. Manifestations can include vomiting and diarrhea, sometimes leading to significant dehydration. Transient hepatic inflammation can occur in rare circumstances.
10. Myositis related to influenza. This is another complication more commonly found in children. It is also more frequently associated with influenza B than with influenza A. Involvement may be limited to pain and weakness of the lower extremities but sometimes can progress to rhabdomyolysis and renal failure.
11. Encephalopathy. Influenza-associated encephalopathy, characterized by an acute alteration in mental status within the first few days of fever onset, is a recently recognized complication of influenza in children. Most reports of influenza-associated encephalopathy have been in Japanese children, but the condition has been reported sporadically in other countries, including the United States. The syndrome can include seizures, neurologic deficits, obtundation, and coma. While most children recover completely, some cases can result in permanent sequelae or death. This condition might be due to an abnormal host inflammatory response without viral infection of the central nervous system.
12. Other neurologic complications. Uncomplicated self-limited febrile seizures can occur with high fever, usually occurring in younger children. Guillain-Barré syndrome and transverse myelitis have been reported to occur in very rare instances after influenza, but no definite etiologic relationship has been established.
13. Reye syndrome. This is characterized by an acute encephalopathy combined with hepatic failure in the absence of inflammation in either the brain or the liver. Hepatic involvement includes fatty infiltration, hypoglycemia, and hyperammonemia, whereas neurologic manifestations include cerebral edema, delirium, coma, and respiratory arrest. Reye syndrome was found to be associated with the use of aspirin in children; its incidence has decreased dramatically since the 1980s after aspirin use was discouraged in children.

14. **Systemic complications.** Seasonal influenza can be associated with systemic symptoms, such as sepsis and shock. Sepsis caused by invasive co-infection with *Staphylococcus aureus*, including methicillin-resistant *S. aureus* (MRSA), or other bacteria, such as *Neisseria meningitidis*. Toxic shock syndrome with bacterial co-infection has also been reported.

## **Appendix 2.**

### **Clinical Presentation and Complications of Illnesses Associated With Avian Influenza A (H5N1) and Previous Pandemic Influenza Viruses**

Human infections with different avian influenza A viruses have emerged and caused mild to severe illness in recent years, including H9N2, H7N7, H7N3, and H7N2. One novel subtype, influenza A (H5N1), has repeatedly caused limited outbreaks of severe and fatal human disease in recent years and therefore has been of particular concern.

#### **Human infection with avian influenza A (H5N1)**

The H5N1 subtype first came to widespread public attention in 1997, when a poultry outbreak of highly pathogenic avian influenza A (H5N1) in Hong Kong caused illness in 18 humans. These cases were the first identified instances of direct avian-to-human transmission of an avian influenza A virus that led to severe disease.

Clinical features ranged from asymptomatic infection or mild upper respiratory symptoms to severe pneumonia and death. Most cases presented with fever, headache, malaise, myalgia, sore throat, cough, and rhinorrhea; a few persons also had conjunctivitis or gastrointestinal distress. Seven persons, mostly children, developed only mild upper respiratory infections, whereas 11 developed severe primary viral pneumonia with rapid deterioration. Most patients in this latter group developed lymphopenia; six developed acute respiratory distress syndrome (ARDS), and five developed multi-organ system failure. Other abnormalities included pulmonary hemorrhage, renal dysfunction, liver failure, pancytopenia, hemophagocytosis, and Reye syndrome (with aspirin ingestion). Notably, none of the patients had secondary bacterial pneumonia. Six of the 18 infected persons eventually died.

Avian influenza A (H5N1) resurfaced in Hong Kong in February 2003, in a father and son returning from Fujian Province, China. Both presented with influenza-like symptoms, chest radiograph abnormalities, and lymphopenia. The father's status rapidly deteriorated, and he developed severe lung involvement and hemophagocytosis; the 8-year-old son recovered. Of note, the father's 7-year-old daughter had also died of a pneumonia-like illness while in China, but the cause of her illness was not determined. The boy reported close contact with live chickens during his visit to China, but no definite source for H5N1 was found.

The most recent human outbreak of avian influenza A (H5N1) has been ongoing since December 2003. This outbreak has been associated with an extensive H5N1 epizootic among poultry in Asia. Transmission continues to be predominantly from birds to humans, although a few instances of limited human-to-human transmission have been suspected.

Reports published from Vietnam and Thailand describe the early confirmed H5N1 cases from this outbreak. These reports characterize human illness with avian influenza A (H5N1) virus infection as a primarily respiratory febrile illness that progresses to severe disease in a high proportion of cases. Among 10 Vietnamese patients,<sup>1</sup> all were previously healthy children or young adults (mean age, 13.7 years) who presented to medical attention with fever, cough, and dyspnea. None of the patients had other respiratory symptoms, such as sore throat or rhinorrhea, but seven developed diarrhea. Significant lymphopenia was observed in all 10 cases, and moderate thrombocytopenia occurred. All 10 had marked abnormalities on chest radiograph, and eight patients—all of whom eventually died—required mechanical ventilation for respiratory failure. Respiratory cultures suggested bacterial pneumonia in two patients.

Of 12 cases described from Thailand,<sup>2</sup> seven were aged <14 years, and all but one were previously healthy. All of the patients developed fever, cough, and dyspnea, and six patients were reported with myalgia and diarrhea. Decreased leukocyte counts were reported in seven cases, thrombocytopenia occurred in four cases, and increased serum liver enzymes were found in eight. All patients had negative blood cultures. They all had abnormal chest radiographs; nine developed respiratory failure with ARDS, whereas five developed cardiac failure, four had renal failure, and eight ultimately died. In the Vietnamese and Thai cases, respiratory deterioration occurred a median of 5 days after symptom onset, but the range was quite wide.

Whereas all patients described above presented with pulmonary symptoms, subsequently published case reports suggest that other clinical syndromes can occur with H5N1 infection.<sup>3,4,5</sup> In one report, a 39-year-old female with confirmed H5N1 from Thailand was initially admitted with symptoms of fever, vomiting, and diarrhea, and was found to have significant lymphopenia. She developed shortness of breath approximately 12 days after illness onset and soon progressed to ARDS and death.

A 4-year-old male from Vietnam presented for medical attention with severe diarrhea, developed acute encephalitis with coma, and died soon thereafter. Although avian influenza A (H5N1) was later detected in throat, stool, serum, and cerebrospinal fluid specimens, the patient had no respiratory symptoms at presentation. This patient's 9-year-old sister died of a similar illness a few days before his illness began, but no H5N1 testing was performed. Asymptomatic H5N1 infection, detected by seroconversion, has been reported. Updated information on avian influenza can be found at [http://www.who.int/csr/disease/avian\\_influenza/en/](http://www.who.int/csr/disease/avian_influenza/en/).

**Illnesses associated with previous pandemic viruses**  
Since most people do not have previous immunity to novel influenza A viruses, an influenza pandemic results in an increased rate of severe disease in a majority of age groups. Nevertheless,

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<sup>1</sup> Tran TH, Nguyen TL, Nguyen TD, Luong TS, Pham PM, Nguyen VC, et al. Avian influenza A (H5N1) in 10 patients in Vietnam. *N Engl J Med.* 2004;350:1179-88.

<sup>2</sup> Chotpitayasunondh T, Ungchusak K, Hanshaoworakul W, Chunsuthiwat S, Sawanpanyalert P, Kijphati R, et al. Human disease from influenza A (H5N1), Thailand, 2004. *Emerg Infect Dis.* 2005;11:201-9.

<sup>3,4,5</sup> de Jong MD, Bach VC, Phan TQ, Vo MH, Tran TT, Nguyen BH, et al. Fatal avian influenza A (H5N1) in a child presenting with diarrhea followed by coma. *N Engl J Med.* 2005;352:686-91.

Apisarnthanarak A, Kitphati R, Thongphubeth K, Patoomanunt P, Anthonont P, Auwanit W, et al. Atypical avian influenza (H5N1). *Emerg Infect Dis* 2004;10:1321-4

Beigel JH, Farrar J, Hayden FG, Hyer R, de Jong MD, Lochindrat S, et al. Avian influenza A (H5N1) infection in humans. *N Eng J Med.* 2005 Sep 29;353(13):1374-85.

the three pandemics of the past century demonstrated significant variability in terms of morbidity.

The 1918–19 pandemic was particularly notable in affecting young, healthy adults with severe illness. A significant proportion of patients developed fulminant disease, accompanied by a striking perioral cyanosis, leading to death within a few days. Postmortem examinations in these patients frequently revealed denuding tracheobronchitis, pulmonary hemorrhage, or pulmonary edema. Others survived the initial illness, only to die of a secondary bacterial pneumonia, usually due to *Streptococcus pneumoniae*, *Staphylococcus aureus*, group A Streptococcus, or *Haemophilus influenzae*.

The clinical features of the subsequent pandemics of 1957–58 and 1968–69 were also typical of influenza-like illness, including fever, chills, headache, sore throat, malaise, cough, and coryza, but were milder compared to the 1918–19 pandemic. On a population level, the impact of influenza in 1957–58 was only one-tenth that observed in 1918–19, and the excess death rate in 1968–69 was only half that observed during 1957–58. However, death rates were elevated among the chronically ill and the elderly, and the occurrence of severe complications, such as primary viral pneumonia, was notably increased in healthy young adults during the 1957–58 pandemic, particularly in pregnant women.

### **Implications for the next pandemic**

The characteristic clinical features of the next influenza pandemic cannot be predicted. It is reasonable to assume that most affected persons will have the typical features of influenza (e.g., fever, respiratory symptoms, myalgia, malaise). However, past pandemics have varied considerably with regard to severity and associated complications.

Illnesses caused by novel influenza viruses such as avian influenza A (H5N1) might predict the potential characteristics of pandemic influenza, but H5N1 has not adapted to spread easily among humans, and its presentation and severity might change as the virus evolves. Even as the next pandemic begins and spreads, the characteristic features might change, particularly if successive waves occur over several months.

Given this potential for a dynamic clinical picture, it will be important for clinicians and public health partners to work together to disseminate updated and authoritative information to the healthcare community on a regular basis.

### Appendix 3.

## Guidelines For Management of Community-Acquired Pneumonia, Including Post-Influenza Community-Acquired Pneumonia

### Rationale

Post-influenza bacterial community-acquired pneumonia will likely be a common complication during the next pandemic and might affect approximately 10% of persons with pandemic influenza, based on data from previous influenza pandemics. Assuming that pandemic influenza will affect about 15%–35% of the U.S. population, approximately 4.4 to 10.2 million cases of post-influenza bacterial community-acquired pneumonia could occur.

Post-influenza bacterial community-acquired pneumonia often presents as a return of fever, along with a productive cough and pleuritic chest pain, after an initial improvement in influenza symptoms over the first few days. Findings include lobar consolidation on chest x-ray and, in adults, sputum smear positive for leukocytes and bacteria. As with other bacterial infections, leukocytosis with increased immature forms may be present, but this finding is neither sensitive nor specific.

The most common etiologies of post-influenza bacterial pneumonia are *Streptococcus pneumoniae*, *Staphylococcus aureus*, group A *Streptococcus*, and *Haemophilus influenzae*.

Primary viral pneumonia, with abrupt onset and rapid progression, is more common than bacterial pneumonia in children, yet rare in adults. Physical and radiologic findings in viral pneumonia are consistent with interstitial and/or alveolar disease and include bilateral inspiratory crackles and diffuse infiltrates.

Mixed viral-bacterial pneumonia is slightly more common than primary viral pneumonia, but they are often indistinguishable. Bacterial pathogens in mixed infections are similar to those found in secondary bacterial pneumonias.

Droplet and Standard Precautions are currently recommended for community-acquired pneumonia of bacterial etiology.<sup>1</sup>

Treatment of community-acquired pneumonia, including post-influenza bacterial community-acquired pneumonia will pose challenges for clinicians during a pandemic. Secondary bacterial pneumonia following influenza virus infection will be difficult to distinguish from community-acquired pneumonia that is not preceded by influenza.

Current guidelines for the treatment of adult community-acquired pneumonia (CAP) during the Interpandemic Period de-emphasize the use of diagnostic testing for pathogen-directed treatment and favor empiric therapy with safe and effective broad-spectrum antibacterials, especially extended-spectrum macrolides and fluoroquinolones. However, these antibacterials will likely be in short supply during a pandemic.

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<sup>1</sup> Centers for Disease Control and Prevention. Guidelines for preventing health-care-associated pneumonia, 2003 recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee. *Respir Care*. 2004;49(8):926-39.

The guidelines in this appendix are therefore designed to assist clinicians in managing patients with community-acquired pneumonia, including post-influenza bacterial community-acquired pneumonia, in a setting of high patient volume and limited clinical resources, where the pressure to treat empirically will likely be even greater than during the Interpandemic Period.

These recommendations are from the November 2005 HHS Pandemic Influenza Plan (<http://www.hhs.gov/pandemicflu/plan/pdf/HHSPandemicInfluenzaPlan.pdf>).

For adults, the guidance draws heavily from the current draft guidelines for the management of CAP developed jointly by the Infectious Diseases Society of America (IDSA)<sup>2</sup> and the American Thoracic Society (ATS).<sup>3</sup> For children, the guidance incorporates recommendations from the British Thoracic Society (BTS),<sup>4</sup> a published review<sup>5</sup> and expert opinions

## **Prevention**

Preventing pneumococcal pneumonia by maximizing vaccination coverage against *Streptococcus pneumoniae* for at risk individuals is important during the Interpandemic, Pandemic Alert, and Pandemic Periods. Current guidelines on the use of the 23-valent pneumococcal polysaccharide vaccine among adults<sup>6</sup> and the 7-valent pneumococcal conjugate vaccine among children<sup>7</sup> are available.

## **Site of care: inpatient versus outpatient**

### **Adults**

IDSA-ATS draft guidelines recommend the use of severity scores, such as the Pneumonia PORT Severity Index (PSI) and the CURB-65 system, to determine which patients can be safely treated as outpatients (Tables 2–5). The use of these or other similar systems could be extremely important during the next pandemic, as hospital beds will be in short supply. However, these systems should be used as guidance and not replace the judgment of the individual clinician.

### **Children**

Current guidelines provide indicators for hospitalization of children with CAP. For infants, the indications include temperature >38.5 C, respiratory rate (RR) >70 breaths per minute, chest retractions (indrawing), nasal flaring, hypoxia, cyanosis, intermittent apnea, grunting, and poor feeding. Indications for hospitalization among older children include temperature >38.5 C, RR >50, chest retractions, nasal flaring, hypoxia, cyanosis, grunting, and signs of dehydration.

As with pandemic influenza, the decision to hospitalize for post-influenza bacterial community-acquired pneumonia during the Pandemic Period will rely on the physician's clinical assessment of the patient as well as availability of personnel and hospital resources. Although an unstable

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<sup>2</sup> Mandell LA, Bartlett JG, Dowell SF, File TM Jr, Musher DM, Whitney C; Infectious Diseases Society of America. Update of practice guidelines for the management of community-acquired pneumonia in immunocompetent adults. *Clin Infect Dis*. 2003; 37(11):1405-33.

<sup>3</sup> Niederman MS, Mandell LA, Anzueto A, Bass JB, Broughton WA, Campbell GD, et al. American Thoracic Society. Guidelines for the management of adults with community-acquired pneumonia. Diagnosis, assessment of severity, antimicrobial therapy, and prevention. *Am J Respir Crit Care Med*. 2001;163(7):1730-54.

<sup>4</sup> British Thoracic Society Standards of Care Committee. British Thoracic Society guidelines for the management of community acquired pneumonia in childhood. *Thorax*. 2002;57(suppl 1):i1-24.

<sup>5</sup> McIntosh, K. Community-acquired pneumonia in children. *N Engl J Med*. 2002;346:429-37.

<sup>6</sup> CDC. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep*. 1997;46(RR-8).

<sup>7</sup> Prevention of pneumococcal disease among infants and young children: recommendations of the Advisory Committee on Immunization Practices. *MMWR Morb Mortal Wkly Rep*. 2000;49(RR-9).

patient will be considered a high priority for admission, patients with certain high-risk conditions (see Appendix 1) might also warrant special attention. Home management with follow-up might be appropriate for well-appearing young children with fever alone.

## **Diagnostic testing**

### **Adults**

Generally, the etiologies associated with CAP during the Interpandemic Periods will continue to occur during a pandemic. Familiarity with the appropriate use of available diagnostic tests is therefore a key feature of clinical preparedness.

1. Look for *S. pneumoniae* and *S. aureus*. Draft IDSA-ATS guidelines recommend obtaining appropriate specimens for etiologic diagnosis whenever such an etiology would alter clinical care. Since the most common etiologies of post-influenza bacterial community-acquired pneumonia [*S. pneumoniae* and *S. aureus*, including community-acquired methicillin-resistant *S. aureus* (CA-MRSA)] are treated differently, diagnostic testing should be performed to the extent feasible to distinguish among these pathogens.
2. Do additional tests for hospitalized patients.
  - a. Blood cultures, pneumococcal urine antigen testing, and pleural fluid aspiration with Gram stain and culture should be considered.
  - b. Since sputum Gram stain and culture is highly dependent on patient and technical conditions, these are considered optional for hospitalized but non-severe patients.
  - c. For patients admitted to an ICU, consider aspiration of endotracheal secretions for Gram stain and bacterial culture.

### **Children**

Diagnostic studies for identifying bacterial pneumonia in young children are severely limited.

1. Blood cultures should be obtained from all children suspected of having post-influenza bacterial community-acquired pneumonia.
2. Sputum samples are rarely useful in children. However, if tracheal or pleural fluid aspirates are available, they should be submitted for Gram stain and bacterial culture.
3. If pleural effusions are present, they should be aspirated and submitted for Gram stain and culture.
4. Test antibiotic susceptibility testing of any bacterial isolates to direct treatment, where feasible.

## **Antibiotic treatment**

### **Adults *and* children**

Antibiotics will likely be in short supply during the Pandemic Period, particularly those needed to treat CAP. Therefore, use of empiric therapy for all persons with post-influenza bacterial community-acquired pneumonia may not be feasible.

1. Antimicrobial therapy is best managed by culture and susceptibility testing of appropriate clinical specimens, and by awareness of local antibiotic susceptibility patterns. (See Figures 1 and 2 for additional clinical management algorithms and information.)
2. A history of a preceding influenza-like illness, especially when pandemic influenza is circulating in the community, might help to select those patients more likely to have viral rather than bacterial respiratory infection.
3. Empiric therapy should be directed toward the most likely etiologies of post-influenza bacterial community-acquired pneumonia.

4. Concurrent antiviral treatment should also be considered, depending on the timing and presentation of illness, the clinical status of the patient, and the availability of antivirals (see Vaccine and Antiviral Supplement).

**Clinical Guidelines Supplement. Appendix 3. Table 2.  
Pneumonia PORT Severity Index (PSI) Calculation**

Patient Characteristic		Points Assigned
Demographic Factor		
Male	Female	Age Number of years Number of years-10
Nursing home resident		+10
Comorbid illnesses		
Neoplastic disease		+30
Liver disease		+20
Congestive heart failure		+10
Cerebrovascular disease		+10
Renal disease		+10
Physical examination finding		
Altered mental status		+20
Respiratory rate >30 breaths/minute		+20
Systolic blood pressure <90 mm Hg		+20
Temperature <35 C or >40 C		+15
Pulse >125 beats/minute		+10
Laboratory and /or radiographic finding		
Arterial pH <7.35		+30
Blood urea nitrogen >30 mg/dl		+20
Sodium <130mmol/l		+20
Glucose >250 mg/dl		+10
Hematocrit <30%		+10
<90% by pulse oximetry OR <60mm Hg by arterial blood gas		+10
Pleural effusion on baseline radiograph		+10

**Clinical Guidelines Supplement. Appendix 3. Table 3.  
Pneumonia Severity Index Risk Classification**

PSI Class	Risk	Characteristics and Points	Recommended Site of Care
I		Age >50 years + no comorbid conditions, normal range vital signs, normal mental status	Outpatient
II		<70	Outpatient
III		71–90	Outpatient / Brief inpatient
IV		91–130	Inpatient
V		130	Inpatient

**Clinical Guidelines Supplement5. Appendix 3. Table 4.  
CURB-65 Scoring System**

Characteristic	Points
Confusion <sup>1</sup>	+1
Urea >7mmol/l (20mg/dl)	+1
Respiratory rate >30 breaths per minute	+1
Blood pressure (Systolic <90 or diastolic <60 mm Hg)	+1
Age >65 years	+1

1 Based on a specific mental test or disorientation to person, place, or time.

**Clinical Guidelines Supplement. Appendix 3. Table 5.  
Recommended site of care based on CURB-65 system**

Number of Points	Recommended Site of Care
0–1	Outpatient
2	Admit to medical ward
3–5	Admit to medical ward or ICU

## Appendix 4. Clinician Fact Sheet: Influenza

### Epidemiology

- **Human** disease is caused by influenza A or influenza B viruses
- Ongoing minor antigenic changes require yearly vaccination in the fall
- Knowing the currently circulating strain aids in decisions regarding antiviral treatment and prophylaxis

### Clinical Presentation

- High fever, chills, prostration, muscle aches, sore throat, coryza, cough; at times, also vomiting and diarrhea

### Differential Diagnosis

- Febrile respiratory illnesses such as bacterial pneumonia, mycoplasma, adenovirus, avian influenza (e.g. influenza A H5N1), and SARS

### Laboratory

- Rapid testing of nasopharyngeal swabs for influenza
- Consider NP swab for respiratory viral culture (if positive, allows for further typing of isolate)
- Do not order routine viral **culture** if novel influenza A virus infection is suspected

### Infection control

- Droplet precautions (mask within 3-6 feet)
- Routine standard precautions and good handwashing before & after patient contact

### Treatment & Prophylaxis

- Antivirals shorten the course of illness when given within the first 1-2 days of influenza symptoms
- CDC recommended against the use of amantadine & rimantadine for the 2005-2006 and the 2006-2007 influenza seasons

	<b>Amantadine</b> (Symmetrel®)	<b>Rimantadine</b> (Flumadine®)	<b>Oseltamivir</b> (Tamiflu®)	<b>Zanamivir</b> (Relenza®)
<b>Effective for Influenza A</b>	<b>NOT RECOMMENDED</b>		Yes	Yes
<b>Effective for Influenza B</b>	No	No	Yes	Yes
<b>Mode</b>	Oral	Oral	Oral	Inhaled
<b>Treatment</b>	≥ 1 y.o.	≥ 13 y.o.	≥ 1 y.o.	≥ 7 y.o.
<b>Prophylaxis</b>	≥ 1 y.o.	≥ 1 y.o.	≥ 1 y.o.	Not licensed – 2006 Updated information in ACIP Influenza Recommendations

### Follow CDC recommendations for ages and contraindications

July 2006 ACIP Recommendations on “[Prevention and Control of Influenza](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5510a1.htm?s_cid=rr5510a1_e),  
[http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5510a1.htm?s\\_cid=rr5510a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5510a1.htm?s_cid=rr5510a1_e)]

**Remember Pneumovax® or Prevnar® pneumococcal vaccine for high-risk individuals.**

**Influenza Vaccine Recommendations for 2005-2006 season**

Inactivated intramuscular shot [Multiple manufacturers]:

- 1) Ages  $\geq$  50 y.o.
- 2) All children ages 6 mo.-23 mo.
- 3) Household contacts and out-of-home caretakers of infants < age 6 mo.
- 4) Ages 2 y.o.-64 y.o. with a chronic medical conditions (e.g. heart disease, lung disease, asthma, diabetes, kidney disease, immunosuppression, etc.)
- 5) Pregnant during influenza season.
- 6) Children age 6 mo.-18 y.o. on chronic aspirin therapy.
- 7) Health care workers (HCW) with direct patient care.
- 8) Residents in nursing home or long-term care facility.
- 9) **Anyone** wishing to reduce their risk of influenza.

Live attenuated influenza vaccine (LAIV) [FluMist™]:

- Healthy, nonpregnant people ages 5 y.o. through 49 y.o., including close contacts of infants and many health care workers

**Pediatric pointers**

- Children aged 6 months to less than 9 years old receiving any influenza vaccine for the first time need two doses of vaccine administered at least one month apart.
  - Two inactivated shots should be spaced  $\geq$  4 weeks apart
  - Two LAIV doses, given only to those children age five years to less than nine years, should be separated by 6-10 weeks
- Notify local or county health department for pediatric influenza deaths.

**Staphylococcal and MRSA disease associated with influenza**

- MRSA is becoming a community-acquired infection
- Coagulase positive *Staphylococcus* secondary respiratory infections are more likely with influenza
- During the 2003-2004 season, CDC reported severe illness and death associated with influenza and MRSA
- Physicians caring for patients who have influenza and worsening respiratory status requiring IV antibiotics should consider using **vancomycin** for staphylococcal coverage until culture results are available and/or clinical improvement occurs
- Many oral antibiotics do not cover MRSA
- Oral antibiotics that may be effective against MRSA
  - Trimethoprim-sulfamethoxazole
    - Poor against *Streptococcus pneumoniae*
    - Avoid in pregnancy
  - Clindamycin (Good against *Streptococcus pneumoniae*)

**For More Information**

- KDPH Web site (<http://chfs.ky.gov/dph/default.htm>)
- Centers for Disease Control and Prevention Web site at [www.cdc.gov/flu](http://www.cdc.gov/flu)
- MMWR July 29, 2005 "Treatment and Control of Influenza" at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm>
- July 2006 ACIP Recommendations on "Prevention and Control of Influenza, [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5510a1.htm?s\\_cid=rr5510a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5510a1.htm?s_cid=rr5510a1_e)

## Appendix 5. Clinician Fact Sheet: Antivirals

### Four antiviral drugs are licensed for treatment and chemoprophylaxis

- Antivirals shorten the course of illness when given within the first 1-2 days of influenza symptoms
- Avoid antivirals in pregnant women unless benefit outweighs risk
- Though usually effective for influenza A, this season amantadine and rimantadine are not recommended in the U.S. due to high levels of resistance

	<b>Amantadine</b> (Symmetrel®)	<b>Rimantadine</b> (Flumadine®)	<b>Oseltamivir</b> (Tamiflu®)	<b>Zanamivir</b> (Relenza®)
<b>Effective for Influenza A</b>	<b>NOT RECOMMENDED</b>		Yes	Yes
Effective for Influenza B	No	No	Yes	Yes
<b>Mode</b>	<b>Oral</b>	<b>Oral</b>	<b>Oral</b>	<b>Inhaled</b>
<b>Treatment</b>	<b>≥ 1 y.o.</b>	<b>≥ 13 y.o.</b>	<b>≥ 1 y.o.</b>	<b>≥ 7 y.o.</b>
<b>Prophylaxis</b>	<b>≥ 1 y.o.</b>	<b>≥ 1 y.o.</b>	<b>≥ 1 y.o.</b>	<b>N/A --2006</b> <b>Updated information in ACIP Influenza Recommendations</b>

### Priority groups for treatment with antiviral medicines

- Any person with a potentially life-threatening influenza-related illness
- Any person at high risk for serious complications of influenza and who is within the first 2 days of illness onset

### Priority groups for chemoprophylaxis with antiviral medicines

- All residents and workers during an institutional outbreak
- All persons at high risk of serious influenza complications if they are exposed to a known or suspected case of influenza

### Consider antiviral use in these patients if local supplies are adequate:

#### **Chemoprophylaxis**

- Persons in communities where influenza viruses are circulating (influenza outbreak usually lasts 6-8 weeks)
- Persons at high risk of serious complications who cannot get vaccinated. Persons at high risk of serious complications who have been vaccinated but have not had time to mount an immune response to the vaccine. In adults, chemoprophylaxis should occur for 2 weeks after vaccination.
- Persons with immunosuppressive conditions who are not expected to mount an adequate antibody response to influenza vaccine.
- Health-care workers with direct patient care responsibilities who have not been vaccinated

#### **Treatment**

- Infected adults and children aged  $\geq 1$  year who do not have conditions placing them at high risk for serious complications secondary to influenza infection.

### Length of Antiviral Treatment and Chemoprophylaxis

	<b>Treatment Length</b>	<b>Chemoprophylaxis Length</b>		
		After exposure	Institutional outbreak	After vaccine**
<b>Amantadine</b>	<b>NOT RECOMMENDED (ACIP 2006)</b>			
<b>Rimantadine</b>				
<b>Oseltamivir</b>	5 days	7 days	Until outbreak over	2 weeks
<b>Zanamivir</b>		N/A	N/A	N/A

\*Until afebrile 1-2 days \*\* If antiviral prophylaxis is desired for high-risk individuals during the time immunity is developing

#### **Pediatric Pointers**

- Children  $\leq 9$  years old who have never had an influenza vaccine need 2 doses of influenza vaccine,  $\geq 1$  month apart to be optimally protected. Therefore, if a high-risk child is vaccinated when there is influenza in the community, antiviral prophylaxis may need to be continued for 6 weeks for optimal protection.
- For pediatric antiviral use where no liquid formulation is available, open the capsule or crush the tablet, and give the appropriate dose in cherry syrup.

#### **ANTIVIRAL MEDICINES**

**Amantadine** [100 mg capsule; 50 mg/5 mL syrup] - **NOT RECOMMENDED (ACIP 2006)**

**Rimantadine** [100 mg tablet; 50 mg/5 mL syrup] -- **NOT RECOMMENDED (ACIP 2006)**

**Oseltamivir (Tamiflu®)** [75 mg tablet; 60 mg/5 mL suspension]

- Treatment and prophylaxis of influenza A & B in  $\geq 12$  months old.
- Treatment: 75 mg PO **twice daily** for 5 days.
- Lower dose in children based on weight:
  - $\leq 15$  kg, 30 mg BID;
  - $>15-23$  kg, 45 mg BID;
  - $>23-40$  kg, 60 mg BID;
  - $>40$  kg, 75 mg PO BID.
- Prophylaxis: 75 mg PO **once daily**
- Side effects: nausea & vomiting
- Reduce dose to 75 mg every other day when CrCl 10-30 mL/min
- 

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**Zanamivir (Relenza®)** [Inhaler]

- Treatment of influenza A & B in  $\geq 7$  years of age.
- Inhalation (10 mg) twice daily for 5 days.
- Side effects: Bronchospasm

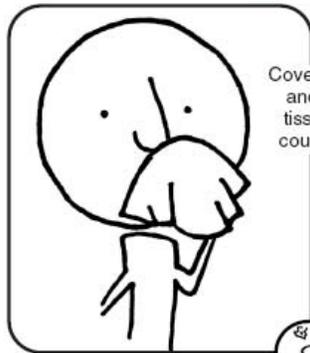
**For more detailed information about each antiviral medication**

See <http://www.cdc.gov/flu/professionals/treatment>

Appendix 6.  
Respiratory Etiquette Poster

**Stop the spread of germs that make you and others sick!**

# Cover your Cough



Cover your mouth and nose with a tissue when you cough or sneeze

or cough or sneeze into your upper sleeve, not your hands.



Put your used tissue in the waste basket.



You may be asked to put on a surgical mask to protect others.

# Clean your Hands

after coughing or sneezing.



Wash with soap and water or clean with alcohol-based hand cleaner.



Minnesota Department of Health  
717 SE Osborne Street  
Minneapolis, MN 55414  
612-676-6414 or 1-877-676-6414  
www.health.state.mn.us



Minnesota Antibiotic Resistance Collaborative



**KENTUCKY PANDEMIC INFLUENZA PREPAREDNESS PLAN  
VACCINE DISTRIBUTION AND USE SUPPLEMENT V**

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## **SUMMARY OF PUBLIC HEALTH ROLES AND RESPONSIBILITIES FOR VACCINE DISTRIBUTION AND USE**

### **Interpandemic and Pandemic Alert Periods**

#### A. Department for Public Health/Local Health Departments

- Work with healthcare partners and other stakeholders to develop state-based plans for vaccine effectiveness, safety, distribution and use.

### **Pandemic Period**

#### A. After the first reports of pandemic influenza are confirmed and before a pandemic vaccine becomes available

##### 1. Department for Public Health/Local Health Department will:

- Work with healthcare partners and other stakeholders to distribute, deliver, and administer vaccines to designated groups if stockpiled influenza vaccine of the pandemic subtype is available,
- Mobilize healthcare partners, and prepare to activate state-based plans for distributing and administering vaccines.
- Keep the healthcare and public health workforce up-to-date on projected timelines for availability of vaccines against pandemic influenza.
- Review modifications, if any, to recommendations on vaccinating priority groups.
- Accelerate training in vaccination and vaccine monitoring for public health staff and for partners responsible for vaccinating priority groups.
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications.

#### B. After a vaccine becomes available

##### 1. Department for Public Health/Local Health Departments will:

- Work with healthcare partners and other stakeholders to distribute, deliver, and administer pandemic vaccines to priority groups.
- Monitor vaccine supplies, distribution, and use.
- Monitor and investigate adverse events.
- Phase-in vaccination of the rest of the population after priority groups have been vaccinated.
- Provide updated information to the public via the news media.
- Work with federal partners to evaluate vaccine-related response activities when the pandemic is over.

## **I. 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 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 to:

- Ensure efficient and equitable distribution of pandemic vaccine, according to priority lists.
- Rapidly determine vaccine effectiveness.
- Provide ongoing and timely monitoring of vaccine coverage.
- Provide ongoing and timely monitoring of vaccine safety.

## **II. OVERVIEW**

The Vaccine Supplement provides recommendations to state and local partners and other stakeholders on planning for the different elements of a pandemic 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.

Additional issues that might be of interest to healthcare partners that administer vaccine are addressed in the Healthcare Planning Supplement.

## **III. GUIDELINES FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS**

### **A. Vaccination Against Seasonal Influenza Virus Strains**

During the Interpandemic Period, the Department for Public Health in coordination with local health departments will work with healthcare partners to:

1. Enhance levels of seasonal influenza vaccination in groups at risk for severe influenza and in healthcare workers.
  - 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.

2. Enhance levels of pneumococcal polysaccharide vaccination for whom it is recommended.
  - 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.

## **B. Responsibility of the Department for Public Health**

- Provide guidance to local health departments during seasonal epidemics of influenza regarding vaccine procurement, effectiveness, safety, distribution and use.
- Use the Health Alert Network during seasonal epidemics of influenza to provide an open line of communication to local health departments in regard to state-wide vaccine supply.
- Provide guidance to the general population during seasonal epidemics of influenza regarding vaccine effectiveness and availability using the Cabinet for Health and Family Services' influenza Web address ([www.chfs.ky.gov/KDPH/Influenza.htm](http://www.chfs.ky.gov/KDPH/Influenza.htm)) and an influenza telephone hotline (502-564-5353).
- Conduct frequent meetings of the Seasonal Influenza Committee within the Department for Public Health to monitor state-wide vaccine distribution, administration and potential shortages.
- Communicate vaccine prioritization to local health departments, private providers and the general public in the event of a vaccine shortage.
- Work with stakeholders (Schools of Public Health, long term care facilities, private providers, employer groups and other health related organizations) to strengthen influenza and pneumococcal vaccination efforts.

## **C. Responsibility of the Local Health Departments**

- Conduct county-wide assessments for seasonal epidemics of influenza regarding vaccine procurement by long term care facilities, hospitals and private physicians to determine anticipated vaccine supply.
- Provide vaccine inventory and administration data to the Department for Public Health utilizing the Health Alert Network.
- Provide information and education to the population regarding vaccine effectiveness, vaccine supply and prioritization of vaccine.
- Emphasize the importance of late season vaccination and fully utilize vaccine supply.
- Provide pneumococcal vaccination to eligible individuals.
- Exercise mass vaccination plans in preparation for a potential pandemic.
- Develop a partnership with other community healthcare providers in regard to influenza vaccination.

## **IV. PREPAREDNESS PLANNING FOR VACCINATION AGAINST A PANDEMIC INFLUENZA STRAIN**

### **A. Vaccination of Priority Groups**

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, and complication rates) and on vaccine effectiveness. The Department for Public Health will comply with the National Vaccine Advisory Committee (NVAC) and Advisory Committee on Immunization Practices (ACIP) Recommendations for Prioritization of Pandemic Influenza Vaccine as they apply to Kentucky residents. Any changes in the NVAC/ACIP recommendations will be reflected in the Kentucky Recommendations for Prioritization of Pandemic Influenza Vaccine (Appendix 1) issued in the Kentucky Pandemic Influenza Preparedness and Response Plan.

### **B. The following activities will be the Responsibility of the Department for Public Health:**

- In collaboration with Regional Epidemiologists, Public Health Preparedness Planners and Local Health Departments, KDPH will enumerate essential priority groups at the state level.
- Provide guidance to local health departments and other healthcare providers on any changes made to priority groups due to the epidemiology of the novel virus.
- Educate professional organizations and other stakeholders about the need for priority groups and the rationale for the groups currently recommended.

### **C. The following activities will be the responsibility of the Local Health Departments:**

- Identify and enumerate recommended priority groups at the local level.
- 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.
- Provide education on priority groups and rationale to healthcare providers and residents in the community.

## **V. VACCINE DISTRIBUTION**

HHS is working to expand pandemic influenza vaccine production capacity and will signal to manufacturers when to shift from annual to pandemic vaccine production and assure that pandemic vaccine is produced at full capacity.

At the onset of an influenza pandemic, HHS, in concert with U.S. Congress in collaboration with the states, will work with the pharmaceutical industry to acquire vaccine directed against the pandemic strain. Distribution of pandemic vaccine to health departments and providers will occur via private-sector vaccine distributors or directly via manufacturer. Only stockpiled pre-pandemic vaccine would be distributed by the

federal government, if used. Due to the uncertainty of the method of distribution, multiple methods of distribution are accounted for in this plan.

### **A. Distribution to Local Health Departments**

If vaccine is delivered to the Department for Public Health in coordination with the federal government or directly from vaccine manufacturers, the following distribution plan will be activated:

- Receipt of vaccine by the state and distribution to local health departments/districts will follow the guidelines set forth in Kentucky Emergency Operations Plan Appendix M-10 (Strategic National Stockpile Program).
- If vaccine is delivered to local health departments/districts directly from vaccine manufacturers, the following activities will be the responsibility of the local health departments/districts:
  - Local health departments/districts will provide vaccination to persons in priority groups.
  - Local health departments/districts will activate established and exercised plans for mass vaccination while ensuring efficient and equitable distribution of pandemic vaccine, according to priority lists.
  - Maintain strategies and equipment to ensure vaccine security issues, cold chain requirements, and transport and storage issues.
  - Identify locations for vaccination clinics that will be operated by health departments and enter into memoranda of agreement with organizations that agree to provide vaccinators or other staff.
  - 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
- Local health departments/districts plans should also specifically address the delivery of pandemic vaccine to medically underserved and migrant populations to improve equity in access within priority groups and, later, the general population.

### **B. Distribution to Private Providers**

If vaccine is administered by private-sector organizations or providers at offices, clinics, or other sites, KDPH will be responsible for the following:

- Providing vaccination information to healthcare providers regarding priority groups, vaccine safety and effectiveness, storage and handling, etc.
- Utilize Immunization Program field staff to collect and redistribute unused vaccine from healthcare providers who have met their priority vaccination goals.
- Monitoring vaccine administration so that it follows existing plans on priority groups based on data submitted by local health departments/districts.

Local health departments/districts will be responsible for the following:

- Providing vaccination information to healthcare providers regarding priority groups, vaccine safety and effectiveness, storage and handling, etc.
- Collecting data from vaccinating providers on inventory, vaccine administration, priority group eligibility screening, etc.
- Reporting collected information to the KDPH via the Health Alert Network, utilizing the format described in the “Vaccine Monitoring and Data Collection” portion of this supplement.

### **C. Second Dose Vaccinations**

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. KDPH along with local health departments/districts will be responsible for 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.
- Use immunization registry or another system that would accomplish the goals of pandemic vaccination.

### **D. Contingency Plan for Investigational New Drug (IND) Use**

State and local health departments should be prepared to distribute unlicensed vaccines (if needed) under FDA’s IND provisions. Unlicensed vaccines might be needed, for example, if pandemic spread is rapid and standard vaccine efficacy and safety tests are not completed before the response.

IND provisions require strict inventory control and record-keeping, completion of a signed consent form from each vaccine recipient, 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.

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".

### **E. Vaccine Monitoring and Data Collection**

To ensure optimal use of a new pandemic influenza vaccine, state and local health departments should be prepared to collect data on vaccine effectiveness, vaccine supply and distribution, vaccine coverage, and vaccine safety.

### **F. Vaccine Effectiveness**

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.

### **G. 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 the major responsibility for allocation decisions and will be 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.
- The Kentucky Immunization Registry may be adapted to track coverage with pandemic influenza vaccine. Kentucky may also 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

Currently, the Department for Public Health utilizes the Health Alert Network to collect inventory and administration data for seasonal influenza and barring further instruction from CDC, would continue to utilize that method in a pandemic.

### **H. Kentucky's Immunization Registry**

Kentucky's Immunization Registry is being developed by the Department for Public Health and should be operational in 2007. The Immunization Registry will be a confidential, population-based, computerized system for maintaining information

regarding vaccinations. The Registry will include persons in the geographic area of the Commonwealth of Kentucky and will provide a single data source for all community vaccination partners, offering benefits to parents, communities, and health-care providers. The Registry will electronically store data on all core data elements that are recommended and approved by the NVAC. A Registry record will be created within 6 weeks of birth for each newborn child in Kentucky. The Registry will enable access to and retrieval of vaccination information at the time of encounter and will produce official immunization certificates; Encounter information will be received and processed within 1 month of vaccine administration. The Registry will automatically determine the routine childhood vaccination(s) needed, in compliance with current ACIP recommendations when an individual presents for a scheduled vaccination. Individuals will be automatically identified when due or late for vaccination(s) to enable the production of reminder/recall notifications. Immunization coverage reports will be automatically produced and stratified by providers, age groups, and geographic area. Electronic data will be exchanged with external systems using Health Level 7 standards. State-of-the-art technology will protect the confidentiality of stored healthcare data and will ensure the confidentiality and security of healthcare information contained.

The Immunization Registry will be architecturally connected to and functionally interoperable with the Kentucky Electronic Disease Surveillance System (KY-EDSS), which is the Commonwealth's implementation of the federal initiative called the National Electronic Disease Surveillance System (NEDSS). This system is designed to detect infectious disease outbreaks rapidly, to facilitate the electronic transfer of appropriate clinical information from external systems to the Department for Public Health, to reduce the provider burden in the provision of information, and to enhance both the timeliness and quality of information provided. The Immunization Registry provides application software functionality for the KY-EDSS to monitor and report information about vaccine preventable diseases. In turn, the NEDSS Logical Data Model includes many database tables and relationships that are used to support immunization efforts.

Effective use of the Immunization Registry during an infectious disease emergency requires a high emphasis on electronically maintaining associated demographic (home and occupation), contact (communicable disease tracing), clinical, geospatial and event (threat, facility, etc.) data in forms that can be readily associated, re-linked and processed. Automated record linking capabilities are specifically designed to facilitate data exchange between partners. During an infectious disease emergency, public health agencies will be able to use Immunization Registry components to manage case contacts given prophylaxis, help identify populations at high risk and persons who are under-vaccinated, monitor the progress of prophylaxis, produce summary reports on outcomes, and support provider and consumer education.

## **I. 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.

## **J. Vaccine Safety**

In response to vaccine safety, the Kentucky Immunization Program will use a system to report and investigate adverse events following immunization (AEFI) with a pandemic influenza vaccine. The following activities will be the responsibility of the Department for Public Health:

- Any person in the state of Kentucky (private citizen, private provider or health department) may fill out and send a Vaccine Adverse Event and Reporting System (VAERS) form to the Department for Public Health.
- VAERS forms are available at local health departments or by contacting the Immunization Program at the Department for Public Health.
- The Immunization Program VAERS Coordinator, who serves as the state's contact with federal government staff overseeing VAERS, will collect the VAERS form, review for completion and assign a specific Kentucky number for each report.
- The specific Kentucky (KY) number can have identifiers attached to track specific cases.
- After a KY number is assigned, the VAERS form will then be submitted to the VAERS central office via the Internet, by fax, or by mail.
- The hard copy of the VAERS form is kept on file for future follow-up.

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 (<http://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 (<http://www.vaccinesafety.org/CISA/index.htm>).

## **VI. RECOMMENDATIONS FOR THE PANDEMIC PERIOD**

### **A. Before a Vaccine is Available**

Before a vaccine becomes available, state and local health departments should:

- 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.
- Work with healthcare partners and other stakeholders to distribute, deliver, and administer vaccines to designated groups if stockpiled vaccine of the pandemic subtype is available.
- 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.

## **B. 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.
- After priority groups have been vaccinated and additional vaccine stocks become available, public health authorities should phase-in vaccination for the remainder 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.

## APPENDIX A

### Recommendations for Prioritization of Pandemic Influenza Vaccine

The following recommendations are reflective of the prioritization recommendations set forth by the Advisory Committee on Immunization Practices (ACIP) and the National Vaccine Advisory Committee (NVAC) in the Department for Health and Human Services (HHS) Pandemic Influenza Plan. Although the advisory committees considered potential priority groups broadly, the main expertise of the members was in health and public health. The primary goal of a pandemic response was to decrease health impacts including severe morbidity and death. A secondary pandemic response goal was to minimize societal and economic impacts. However, as other sectors are increasingly engaged in pandemic planning, additional considerations may arise. The advisory committee reports explicitly acknowledge the importance of this, for example highlighting the priority for protecting critical components of the military. Finally, HHS has recently initiated outreach to engage the public and obtain a broader perspective into decisions on priority groups for pandemic vaccine and antiviral drugs. Though findings of the outreach are preliminary, a theme that has emerged is the importance of limiting the effects of a pandemic on society by preserving essential societal functions.

The Kentucky Department for Public Health (KDPH) recommendations for prioritization will continue to reflect the recommendations set forth by the Centers for Disease Control and Prevention (CDC) and the HHS. We recognize the potential for alterations of these recommendations in the case of a pandemic depending upon the epidemiology of a novel strain and will reiterate the need to refer to national recommendations for changes that may occur.

The Constitution of the Commonwealth of Kentucky affords the Governor of Kentucky, or his designee, the discretionary ability to restructure the prioritization during an influenza pandemic. In addition, the recommendations for prioritization of vaccination may be further modified at a local level by the chief elected official.

#### A. Critical Assumptions

The recommendations were based on the following critical assumptions:

- **Morbidity and mortality.** The greatest risk of hospitalization and death—as during the 1957 and 1968 pandemics and annual influenza—will be in infants, the elderly, and those with underlying health conditions. In contrast, during the 1918 pandemic, most deaths occurred in young adults, highlighting the need to reconsider the recommendations at the time of the pandemic based on the epidemiology of disease.
- **Healthcare system.** The healthcare system will be severely taxed if not overwhelmed due to the large number of illnesses and complications from influenza requiring hospitalization and critical care. CDC models estimate increases in hospitalization and intensive care unit demand of more than 25% even in a moderate pandemic.

- **Workforce.** During a pandemic wave in a community, between 25% and 30% of persons will become ill during a 6 to 8 week outbreak. Among working-aged adults, illness attack rates will be lower than in the community as a whole. A CDC model suggests that at the peak of pandemic disease, about 10% of the workforce will be absent due to illness or caring for an ill family member. Impacts will likely vary between communities and work sites and may be greater if significant absenteeism occurs because persons stay home due to fear of becoming infected.
- **Critical infrastructure.** Only limited information was available from which to assess potential impacts on critical infrastructure sectors such as transportation and utility services. Because of changes in business practices and the complexity of networks, information from prior pandemics was not considered applicable.
- **Vaccine production capacity.** The U.S.-based vaccine production capacity was assumed at 3 to 5 million doses (15 mcg) per week with 3 to 6 months needed before the first doses are produced. Two doses per person were assumed to be required for protection. Subsequent results of a National Institute of Health (NIH) clinical trial of influenza A (H5N1) vaccine suggest that higher doses of antigen will be needed to elicit a good immune response; thus, the assumptions made by the committee could potentially substantially exceed the amount of vaccine that would be produced.

Vaccine Priority Group Recommendations\*

Tier	Subtier	Population	Rationale
1	A	<ul style="list-style-type: none"> <li>• Medical workers and public health workers who are involved in direct patient contact, other support services essential for direct patient care, and vaccinators</li> </ul>	<ul style="list-style-type: none"> <li>• Healthcare workers are required for quality medical care (studies show outcome is associated with staff-to-patient ratios). There is little surge capacity among healthcare sector personnel to meet increased demand</li> </ul>
1	B	<ul style="list-style-type: none"> <li>• Persons &gt; 65 years with 1 or more influenza high-risk conditions, not including essential hypertension</li> <li>• Persons 6 months to 64 years with 2 or more influenza high-risk conditions, not including essential hypertension</li> <li>• Persons 6 months or older with history of hospitalization for pneumonia or influenza or other influenza high-risk condition in the past year</li> </ul>	<ul style="list-style-type: none"> <li>• These groups are at high risk of hospitalization and death. Excludes elderly in nursing homes and those who are immunocompromised and would not likely be protected by vaccination</li> </ul>

1	C	<ul style="list-style-type: none"> <li>• Pregnant women</li> <li>• Household contacts of severely immunocompromised persons who would not be vaccinated due to likely poor response to vaccine</li> <li>• Household contacts of children &lt;6 month olds</li> </ul>	<ul style="list-style-type: none"> <li>• In past pandemics and for annual influenza, pregnant women have been at high risk; vaccination will also protect the infant who cannot receive vaccine.</li> <li>• Vaccination of household contacts of immunocompromised and young infants will decrease risk of exposure and infection among those who cannot be directly protected by vaccination</li> </ul>
1	D	<ul style="list-style-type: none"> <li>• Public health emergency response workers critical to pandemic response</li> <li>• Key government leaders</li> </ul>	<ul style="list-style-type: none"> <li>• Critical to implement pandemic response such as providing vaccinations and managing/monitoring response activities</li> <li>• Preserving decision-making capacity also critical for managing and implementing a response</li> </ul>

Tier	Subtier	Population	Rationale
2	A	<ul style="list-style-type: none"> <li>• Healthy 65 years and older</li> <li>• 6 months to 64 years with 1 high-risk condition</li> <li>• 6-23 months old, healthy</li> </ul>	<ul style="list-style-type: none"> <li>• Groups that are also at increased risk but not as high risk as population in Tier 1B</li> </ul>
2	B	<ul style="list-style-type: none"> <li>• Other public health emergency responders</li> <li>• Public safety workers including police, fire, 911 dispatchers, and correctional facility staff</li> <li>• Utility workers essential for maintenance of power, water, and sewage system functioning</li> <li>• Transportation workers transporting fuel, water, food, and medical supplies as well as public ground public transportation</li> <li>• Telecommunications/IT</li> </ul>	<ul style="list-style-type: none"> <li>• Includes critical infrastructure groups that have impact on maintaining health (e.g., public safety or transportation of medical supplies and food); implementing a pandemic response; and on maintaining societal functions</li> </ul>

		for essential network operations and maintenance	
3		<ul style="list-style-type: none"> <li>• Other key government health decision-makers</li> <li>• Funeral directors/embalmers</li> </ul>	<ul style="list-style-type: none"> <li>• Other important societal groups for a pandemic response but of lower priority</li> </ul>
4		<ul style="list-style-type: none"> <li>• Healthy persons 2-64 years not included in above categories</li> </ul>	<ul style="list-style-type: none"> <li>• All persons not included in other groups based on objective to vaccinate all those who want protection</li> </ul>

\*The committee focused its deliberations on the U.S. civilian population. ACIP and NVAC recognize that Department of Defense (DOD) needs should be highly prioritized. DoD Health Affairs indicates that 1.5 million service members would require immunization to continue current combat operations and preserve critical components of the military medical system. Should the military be called upon to support civil authorities domestically, immunization of a greater proportion of the total force will become necessary. These factors should be considered in the designation of a proportion of the initial vaccine supply for the military.

Other groups also were not explicitly considered in these deliberations on prioritization. These include American citizens living overseas, non-citizens in the U.S., and other groups providing national security services such as the border patrol and customs service.

**B. Definitions and rationales for priority groups**

1. Healthcare workers and essential healthcare support staff

a) Definition  
 Healthcare workers (HCW) with direct patient contact (including acute-care hospitals, nursing homes, skilled nursing facilities, urgent care centers, physician’s offices, clinics, home care, blood collection centers, and EMS) and a proportion of persons working in essential healthcare support services needed to maintain healthcare services (e.g. dietary, housekeeping, admissions, blood collection center staff, etc.). Also included are healthcare workers in public health with direct patient contact, including those who may administer vaccine or distribute influenza antiviral medications, and essential public health support staff for these workers.

b) Rationale  
 The pandemic is expected to have substantial impact on the healthcare system with large increases in demand for healthcare services placed on top of existing demand. HCW will be treating influenza-infected patients and will be at risk of repeated exposures. Further, surge capacity in this sector is low. To encourage continued work in a high-exposure setting and to help lessen the risk of healthcare workers transmitting influenza to other patients and HCW family members, this group was highly prioritized. In addition, increases in bed/nurse ratios have been associated with increases in overall patient mortality. Thus, substantial absenteeism may affect overall patient care and outcomes.

## 2. Groups at high risk of influenza complications

a) Definition  
Persons 2-64 years with a medical condition for which influenza vaccine is recommended and all persons 6-23 months and 65 years and older. Excludes nursing home residents and severely immunocompromised persons who would not be expected to respond well to vaccination.

b) Rationale  
These groups were prioritized based on their risk of influenza-related hospitalization and death and also their likelihood of vaccine response. Information from prior pandemics was used whenever possible, but information from interpandemic years was also considered. Nursing home residents and severely immunocompromised persons would be prioritized for antiviral treatment and/or prophylaxis and vaccination of healthcare workers and household contacts who are most likely to transmit influenza to these high risk groups.

## 3. Critical infrastructure

a) Definitions and rationale  
Those critical infrastructure sectors that fulfill one or more of the following criteria:

- Have increased demand placed on them during a pandemic
- Directly support reduction in deaths and hospitalization;
- Support the healthcare sector and other emergency services
- Supply basic necessities and services critical to support of life and healthcare or emergency services.

Groups included in critical infrastructure are needed to respond to a pandemic and to minimize morbidity and mortality, and include the following sectors:

- Key government leaders and health decision-makers who will be needed to quickly move policy forward on pandemic prevention and control efforts
- Public safety workers (firefighters, police, and correctional facility staff, including dispatchers) are critical to maintaining social functioning and order and will contribute to a pandemic response, for example by ensuring order at vaccination clinics and responding to medical emergencies
- Utility service workers (water, power, and sewage management) are prioritized as the services they provide are also essential to the healthcare system as well as to preventing additional illnesses from lack of these services unrelated to a pandemic.
- Transportation workers who maintain critical supplies of food, water, fuel, and medical equipment and who provide public transportation, which is essential for provision of medical care and transportation of healthcare workers to work and transportation of ill persons for care
- Telecommunication and information technology services critical for maintenance and repairs of these systems are also essential as these systems are now critical for accessing and delivering medical care and in support of all other critical infrastructure
- Mortuary services will be substantially impacted due to the increased numbers of deaths from a pandemic and the fact that impact will be high in the elderly, a growing segment of the population

#### **4. Public health emergency response workers**

a) Definition

This group includes persons who do not have direct patient care duties, but who are essential for surveillance for influenza, assessment of the pandemic impact, allocation of public health resources for the pandemic response, development and implementation of public health policy as part of the response, and development of guidance as the pandemic progresses.

b) Rationale

Persons in this sector have been critical for past influenza vaccine pandemics and influenza vaccine shortages and little surge capacity may be available during a public health emergency such as a pandemic.

#### **5. Persons in skilled nursing facilities**

a) Definition

Patients residing in skilled nursing facilities. Not included in this group are persons in other residential settings (e.g., assisted living) who are more likely to be mobile, in a setting that is less closed, and have decentralized healthcare.

b) Rationale

This group was not prioritized for vaccine because of the medical literature finding of poor response to vaccination and occurrence of outbreaks even in the setting of high vaccination rates. Other studies have suggested that vaccination of healthcare workers may be a more effective strategy to prevent influenza in this group. Further, surveillance for influenza can be conducted in this group and antiviral medications used widely for prophylaxis and treatment. Ill visitors and staff should also be restricted from visiting nursing home facilities during outbreaks of pandemic influenza. This strategy for pandemic influenza vaccine differs from the interpandemic vaccination strategy of aggressively vaccinating nursing home residents. The rationale considers several factors: 1) these populations are less likely to benefit from vaccine than other groups who are also at high risk; 2) other prevention strategies feasible for this group are not possible among other high-risk groups; 3) the overall morbidity and mortality from pandemic is likely to severely impact other groups of persons who would be expected to have a better response to the vaccine; and 4) a more severe shortage of vaccine is anticipated.

#### **6. Severely immunocompromised persons**

a) Definition

Persons who are undergoing or who have recently undergone bone marrow transplantation and others with severe immunodeficiency (e.g., AIDS patients with CD4 counts <50, children with SCID syndrome, recent bone marrow transplant patients). The numbers of persons in these categories is likely much smaller than the anticipated number assumed in tiering above, but sources for more specific estimates have not been identified.

b) Rationale

These groups have a lower likelihood of responding to influenza vaccination. Thus, strategies to prevent severe influenza illness in this group should include vaccination of healthcare workers and household contacts of severely immunocompromised persons and

use of antiviral medications. Consideration should be given to prophylaxis of severely immunocompromised persons with influenza antivirals and early antiviral treatment should they become infected.

## **7. Children <6 months of age**

a) Rationale  
Influenza vaccine is poorly immunogenic in children <6 months and the vaccine is currently not recommended for this group. In addition, influenza antiviral medications are not FDA-approved for use in children <1 year old. Thus, vaccination of household contacts and out-of-home caregivers of children <6 months is recommended to protect this high-risk group. Influenza vaccine administered to pregnant women may provide some protection to children for several months after their birth.

### **C. Other discussion**

There was substantial discussion on priority for children. Four potential reasons were raised for making vaccination of children a priority:

1. At the public engagement session, many participants felt that children should have high priority for vaccination.
2. Children play a major role in transmitting infection, and vaccinating this group could slow the spread of disease and indirectly protect others.
3. Children have strong immune systems and will respond well to vaccine whereas vaccination of the elderly and those with illnesses may be less effective.
4. Some ethical frameworks would support a pediatric priority.

ACIP and NVAC did not make children a priority (other than those included in tiers, because of their underlying diseases [Tiers 1B and 2A] or as contacts of high-risk persons [Tier 1C]) for several reasons:

- Healthy children have been at low risk for hospitalization and death in prior pandemics and during annual influenza seasons.
- It is uncertain whether vaccination of children will decrease transmission and indirectly protect others. Studies that show this impact or mathematical models that predict it rely on high vaccination coverage that may not be possible to achieve given limited supplies in a pandemic.
- The committees recognize that this is an area for further scientific work; that children may be a good target population for live-attenuated influenza vaccine (FluMist®) if it is available; and that education of the public will be needed to provide the rationale for the recommendations.

**KENTUCKY PANDEMIC INFLUENZA PREPAREDNESS PLAN  
ANTIVIRAL DISTRIBUTION AND USE SUPPLEMENT VI**

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## **ANTIVIRAL DISTRIBUTION AND USE SUPPLEMENT VI**

### **SUMMARY OF PUBLIC HEALTH ROLES AND RESPONSIBILITIES FOR ANTIVIRAL DISTRIBUTION AND USE**

#### **Interpandemic and Pandemic Alert Periods**

##### **Department for Public Health/Local Health Departments**

- Use antivirals in medical management of cases of novel strains of influenza
- Procure and maintain local stockpiles of antiviral drugs if/when funding permits
- Develop state-based plans for distribution and use of antiviral drugs during a pandemic

#### **Pandemic Period**

##### **Department for Public Health/Local Health Departments**

- Prepare to activate state-based plans for distributing and administering antivirals to persons in priority groups.
- Review modifications, if any, to interim recommendations on antiviral prophylaxis in selected groups or circumstances.
- Accelerate training on appropriate use of antiviral drugs among public health staff and healthcare partners.
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications.

If pandemic influenza is detected in the United States, state and local health departments will work with healthcare partners to:

- Distribute and deliver stockpiled supplies of antivirals, as appropriate, to healthcare facilities that will administer them to priority groups.
- Work with HHS to monitor antiviral drug use and effectiveness.
- Work with HHS to monitor and investigate adverse events.
- Provide updated information to the public via the news media.

## **I. RATIONALE**

Drugs with activity against seasonal influenza viruses (“antivirals”) in 2005-2006 and 2006-2007 include the neuraminidase inhibitors (*oseltamivir* and *zanamivir*). The adamantanes (*amantadine* and *rimantadine*) were ineffective against recent seasonal influenza viruses. 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.

## **II. OVERVIEW**

The Antiviral Supplement provides recommendations to state and local partners on the distribution and use of antiviral drugs for treatment and prophylaxis during an influenza pandemic. Stockpiled antivirals will be supplied from the federal level. State and local stockpiles will depend upon funding and availability. The Interpandemic and Pandemic Alert Period recommendations focus on preparedness planning for the rapid distribution and use of antiviral drugs (e.g., 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 influenza A (H5N1) and other strains with pandemic potential.

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
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.

Additional issues that may be of interest to healthcare partners who administer antiviral drugs are outlined in the Healthcare Planning Supplement.

### **III. GUIDELINES FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS**

#### **A. Use of Antivirals in Management of Cases of Novel Influenza**

Influenza infections may be due to:

1. Interpandemic (i.e., ‘normal’) seasonal strains of influenza A
2. Novel strains of influenza that do not appear to be easily transmissible but could be precursors to human pandemic strains (e.g., 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 supplement, 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. Criteria for early detection and identification of novel strains of influenza are discussed in the Clinical Guidelines Supplement.

#### **B. 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 in the Transmission of Disease Supplement and treated in accordance with the clinical algorithm for the Pandemic Alert Period provided in the Healthcare Planning Supplement. 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.

#### **C. 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. Zanamivir is now recommended for chemoprophylaxis.

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.

#### **D. 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.

### **IV. PREPAREDNESS PLANNING FOR USE OF ANTIVIRALS DURING PANDEMIC**

#### **A. National Recommendations on Use of Antivirals During a Pandemic**

The Department for Health and Human Services (HHS) is working with private-sector partners to increase production of antivirals and to procure additional stocks of antivirals for the Strategic National Stockpile (SNS) (<http://www.HHS.gov/nvpo/pandemicplan/>). Despite these efforts, demand for antivirals during an influenza pandemic is likely to far outstrip supplies available in stockpiles or through usual channels of distribution.

- A list of priority groups for receiving antiviral treatment or prophylaxis and the rationale for prioritization are provided in the NVAC/ACIP Recommendations Appendix. During an actual pandemic, these recommendations could be modified, based on the characteristics of the causative virus (e.g., drug susceptibilities, initial geographic distribution, fatality rate, age-specific morbidity and mortality rates) and the effectiveness of implemented strategies.

#### **B. State-Level Planning**

- State-based planning for antiviral includes:

- Obtaining antiviral drugs from national, state, and local stockpiles if available, and their distribution to priority groups by healthcare providers
- Data collection on drug use,
- Drug-related adverse events
- Drug resistance.

### **C. Procurement**

Examples of planning steps for state-level procurement of antivirals include:

- Estimating the quantities of antiviral drugs that will be needed for treatment and prophylaxis of priority groups (see below)
- Identifying sources of antiviral drugs (e.g., federal supplies from the SNS and if available state stockpiles and private sector).

The establishment of state, local, or institutional stockpiles should take into account the expiration dates of the purchased material. All drugs are marked with an expiration date, based on review of stability data, at the time of manufacture. However, when purchased, the drugs might have been stored for some time in warehouses so that the time to expiration might be shorter than the time from initial manufacture to expiration date. Moreover, one shipment might consist of several batches with different expiration dates. Antivirals maintained in the national stockpile may be tested for potency and dating extended under the U.S. Food and Drug Administration's (FDA) shelf life extension program. Currently, state stockpiles are not included in this program.

### **D. Establishing Priority Groups**

Based on interim recommendations on priority groups for antiviral treatment and prophylaxis (NVAC/ACIP Recommendations), state and local health authorities should determine how certain priority groups (e.g., public safety workers, essential service providers, and key decision makers) will be defined in their jurisdictions. These recommendations and enumerations can be found in the Recommendations on Antiviral Use portion of the state pandemic plan.

### **E. Distributing and Dispensing Antivirals to Priority Groups**

Planning steps for distribution of antivirals to priority groups might include:

- Estimating the size and needs of priority groups in local jurisdictions, using interim recommendations
- Assessing antiviral stocks available at the state, local, and hospital levels if available
- Establishing a mechanism to request antivirals from the federal stockpile, if needed (see below)
- Activating pre-existing plans for the transport, receipt, storage, security, tracking, and delivery of:

- Antiviral stocks for use in treatment to hospitals, clinics, nursing homes, alternative care facilities, and other healthcare institutions. Prompt dispensing to point-of-care locations is crucial, because clinical efficacy for these agents has been demonstrated when treatment begins within 48 hours of the onset of symptoms.
- Antiviral stocks for use in post-exposure prophylaxis (e.g., for direct contacts of infected patients)
- Antiviral stocks for use in prophylaxis (e.g., if recommended for healthcare workers, public safety workers, and essential service providers)
- Considering the use of standing orders for treatment of certain priority groups, such as hospitalized patients and healthcare workers
- Developing a communication plan to explain the rationale for establishing these target groups

The decision to deploy federal assets from the SNS during an influenza pandemic will be made by HHS officials, as it would be during any public health emergency. Each state and federal agency with direct patient care responsibilities should designate a representative (e.g., the state epidemiologist or public health director) to make emergency requests for federal assets in the SNS.

Federal supplies of antivirals will be delivered to a site designated by state planners in each state or large city (e.g., state health department; existing SNS receipt, storage, staging site). State SNS coordinators should provide logistical guidance on the receipt and distribution of federal assets to priority groups.

Kentucky's SNS plan can be found in Kentucky Emergency Operations Plan Appendix M-10 (Strategic National Stockpile Program).

## **F. Monitoring and Data Collection**

To ensure optimal use of antiviral drugs during an influenza pandemic, state and local health departments and healthcare partners should work with federal officials and collect data on:

- Distribution of state or federal supplies of antiviral drugs
- Occurrence of adverse events following administration of antiviral drugs

State and local departments could also participate in federal efforts to collect data on:

- Effectiveness of treatment and prophylaxis
- Development of drug resistance

**(1) Distribution.** Allocation and distribution of antiviral drugs from state and local health departments to drug delivery or dispensing sites will be established based on state and local pandemic plans. Health departments should develop strategies to

monitor drug distribution and use, assessing whether drugs are being effectively targeted to priority groups and whether distribution is equitable within those groups (e.g., among racial and ethnic minorities and persons of different socioeconomic levels).

**(2) Antiviral effectiveness.** Studies to evaluate the effectiveness of antiviral drug use during a pandemic will be conducted by federal agencies in collaboration with state and local health departments and other healthcare and academic partners. The effectiveness of antiviral therapy and prophylaxis will be assessed by comparing rates of severe influenza-related illness and death among treated and untreated persons and among persons who did and did not receive prophylaxis. Analyses of antiviral drug effectiveness should take into account characteristics that will vary among individuals and those that may vary over time, such as diagnostic practices, length of time to initiate therapy, and changes in the pandemic virus.

**(3) Adverse events.** Serious adverse events associated with the use of antiviral drugs for prophylaxis and treatment of influenza should be reported to the FDA, using the MedWatch monitoring program. During an influenza pandemic, state and local health departments can assist in this effort by providing protocols and information to healthcare providers and encouraging hospitals to download MedWatch forms (available at <http://www.fda.gov/medwatch/>) for distribution to patients. Adverse events reported to MedWatch are collated and analyzed by the FDA's Adverse Events Reporting System (AERS).

Use of antivirals will be much greater during a pandemic than during a regular influenza season. To help improve the detection of serious adverse effects (especially rare effects or effects in vulnerable populations), additional efforts to encourage recognition and reporting of adverse events will be needed. These efforts might include:

- Active monitoring for adverse events observed at emergency rooms, through the National Electronic Injury Surveillance System Cooperative Adverse Drug Event project (NEISS-CADE)
- Local campaigns to educate healthcare workers about the recognition and reporting of adverse events
- Distribution of MedWatch forms and descriptions of known adverse events to each end-user who receives antiviral drugs

In addition, the CDC, FDA, and AHRQ will explore the use of existing drug-monitoring systems that have access to individual health utilization records that may

allow active, population-based surveillance for adverse events following the use of antivirals for treatment or prophylaxis.

**(4) Antiviral drug resistance.** CDC will work with state and local partners to monitor the development of resistance to antivirals. Because resistance to M2 inhibitors may involve a single base pair change, resistance may develop rapidly if these drugs are used widely. Information about resistance to M2 inhibitors (i.e. the adamantanes and neuraminidase inhibitors) can be found in the July 2005 recommendations of the ACIP (<http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>).

Global surveillance for neuraminidase resistance during a pandemic will also be conducted by the Neuraminidase Inhibitor Susceptibility Network (NISN). The global NISN was established in 1999 to address public health and regulatory concerns regarding the potential emergence and consequences of drug resistance in influenza viruses following the introduction of the influenza neuraminidase inhibitor (NI) class of antiviral agents. The Network includes representatives of each of the four World Health Organization (WHO) global influenza reference laboratories and scientists from regions of the world where increasing use of these drugs is anticipated.

CDC will test the drug susceptibilities of viruses isolated from different age groups and geographic groups over the course of the pandemic (see Antiviral Effectiveness above). State and local health departments should encourage clinicians to obtain specimens from patients who develop severe disease while receiving treatment or prophylaxis. State health departments should provide these specimens on a periodic basis, preferably after testing them by RT-PCR, viral culture, or rapid diagnostic testing to confirm the presence of novel strains of influenza A.

Surveillance for antiviral resistance may be particularly important during the later stages of the pandemic, especially if M2 inhibitor agents (i.e. adamantanes) have been widely used. Under these circumstances, the detection of widespread M2 inhibitor resistance might require a re-evaluation of priorities for prophylaxis and treatment.

#### **G. Contingency Planning for Investigational New Drug (IND) Use**

State and local health departments should be prepared to distribute unlicensed antiviral drugs (if needed) under FDA's Investigational New Drug (IND) provisions. IND provisions require strict inventory control and recordkeeping, completion of a signed consent form from each person who receives the medication, and mandatory reporting of specified types of adverse events. IND provisions also require approval of the protocol and consent form by an Institutional Review Board (IRB). 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](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>

## **V. RECOMMENDATIONS FOR THE PANDEMIC PERIOD**

Interim recommendations for use of antivirals may be updated throughout the course of an influenza pandemic to reflect current epidemiologic and laboratory data. Interim recommendations may also be updated as an effective influenza vaccine becomes available.

### **A. When pandemic influenza is reported abroad, or sporadic pandemic influenza cases are reported in the United States, without evidence of spread**

If an influenza pandemic has begun in other countries, state and local health departments should:

- Use antiviral drugs in the management of persons infected with novel strains of influenza and their contacts.
- Work with healthcare partners to consider providing antiviral prophylaxis to persons at highest risk for pandemic influenza. Examples of such persons include:
  - Public health workers who investigate suspected cases of pandemic influenza
- Meet with local partners and stakeholders to review the state-based antiviral drug distribution plan. As part of this effort, state and local partners could:
  - Modify the distribution plan to take into account possible updated recommendations on target groups and updated information on projected supplies of antiviral drugs.
  - Notify the medical community about the status of the plan and the availability of antiviral drugs.
  - Disseminate public health guidelines that encourage drug-use practices that help minimize the development of drug resistance.
  - Provide the public with information on interim recommendations and their rationale for the use of antiviral drugs during an influenza pandemic.
- Work with federal partners to monitor the safety and effectiveness of drugs and ensure that available antivirals are used in accordance with federal and local recommendations.

### **B. When there is limited transmission of pandemic influenza in the United States**

When there is limited transmission of pandemic influenza in the United States, state and local health departments should:

- Activate state-based plans for targeting antiviral drugs to priority groups for prophylaxis and treatment.

- Request antiviral drugs, as needed, from previously identified sources, including the SNS.
- Continue to work with healthcare partners to ensure appropriate use of antivirals in the medical management of early cases and contacts.
- Work with federal partners to begin monitoring the safety and effectiveness of drugs and ensure that available antivirals are used in accordance with federal and local recommendations.

### **C. When there is widespread transmission of pandemic influenza in the United States**

When transmission of pandemic influenza has become widespread, the paramount goals of antiviral use will be to treat those at highest risk of severe illness and death, and to preserve the delivery of healthcare and other essential critical services through early treatment and limited prophylaxis.

After a vaccine becomes available, antiviral drugs may be used to protect persons who have an inadequate vaccine response (e.g., the elderly and those with underlying immunosuppressive disease) as well as persons with contraindications to vaccination, such as anaphylactic hypersensitivity to eggs or other vaccine components.

Until the pandemic has waned, state and local health departments should continue to work with healthcare and federal partners to monitor the safety and effectiveness of antivirals and to encourage appropriate drug use practices that help minimize the development of drug resistance.

## **APPENDIX A**

### **Recommendations on Pandemic Antiviral Use**

The following recommendations are reflective of the National Vaccine Advisory Committee (NVAC) recommendations issued on July 19, 2005. NVAC recognizes that recommendations for antiviral drug use will need to be reconsidered at the time of a pandemic when information of the available drug supply, epidemiology of disease, and impacts on society are known. Kentucky will comply with recommendations set forth by NVAC, the Department for Health and Human Services (HHS), and the Centers for Disease Control and Prevention (CDC) and will implement any changes made by these agencies to the recommendations on pandemic antiviral use. The committee considered the primary goals of a pandemic response to decrease health impacts including severe morbidity and death. Minimizing societal and economic impacts were considered secondary and tertiary goals.

#### **A. Critical Assumptions**

Assumptions regarding groups at highest risk during a pandemic and impacts on the healthcare system and other critical infrastructures are the same as those underlying the vaccine priority recommendations. Additional assumptions specific for antiviral drugs included:

- Treatment with a neuraminidase inhibitor (oseltamivir [Tamiflu®] or zanamivir [Relenza®]) will be effective in decreasing risk of pneumonia, will decrease hospitalization by about half (as shown for interpandemic influenza), and will also decrease mortality.
- Antiviral resistance to the adamantanes (amantadine and rimantadine) may limit their use during a pandemic.
- The primary source of antiviral drugs for a pandemic response will be the supply of antiviral drugs that have been stockpiled. Before annual influenza seasons about 2 million treatment courses of oseltamivir are available in the U.S. U.S.-based production of oseltamivir is being established; expected capacity is projected at about 1.25 million courses per month.
- Treating earlier after the onset of disease is most effective in decreasing the risk of complications and shortening illness duration. Generally, treatment should be given within the first 48 hours.
- Assumptions for the amount of antiviral drug needed for defined priority groups is based on the population in those groups and assumptions that 35% of persons in the priority groups will have influenza-like illness and 75% will present within the first 48 hours and be eligible for treatment. For persons admitted to the hospital, the committee assumed that 80% would be treated, as the 48-hour limit may sometimes be relaxed in more ill patients.
- Unlike vaccines, where each tier would be protected in turn as more vaccine is produced, for antiviral drugs, the number of priority groups that can be covered would be known at the start of the pandemic based on the amount of drug that is

stockpiled. Additional supply that would become available during the pandemic could provide some flexibility.

**Table D-2: Antiviral Drug Priority Group Recommendations\***

	Group	Estimated population (millions)	Strategy**	# Courses (millions)		Rationale
				For target group	Cumulative	
1	Patients admitted to hospital***	10.0	T	7.5	7.5	Consistent with medical practice and ethics to treat those with serious illness and who are most likely to die.
2	Health care workers (HCW) with direct patient contact and emergency medical service (EMS) providers	9.2	T	2.4	9.9	Healthcare workers are required for quality medical care. There is little surge capacity among healthcare sector personnel to meet increased demand.
3	Highest risk outpatients—immunocompromised persons and pregnant women	2.5	T	0.7	10.6	Groups at greatest risk of hospitalization and death; immunocompromised cannot be protected by vaccination.
4	Pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision-makers	3.3	T	0.9	11.5	Groups are critical for an effective public health response to a pandemic.
5	Increased risk outpatients—young children 12-23 months old, persons	85.5	T	22.4	33.9	Groups are at high risk for hospitalization and death.

	Group	Estimated population (millions)	Strategy**	# Courses (millions)		Rationale
				For target group	Cumulative	
	>65 yrs old, and persons with underlying medical conditions					
6	Outbreak response in nursing homes and other residential settings	NA	PEP	2.0	35.9	Treatment of patients and prophylaxis of contacts is effective in stopping outbreaks; vaccination priorities do not include nursing home residents.
7	HCWs in emergency departments, intensive care units, dialysis centers, and EMS providers	1.2	P	4.8	40.7	These groups are most critical to an effective healthcare response and have limited surge capacity. Prophylaxis will best prevent absenteeism.
8	Pandemic societal responders (e.g., critical infrastructure groups as defined in the vaccine priorities) and HCW without direct patient contact	10.2	T	2.7	43.4	Infrastructure groups that have impact on maintaining health, implementing a pandemic response, and maintaining societal functions.
9	Other outpatients	180	T	47.3	90.7	Includes others who develop influenza and do not fall within the above groups.
10	Highest risk outpatients	2.5	P	10.0	100.7	Prevents illness in the highest risk groups for hospitalization and death.

	Group	Estimated population (millions)	Strategy**	# Courses (millions)		Rationale
				For target group	Cumulative	
11	Other HCWs with direct patient contact	8.0	P	32.0	132.7	Prevention would best reduce absenteeism and preserve optimal function.

\*The committee focused its deliberations on the domestic U.S. civilian population. NVAC recognizes that Department of Defense (DoD) needs should be highly prioritized. A separate DoD antiviral stockpile has been established to meet those needs. Other groups also were not explicitly considered in deliberations on prioritization. These include American citizens living overseas, non-citizens in the U.S., and other groups providing national security services such as the border patrol and customs service.

\*\*Strategy: Treatment (T) with oseltamivir [Tamiflu®] requires a total of 10 capsules and is defined as 1 course. Post-exposure prophylaxis (PEP) also requires a single course. Prophylaxis (P) with oseltamivir [Tamiflu®] is assumed to require 40 capsules (4 courses) though more may be needed if community outbreaks last for a longer period.

\*\*\*There are no data on the effectiveness of treatment at hospitalization. If stockpiled antiviral drug supplies are very limited, the priority of this group could be reconsidered based on the epidemiology of the pandemic and any additional data on effectiveness in this population.

## B. Definitions and rationale for draft priority groups

### 1. Persons admitted to hospital with influenza infection

a) Definition  
 Persons admitted to acute care facilities (traditional or non-traditional with a clinical diagnosis of influenza; laboratory confirmation not required). Excludes persons admitted for a condition consistent with a bacterial superinfection (e.g., lobar pneumonia developing late after illness onset) or after viral replication and shedding has ceased (e.g., as documented by a negative sensitive antigen detection test)

b) Strategy  
 Treatment within 48 hours of symptom onset.

c) Rationale  
 This group is at greatest risk for severe morbidity and mortality. Although there are no data to document the impacts of antiviral drug treatment among persons who already suffer more severe influenza illness, benefit is biologically plausible in persons with evidence of ongoing virally mediated pathology (e.g., diffuse pneumonia, ARDS). Providing treatment to those who are most ill is also consistent

with standard medical practices, would be feasible to implement, and would be acceptable to the public.

d) Population size  
The number of persons admitted to hospital in an influenza pandemic would vary substantially depending on the severity of the pandemic and on the ability to expand inpatient capacity, if needed.

e) Unresolved issues  
More specific guidance should be provided to healthcare workers on implementing antiviral treatment, including when and when not to treat. In some persons with severe illness, the ability to take oral medication or its absorption may be important issues. For infants <1 year old admitted to hospital, decisions about whether to treat with antiviral drugs may depend on the child's age and potential risk versus benefit as the neuraminidase inhibitors are not licensed for use in infants. If possible, data on time from symptom onset to hospital admission, current use of antiviral drug treatment among inpatients, and its impacts should be collected during interpandemic influenza seasons.

## **2. Healthcare workers and emergency medical service providers who have direct patient contact**

a) Definition  
Persons providing direct medical services in inpatient and outpatient care settings. Includes doctors, nurses, technicians, therapists, EMS providers, laboratory workers, other care providers who come within 3 feet of patients with influenza, and persons performing technical support functions essential to quality medical care.

b) Strategy  
Treatment within 48 hours of symptom onset.

c) Rationale  
Maintaining high quality patient care is critical to reduce health impacts of pandemic disease and to prevent adverse outcomes from other health conditions that will present for care during the pandemic period. Treatment of healthcare providers will decrease absenteeism due to influenza illness and may decrease absenteeism from fear of becoming ill, given the knowledge that treatment can prevent serious complications of influenza. Good data exist documenting the impacts of early treatment on duration of illness and time off work, and on the occurrence of complications such as lower respiratory infections. Treating healthcare providers is feasible to implement, especially for inpatient care providers who can be provided drugs through the occupational health clinic. It also would be acceptable to the public, who would recognize the importance of maintaining quality healthcare and would understand that persons with direct patient contact are putting themselves at increased risk.

d) Population size  
There are about 12.6 million persons designated as healthcare workers by the Bureau of Labor Statistics and about 820,000 EMS providers. Among HCWs, two-thirds are estimated to provide direct patient care services.

e) Unresolved issues  
Further work is needed to hone definitions and estimate population sizes.

Implementation issues include the approach to identifying healthcare providers who would be eligible for treatment and where the treatment would be provided, particularly for outpatient care providers.

### **3. Outpatients at highest risk for severe morbidity or mortality from influenza infection**

a) Definition  
The ACIP defines groups at high risk (or increased risk) of complications from influenza infection during annual outbreaks based on age (6-23 months and >65 years) and underlying illnesses. Among this population of about 88 million persons, some can be identified who are at highest risk of severe disease and death. These include persons with hematopoietic stem cell transplants (HSCT) and solid organ transplants; those with severe immunosuppression due to cancer therapy or hematological malignancy; persons receiving immunosuppressive therapy for other illnesses (e.g., rheumatoid arthritis); persons with HIV infection and a CD4 count <200; persons on dialysis; and women who are in the second or third trimester of pregnancy.

b) Strategy  
Treatment within 48 hours of symptom onset.

c) Rationale  
Of the large group of persons who are at increased risk of severe disease or death from influenza, these groups represent the population at highest risk and who are least likely to be protected by vaccination. Studies show that neuraminidase inhibitor therapy decreases complications and hospitalizations from influenza in high-risk persons and one unpublished study shows a significant decrease in mortality among patients who have undergone a hematopoietic stem cell transplant.

d) Population size  
About 150,000 persons have had an HSCT or solid organ transplant. Assuming that the period of severe immunosuppression after a cancer diagnosis lasts for 1 year, the population targeted with non-skin, non-prostate cancers would equal the incidence of about 1.35 million persons. Based on a birth cohort of 4.1 million, a 28-week risk period during the second and third trimesters, and an 8-week pandemic outbreak in a community, there would be about 400,000 pregnant women included in this risk group. Further work is needed to estimate the size of other immunosuppressed groups.

e) Unresolved issues  
Specific definition of included groups and population sizes.

### **4. Pandemic health responders, public safety workers, and key government decision-makers**

a) Definition  
Public health responders include those who manufacture vaccine and antiviral drugs; persons working at health departments who are not included as healthcare workers; and those who would be involved in implementing pandemic vaccination or other response components. Public safety workers include police, fire, and corrections personnel. Key government decision-makers include chief executives at federal, state, and local levels.

- b) Strategy  
Treatment within 48 hours of symptom onset.
- c) Rationale  
Preventing adverse health outcomes and social and economic impacts in a pandemic depend on the ability to implement an effective pandemic response. Early treatment of pandemic responders will minimize absenteeism and ensure that vaccination and other critical response activities can be maintained. Implementing early treatment for public health workers and vaccine manufacturers is feasible at workplace settings. Public safety workers prevent intentional and unintentional injuries and death, are critical to maintaining social functioning, and will contribute to a pandemic response, for example by ensuring order at vaccination clinics. A small number of decision-makers at federal, state, and local levels are needed to for an effective pandemic response.
- d) Population size  
An estimated 40,000 workers who produce pandemic vaccine and antiviral drugs in the U.S.; ~300,000 public health workers who would not be included in the HCW category; 3 million public safety workers; and a small number of government decision-makers.
- e) Unresolved issues  
Need to define the exact composition and size of this group.

## **5. Outpatients at increased risk of severe morbidity or mortality from influenza**

- a) Definition  
For planning purposes, this group would include those currently designated as high-risk groups, except for those who have been categorized as being at highest-risk and included in a separate category. This increased-risk group includes persons 6-23 months and >65 years old, or who have underlying illnesses defined by the ACIP as associated with increased risk. Definition of this group may change based on the epidemiology of the pandemic.
- b) Strategy  
Treatment within 48 hours of symptom onset.
- c) Rationale  
Early treatment has been shown to significantly decrease lower respiratory infections and reduce the rate of hospitalization in elderly and high-risk populations. By extrapolation and based on the results of one small uncontrolled study, significant reductions of mortality can be expected as well. As these risk groups are familiar to the public given recommendations for annual vaccination, communication would be easy and acceptability high.
- d) Population size  
About 85.5 million persons are included in this group. Although all are at increased risk of annual influenza compared with the healthy under-65 year old population, there are different levels of increased risk for severe complications and death within this category. Further stratification may be possible based on several parameters including number of underlying conditions; recent hospitalization for a high-risk condition, pneumonia, or influenza; and age.

e) Unresolved issues  
Stratifying this group into those at greater and lesser risk may be important if antiviral supplies are limited. Implementing treatment will be challenging given that it should be provided at the initial point of care to accrue the greatest benefit from early therapy.

## 6. Outbreak control

a) Definition  
Use of antiviral drugs to support public health interventions in closed settings where an outbreak of pandemic influenza is occurring.

b) Strategy  
Treatment of cases and post-exposure prophylaxis of contacts (once daily antiviral medication for 10 days).

c) Rationale  
Influenza outbreaks in nursing homes are associated with substantial mortality and morbidity. Nursing home residents also are less likely to respond to vaccination. Post-exposure prophylaxis has been shown to be effective in stopping influenza outbreaks in closed settings.

d) Population size  
The number of outbreaks that may occur during a pandemic is unclear. Measures should be implemented to prevent outbreaks including limiting visitors, vaccination of staff, furloughing non-critical staff, and screening and exclusion for illnesses consistent with influenza.

e) Unresolved issues  
Should this policy also be implemented in prisons or other settings where explosive spread of illness may occur but the risk for severe complications is not high?

## 7. Healthcare workers in ER, ICU, EMS, and dialysis settings

a) Definition  
Includes all staff in these settings who are required for effective functioning of these health care units.

b) Strategy  
Prophylaxis

c) Rationale  
Optimally effective functioning of these units is particularly critical to reducing the health impacts of a pandemic. Prophylaxis will minimize absenteeism in these critical settings.

d) Population size  
Need to obtain population estimates.

e) Unresolved issues  
Population sizes

## 8. Pandemic societal responders and healthcare workers who have no direct patient contact

a) Definition  
This group includes persons who provide services that must be sustained at a

sufficient level during a pandemic to maintain public well-being, health, and safety. Included are workers at healthcare facilities who have no direct patient contact but are important for the operation of those facilities; utility (electricity, gas, water), waste management, mortuary, and some transport workers.

b) Strategy  
Treatment within 48 hours of symptom onset.

c) Rationale  
Maintaining certain key functions is important to preserve life and decrease societal disruption. Heat, clean water, waste disposal, and corpse management all contribute to public health. Ensuring functional transportation systems also protects health by making it possible for people to access medical care and by transporting food and other essential goods to where they are needed.

d) Population size  
Within these broad categories, there are about 2 million workers at healthcare facilities who have no direct patient contact; 730,000 utility workers; 320,000 waste management workers; 62,000 in mortuary services; and 2.3 million in transportation. Not all occupations within these categories would be classified as pandemic societal responders. Estimates are that 35% of this population will develop illness and present within 48 hours of onset regardless of pandemic severity.

e) Unresolved issues  
Need to stratify within these groups to identify who fills specific pandemic societal response functions and to assess whether those functions could still operate if a substantial proportion of the workforce became ill during a 6-8 week pandemic outbreak within a community. Implementation issues need to be addressed, especially with respect to how persons would be identified as falling within this priority group when presenting for treatment and where that treatment would be provided.

## 9. Other outpatients

a) Definition  
Includes persons not in one of the earlier priority groups.

b) Strategy  
Treatment within 48 hours of illness onset.

c) Rationale  
Treatment reduces the risk of complications and mortality, reduces duration of illness and shortens time off work, and decreases viral shedding and transmission. If sufficient antiviral supplies are available, providing treatment to all who are ill achieves equity and will be most acceptable to the public.

d) Population size  
There are an estimated 180 million persons who are not included in previously targeted groups.

e) Unresolved issues  
Consider whether there are any strata that can be defined within this population.

## C. Additional NVAC recommendations on antiviral drugs for pandemic influenza

In addition to recommendations for priority groups, NVAC unanimously adopted the following recommendations:

- Sufficient drugs should be stockpiled to address top priorities. NVAC recommends that the minimum stockpile size be about 40 million courses, allowing coverage of the top 7 priority groups.
- Oseltamivir should be the primary drug stockpiled, but some zanamivir also should be obtained as it is effective against some oseltamivir-resistant strains, may be preferred for treatment of pregnant women, and supporting two manufacturers enhances security against supply disruptions. Approximately 10% of the stockpile should be zanamivir if feasible and cost effective. No additional adamantanes should be stockpiled.
- Antiviral drugs can also be used as part of an international effort to contain an initial outbreak and prevent a pandemic. Use to slow disease spread early in a pandemic may be useful but requires large amounts of drug.
- Critical research should be conducted to support development and implementation of recommendations for pandemic influenza antiviral drug use, including:
  - Impact of treatment at hospital admission on outcome
  - Optimal treatment dose for H5N1 and other potential pandemic strains
  - Sensitivity and use of rapid diagnostic tests for H5N1 and other influenza strains with pandemic potential
  - Safety and pharmacokinetics of oseltamivir among infants <1 year old
  - Investigation of the impact of other drugs (new antiviral agents and other classes such as statins) on influenza
- Additional work with public and private sector groups should be done to further hone definitions of target groups and their estimated population sizes, and to provide further guidance on antiviral drug distribution and dispensing.

**KENTUCKY INFLUENZA PANDEMIC RESPONSE PLAN  
COMMUNITY CONTAINMENT SUPPLEMENT VII**

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## Community Containment

### I. RATIONALE / OVERVIEW

The objective of this supplement is to provide guidance on the most effective combinations of pharmaceutical and nonpharmaceutical interventions to reduce the risk of transmission of novel influenza A viruses, particularly subtype H5N1 (a causative agent of avian influenza) that may cause an influenza pandemic. The supplement is divided into three major areas: Community Disease Containment, Prevention and Managing Travel-Related Risk of Disease Transmission and Legal Authority for Public Health Emergencies. The first two major areas provide guidance for the state and local health departments depending on the stages of the pandemic. This supplement contains appendices that address vaccine and antiviral prioritization, travel industry guidelines, protocols for international flights, isolation and quarantine information, school notification-concerning communicable disease and interim guidance from the CDC on nonpharmaceutical interventions.

The Kentucky Department for Public Health will implement recommendations from the “Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States – Early, Targeted, Layered Use of Nonpharmaceutical Interventions” (Appendix 6) before explosive growth of an epidemic. This will mitigate the effects of an influenza pandemic on the population of Kentucky. KDPH will execute the pandemic mitigation interventions described based upon the pandemic severity index and other guidance received by the CDC.

There are several local health departments (LHDs) throughout Kentucky that are working with local government, law enforcement, and emergency medical planning coalitions to develop local isolation and quarantine (I&Q) plans. The Kentucky Department for Public Health (KDPH) has been involved with these initiatives and is in the planning and development stages of a statewide I&Q plan that will align with local plans. Kentucky's I&Q planning efforts incorporate the unique needs and circumstances of vulnerable populations such as limited English proficiency populations, homeless persons, persons with special medical needs, etc. KDPH will work closely with LHDs, first responders, health care providers, health care facilities, etc. to monitor isolated/quarantined persons and ensure their basic needs are met. Necessities such as clothing, food, and shelter will be addressed through coordination with community-based organizations and LHDs. To ensure the ongoing provision of basic utilities such as water, electricity, garbage collection, heating/air conditioning, etc., the KDPH and LHDs will coordinate with community-based organizations, regional jurisdictions, and/or public utilities.

Effective public communication programs will be essential to achieving compliance with all disease control strategies and to maintain the credibility of government and health officials. Pre-event radio and television public service announcements have been developed for emergency broadcasting discussing necessary steps for the public to follow during a pandemic influenza outbreak in Kentucky. Communication to isolated/quarantined persons will be accomplished through utilization of radio, television,

printed media, door-to-door messages (when necessary) and the Kentucky Outreach Information Network. Access to telephone services will be coordinated for isolated/quarantined persons when necessary. In addition, Emergency Public Information and Risk Communication (EPIRC) will continue to closely communicate with Kentucky Home Health Association, Kentucky Hospital Association, and the Kentucky Medical Association for strategies to coordinate health and medical services for those isolated/quarantined.

## **II. GUIDELINES FOR COMMUNITY DISEASE CONTAINMENT:**

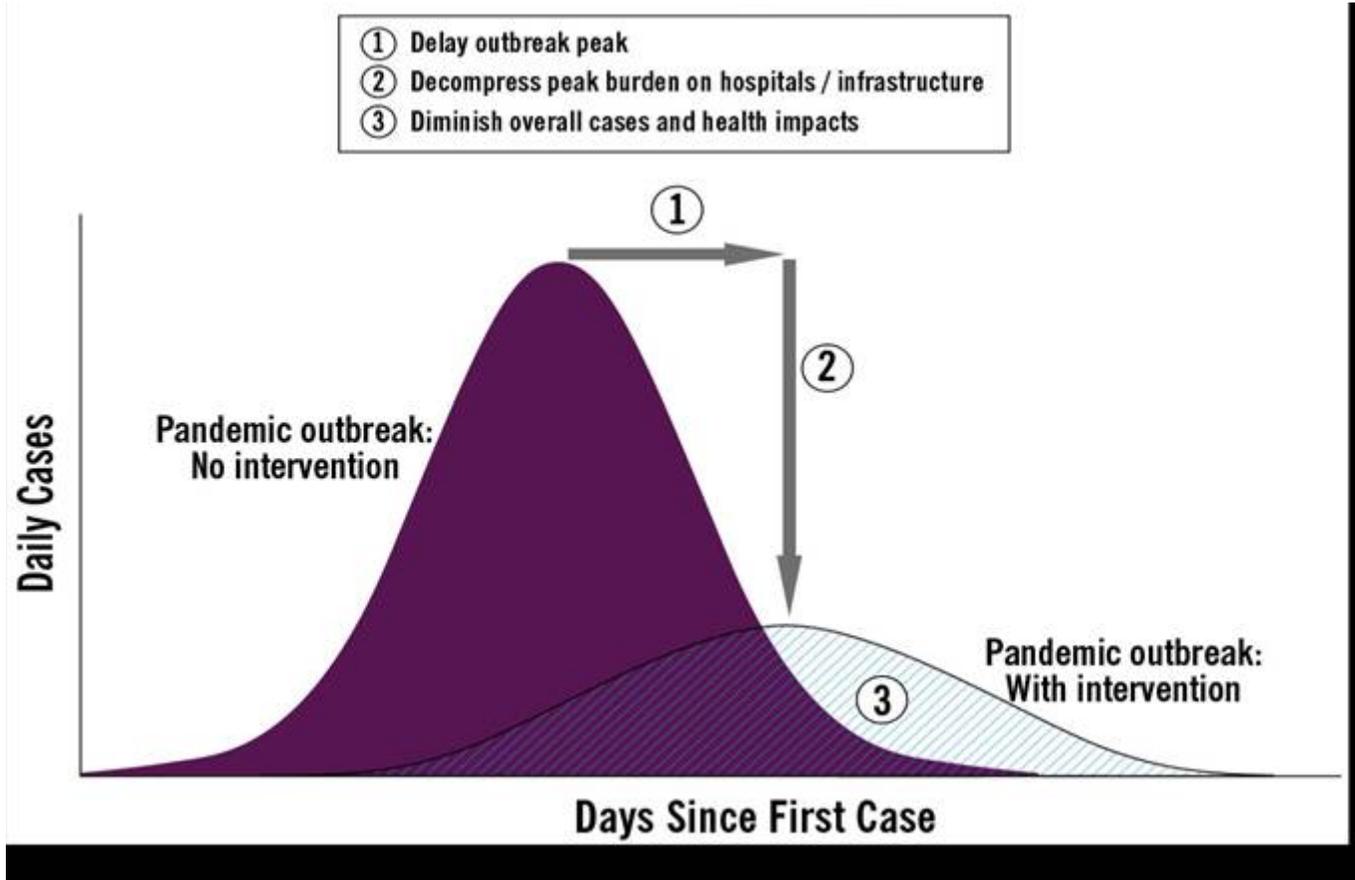
The overarching public health imperative is to reduce morbidity and mortality in a pandemic. The primary strategies for combating influenza are:

1. Vaccination
2. Treatment of infected individuals and prophylaxis of exposed individuals with influenza antiviral medications
3. Implementation of infection control and social distancing measures.

Because it is highly unlikely that a vaccine would be available at the start of a pandemic and the fact that vaccine and antivirals are likely to be in short supply, nonpharmaceutical interventions will be the best countermeasure. The goals of community mitigation are listed below and summarized in Figure 1:

1. Delay outbreak peak
2. Decompress peak burden on hospitals/infrastructure
3. Diminish overall cases and health impacts

**Figure 1. Goals of Community Mitigation**

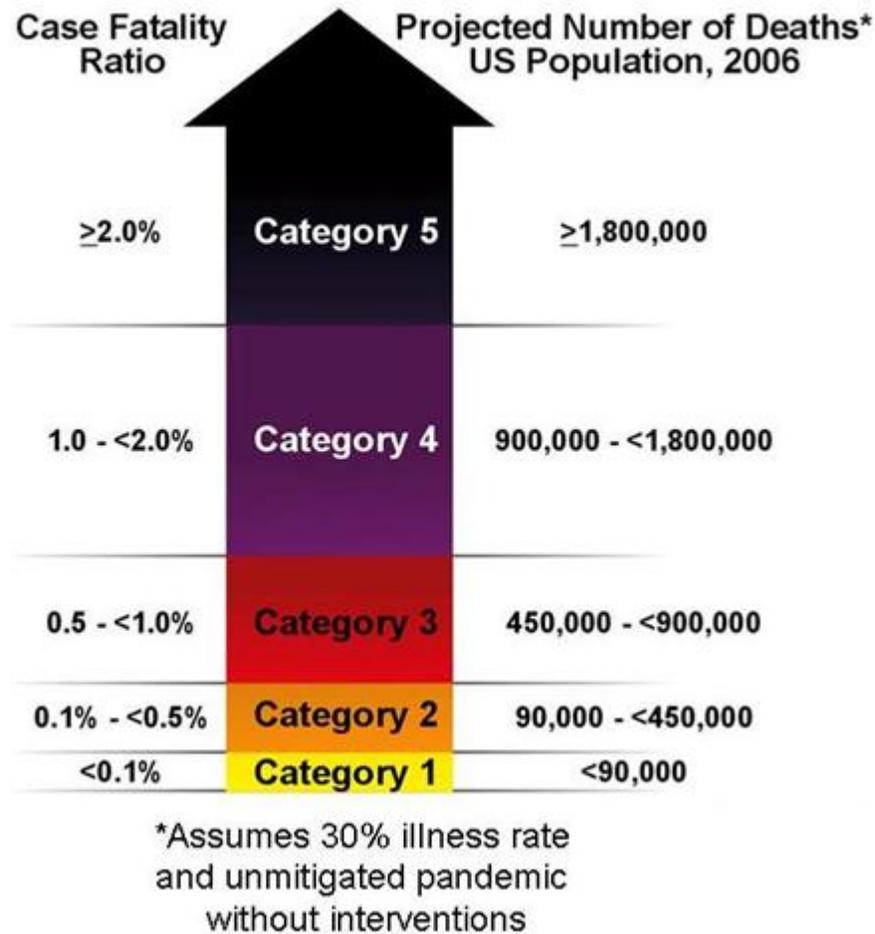


Based on research done by the CDC, community containment is based upon early, targeted, layered mitigation strategies involving multiple partially effective nonpharmaceutical measures initiated early and maintained consistently during an epidemic wave. Decisions about what interventions should be used during a pandemic should be based on the severity of the event, its impact on specific subpopulations, the expected benefits of the intervention, the feasibility of success in modern society, the direct and indirect costs, and the consequences of critical infrastructure, healthcare delivery and society. Some interventions such as prolonged dismissal of students from school are not necessary during a less severe pandemic. The Pandemic Severity Index is a tool created by the CDC for pre-pandemic planning efforts based primarily on case fatality ratio. Pandemic severity is described within five discrete categories of increasing severity (Category 1 to Category 5). Figure 2 below provides categorization of pandemic severity by epidemiological characteristics:

**Figure 2. Pandemic Severity Index by Epidemiological Characteristics**

Characteristics	Pandemic Severity Index				
	Category 1	Category 2	Category 3	Category 4	Category 5
Case Fatality Ratio (percentage)	<0.1	0.1 - <0.5	0.5 - <1.0	1.0 - <2.0	≥ 2.0
Excess Death Rate (per 100,000)	<30	30 - <150	150 - <300	300 - <600	≥600
Illness Rate (percentage of the population)	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40
Potential Number of Deaths (based on 2006 U.S. population)	<90,000	90,000- <450,000	450,000- <900,000	900,000- <1.8 million	≥1.8 million
20 <sup>th</sup> Century U.S. Experience	Seasonal Influenza (Illness rate 5-20%)	1957, 1968 Pandemic	None	None	1918 Pandemic

**Figure 3. Pandemic Severity Index**



### **A. Nonpharmaceutical Interventions**

Community containment is based upon early, targeted, layered mitigation strategies involving multiple partially effective nonpharmaceutical measures initiated early and maintained consistently during an epidemic wave. These interventions are based on severity index and include:

1. Isolation and treatment (as appropriate) with influenza antiviral medications of all persons with confirmed or probable pandemic influenza. Isolation may occur in the home or healthcare setting, depending on the severity of the individual's illness and/or the current capacity of the healthcare infrastructure.
2. Voluntary home quarantine of members of households with confirmed or probable influenza case(s) and consideration of combining this intervention with

the prophylactic use of antiviral medications, providing sufficient quantities of effective medications exist and that a feasible means of distributing them is in place.

3. Dismissal of students from schools (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing.
4. Use of social distancing measures to reduce contact between adults in the community and workplace, including, for example, cancellation of large public gatherings and alteration of workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services. Enable institution of workplace leave policies that align incentives and facilitate adherence with the nonpharmaceutical interventions (NPIs) outlined above.

Recommendations for these nonpharmaceutical measures are summarized below.

**Figure 4. Summary of the Community Mitigation Strategy by Pandemic Severity**

Interventions* by Setting	Pandemic Severity Index		
	1	2 and 3	4 and 5
<b>Home</b>			
<b>Voluntary isolation</b> of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	Recommend †§	Recommend †§	Recommend †§
<b>Voluntary quarantine</b> of household members in homes with ill persons¶ (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Generally not recommended	Consider **	Recommend **
<b>School</b>			
<b>Child social distancing</b>			
-dismissal of students from schools and school based activities, and closure of child care programs	Generally not recommended	Consider: ≤4 weeks ††	Recommend: ≤12 weeks §§
-reduce out-of school social contacts and community mixing	Generally not recommended	Consider: ≤4 weeks ††	Recommend: ≤12 weeks §§
<b>Workplace / Community</b>			
<b>Adult social distancing</b>			
-decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)	Generally not recommended	Consider	Recommend
-increase distance between persons (e.g., reduce density in public transit, workplace)	Generally not recommended	Consider	Recommend
-modify, postpone, or cancel selected public gatherings to promote social distance (e.g., stadium events, theater performances)	Generally not recommended	Consider	Recommend
-modify work place schedules and practices (e.g., telework, staggered shifts)	Generally not recommended	Consider	Recommend

The following interventions are taken from “Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States – Early, Targeted, Layered Use of Nonpharmaceutical Interventions”.

#### *Voluntary Isolation of Ill Persons*

The goal of this intervention is to reduce transmission by reducing contact between persons who are ill and those who are not. Ill individuals not requiring hospitalization would be requested to remain at home voluntarily for the infectious period, approximately 7-10 days after symptom onset. This would usually be in their homes, but could be in a home of a friend or relative. Voluntary isolation of ill children and adults at home is predicated on the assumption that many ill individuals who are not critically ill can and will need to be cared for in the home. In addition, this intervention may be combined with the use of influenza antiviral medications for treatment (as appropriate), as long as such medications are effective and sufficient in quantity and that feasible plans and protocols for distribution are in place.

Requirements for success include prompt recognition of illness, appropriate use of hygiene and infection control practices in the home setting (specific guidance is forthcoming and will be available on [www.pandemicflu.gov](http://www.pandemicflu.gov)); measures to promote voluntary compliance (e.g., timely and effective risk communications); commitment of employers to support the recommendation that ill employees stay home; and support for the financial, social, physical, and mental health needs of patients and caregivers. In addition, ill individuals and their household members need clear, concise information about how to care for an ill individual in the home and when and where to seek medical care. Special consideration should be made for persons who live alone, as many of these individuals may be unable to care for themselves if ill.

#### *Voluntary Quarantine of Household Members of Ill Persons*

The goal of this intervention is to reduce community transmission from members of households in which there is a person ill with pandemic influenza. Members of households in which there is an ill person may be at increased risk of becoming infected with a pandemic influenza virus. As determined on the basis of known characteristics of influenza, a significant proportion of these persons may shed virus and present a risk of infecting others in the community despite having asymptomatic or only minimally symptomatic illness that is not recognized as pandemic influenza disease. Thus, members of households with ill individuals may be recommended to stay home for an incubation period, 7 days (voluntary quarantine) following the time of symptom onset in the household member. If other family members become ill during this period, the recommendation is to extend the time of voluntary home quarantine for another incubation period, 7 days from the time that the last family member becomes ill. In addition, consideration may be given to combining this intervention with provision of influenza antiviral medication to persons in quarantine if such medications are effective and sufficient in quantity and if a feasible means of distributing them is in place.

Requirements for success of this intervention include the prompt and accurate identification of an ill person in the household, voluntary compliance with quarantine by household members, commitment of employers to support the recommendation that employees living in a household with an ill individual stay home, the ability to provide needed support to households that are under voluntary quarantine, and guidance for infection control in the home. Additionally, adherence to ethical principals in use of quarantine during pandemics, along with proactive anti-stigma measures should be assured.<sup>83, 84</sup>

### *Child Social Distancing*

The goal of these interventions is to protect children and to decrease transmission among children in dense classroom and non-school settings and, thus, to decrease introduction into households and the community at large. Social distancing interventions for children include dismissal of students from classrooms and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing. Childcare facilities and schools represent an important point of epidemic amplification, while the children themselves, for reasons cited above, are thought to be efficient transmitters of disease in any setting. The common sense desire of parents to protect their children by limiting their contacts with others during a severe pandemic is congruent with public health priorities, and parents should be advised that they could protect their children by reducing their social contacts as much as possible.

However, it is acknowledged that maintaining the strict confinement of children during a pandemic would raise significant problems for many families and may cause psychosocial stress to children and adolescents. These considerations must be weighed against the severity of a given pandemic virus to the community at large and to children in particular. Risk of introduction of an infection into a group and subsequent transmission among group members is directly related to the functional number of individuals in the group. Although the available evidence currently does not permit the specification of a “safe” group size, activities that recreate the typical density and numbers of children in school classrooms are clearly to be avoided. Gatherings of children that are comparable to family-size units may be acceptable and could be important in facilitating social interaction and play behaviors for children and promoting emotional and psychosocial stability.

A recent study of children between the ages of 25 and 36 months found that children in group care with six or more children were 2.2 times as likely to have an upper respiratory tract illness as children reared at home or in small-group care (defined as fewer than six children). If a recommendation for social distancing of children is advised during a pandemic and families must nevertheless group their children for pragmatic reasons, it is recommended that group sizes be held to a minimum and that mixing between such groups be minimized (e.g., children should not move from group to group or have extended social contacts outside the designated group).

Requirements for success of these interventions include consistent implementation among all schools in a region being affected by an outbreak of pandemic influenza, community and parental commitment to keeping children from congregating out of school, alternative options for the education and social interaction of the children, clear legal authorities for decisions to dismiss students from classes and identification of the decision-makers, and support for parents and adolescents who need to stay home from work. Interim recommendations for pre-pandemic planning for this intervention include a three-tiered strategy: 1) no dismissal of students from schools or closure of childcare facilities in a Category 1 pandemic, 2) short-term (up to 4 weeks) dismissal of students and closure of childcare facilities during a Category 2 or Category 3 pandemic, and 3) prolonged (up to 12 weeks) dismissal of students and closure of childcare facilities during a severe influenza pandemic (Category 4 or Category 5). The conceptual thinking behind this recommendation is developed more fully in Section VII, *Duration of Implementation of Nonpharmaceutical Interventions*.

Colleges and universities present unique challenges in terms of pre-pandemic planning because many aspects of student life and activity encompass factors that are common to both the child school environment (e.g., classroom/dormitory density) and the adult sphere (e.g., commuting longer distances for university attendance and participating in activities and behaviors associated with an older student population). Questions remain with regard to the optimal strategy for managing this population during the early stages of an influenza pandemic.

The number of college students in the United States is significant. There are approximately 16.6 million college students attending both 2- and 4-year universities, a large number of whom live away from home. Of the 8.3 million students attending public or private 4-year colleges and universities, less than 20 percent live at home with their parents.

At the onset of a pandemic, many parents may want their children who are attending college or university to return home from school. Immediately following the announcement of an outbreak, colleges and universities should prepare to manage or assist large numbers of students departing school and returning home within a short time span. Where possible, policies should be explored that are aligned with the travel of large numbers of students to reunite with family and the significant motivations behind this behavior. Pre-pandemic planning to identify those students likely to return home and those who may require assistance for imminent travel may allow more effective management of the situation. In addition, planning should be considered for those students who may be unable to return home during a pandemic.

### *Adult Social Distancing*

Social distancing measures for adults include provisions for both workplaces and the community and may play an important role in slowing or limiting community transmission pressure. The goals of workplace measures are to reduce transmission within the workplace and thus into the community at large, to ensure a safe working

environment and promote confidence in the workplace, and to maintain business continuity, especially for critical infrastructure. Workplace measures such as encouragement of telework and other alternatives to in-person meetings may be important in reducing social contacts and the accompanying increased risk of transmission. Similarly, modifications to work schedules, such as staggered shifts, may also reduce transmission risk.

Within the community, the goals of these interventions are to reduce community transmission pressures and thus slow or limit transmission. Cancellation or postponement of large gatherings, such as concerts or theatre showings, may reduce transmission risk. Modifications to mass transit policies/ridership to decrease passenger density may also reduce transmission risk, but such changes may require running additional trains and buses, which may be challenging due to transit employee absenteeism, equipment availability, and the transit authority's financial ability to operate nearly empty train cars or buses.

Requirements for success of these various measures include the commitment of employers to providing options and making changes in work environments to reduce contacts while maintaining operations; whereas, within communities, the support of political and business leaders as well as public support is critical.

## **B. Triggers for Initiating Use of Nonpharmaceutical Interventions**

Identifying the optimal time for initiation of nonpharmaceutical interventions will be challenging as implementing measures prior to a pandemic may result in economic and social hardship and compliance fatigue while implementing measures after extensive spread may limit health benefits. Identification of key personnel, critical resources and processes is very important during a pandemic. Figure 5 below introduces the terms Alert, Standby and Active to reflect key steps in escalation of response action.

**Figure 5. Triggers for Implementation of Mitigation Strategies by Pandemic Severity Index and U.S. Government Stages**

Pandemic Severity Index	WHO Phase 6, U.S. Government Stage 3*	WHO Phase 6, U.S. Government Stage 4† and First human case in United States	WHO Phase 6, U.S. Government Stage 5§ and First laboratory-confirmed cluster in State or region¶
	1	Alert	Standby
2 and 3	Alert	Standby	Activate
4 and 5	Standby**	Standby/Activate ¶¶	Activate

\*Widespread human outbreaks in multiple locations overseas.

†First human case in North America.

§Spread throughout the United States.

¶Recommendations for regional planning acknowledge the tight linkages that may exist between cities and metropolitan areas that are not encompassed within state boundaries.

\*\*Standby applies. However, Alert actions for Category 4 and 5 should occur during WHO Phase 5, which corresponds to U.S. Government Stage 2.

††Standby/Activate Standby applies unless the laboratory-confirmed case cluster and community transmission occurs within a given jurisdiction, in which case that jurisdiction should proceed directly to Activate community interventions defined in Table 2.

Alert includes notification of critical systems and personnel of impending activation, Standby includes initiation of decision-making processes for imminent activation, including mobilization of resources and personnel, and Activate refers to implementation of the specified pandemic mitigation measures. See Appendix 7 for specific triggers for community containment interventions.

### C. Duration of Implementation of Nonpharmaceutical Interventions

The total duration for intervention measures will depend on the severity of the pandemic and the duration of the pandemic wave in the community. (The average pandemic wave is about 6-8 weeks). Monitoring of excess mortality, case fatality ratios or other surrogate markers over time will be important for determining the optimal duration. The table below provides guidance on the duration of dismissal of students:

- No dismissal of students from schools or closure of childcare facilities in a Category 1 pandemic

- Short-term (up to 4 weeks) dismissal of students and closure of childcare facilities during a Category 2 or Category 3 pandemic
- Prolonged (up to 12 weeks) dismissal of students and closure of childcare facilities during a severe influenza pandemic (Category 4 or Category 5 pandemic)

#### **D. Planning to Minimize Consequences of Community Mitigation Strategy**

The major areas of concern derive from the recommendation to dismiss children from school and closure of childcare programs. The concerns include 1) the economic impact to families; 2) the potential disruption to all employers, including businesses and governmental agencies; 3) access to essential goods and services; and 4) the disruption of school-related services (e.g., school meal programs). Other interventions, such as home isolation and voluntary home quarantine of members of households with ill persons, would also contribute to increased absenteeism from work and affect both business operations and employees. These issues are of particular concern for vulnerable populations who may be disproportionately impacted.

Solutions or strategies for minimizing the impact of dismissal of students from school and closure of childcare programs and workplace absenteeism are summarized below: 1) employing child-minding strategies to permit continued employment; 2) employing flexible work arrangements to allow persons who are minding children or in quarantine to continue to work; 3) minimizing the impact on household income through income replacement; and 4) ensuring job security.

Communities and families with school-age children who rely on school meal programs should anticipate and plan as best they can for a disruption of these services and school meal programs for up to 12 weeks. Local government and faith-based and community leaders are being encouraged to work closely with nutrition program administrators at the local, State, and Federal level to:

- Develop plans to address community nutrition assistance needs during a pandemic
- Identify nutrition program adaptations needed to respond to social distancing, voluntary quarantines, and possible disruption of the normal food supply
- Address challenges related to the supply and delivery of food through commercial markets
- Identify current program flexibilities/authorities and determine if others are needed

### **III. GENERAL GUIDELINES FOR COMMUNITY DISEASE CONTAINMENT AND PREVENTION — INTERPANDEMIC AND PANDEMIC ALERT PERIODS:**

#### **A. Department for Public Health Responsibilities**

A novel influenza A virus has been detected in animals but not in humans. During these phases, the risk of human infection with a novel influenza A virus strain is extremely low but would become much higher in persons living in or traveling to affected areas.

Notify Local Health Departments through Kentucky Health Alert Network as “heads up” warning and encourage public information the following guidelines to reduce the transmission of disease:

- Hand washing: wash hands after touching blood, bodily fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Wash hands immediately after gloves are removed, between patients’ contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments.
- Use plain non-antimicrobial soap for routine hand washing
- Wash hands with either a non-antimicrobial soap and water or an antimicrobial soap and water when hands are visibly soiled.
- When hands are not visibly soiled, use an **alcohol-based hand rub** or waterless antiseptic agent when soap and water are not immediately available.
- Use respiratory hygiene/ cough etiquette

**Control measures for persons with symptoms of a respiratory infection; implement at first point of encounter (e.g. triage/ reception areas within a healthcare setting).**

Cover the mouth/nose when sneezing/coughing; use tissues and dispose in no-touch receptacles; perform hand hygiene after contact with respiratory secretions; wear a mask (procedure or surgical) if tolerated; sit or stand as far away as possible (more than 3 feet) from persons who are ill.

#### **1. Personal Protective Equipment (PPE):**

- **Gloves:** Wear gloves (clean, non-sterile gloves are adequate) when touching blood, body fluids, secretions, excretions, and contaminated items. Put on clean gloves just before touching mucous membranes and non-intact skin. Change gloves between tasks and procedures on the same patient after contact with material that may contain a high concentration of microorganisms. Decontaminate hands after removing gloves.
- **Gown:** Wear a gown during procedures and patient care activities when contact of clothing or exposed skin with blood or body fluids, secretions, and excretions is anticipated.
- **Face/ eye protection** (e.g. surgical or procedure mask and goggles or face shield). Use face/ eye protection during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, or excretions

## **2. Safe Work Practices:**

- Avoid touching eyes, nose, mouth or exposed skin with contaminated hands (gloved or ungloved).
- Avoid touching surfaces that are not directly related to patient care (e.g. door knobs, keys, light switches) with contaminated gloves and other PPE.

## **3. Environmental cleaning and disinfection:**

- Use EPA-registered hospital detergent-disinfectant; follow standard facility procedures for cleaning and disinfection of environmental surfaces; emphasize cleaning/disinfection of frequently touched surfaces (e.g. bed rails, phones, lavatory surfaces).
- Disposal of solid waste: Contain and dispose of solid waste (regulated medical and non-medical) in accordance with facility procedures and local or state regulations; wear gloves when handling waste; wear gloves when handling waste containers; perform hand hygiene after waste disposal.
- Soiled patient care equipment: Handle in a manner that prevents transfer of microorganisms to oneself, others, and environmental surfaces; wear gloves if handling visibly contaminated equipment; perform hand hygiene after handling equipment.
- Soiled linen and laundry: Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces; wear gloves (gown if necessary) when handling and transporting soiled linen and laundry; and perform hand hygiene after handling soiled lines and laundry.

## **B. Local Health Departments Responsibilities:**

- Implement guidelines set out by state and local pandemic influenza plan using standard precautions for hand washing techniques, PPE, and reduction of spread of disease.
- Standard precautions using proper hand washing techniques (e.g. wash hands after touching blood, bodily fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Wash hands immediately after gloves are removed, between patient contacts, tasks, and procedures.)
- Standard procedures followed for reduction of spread of disease through respiratory hygiene/ cough etiquette; covering the mouth/nose when sneezing/coughing; using tissues and dispose in no-touch receptacles; perform hand hygiene after contact with respiratory secretions; wear a mask (procedure or surgical) if necessary.
- Educate general public in ways to reduce the spread of disease; PSA in local newspapers and television; flyers and hand outs for school visits, posters displayed in waiting rooms of LHD describing proper techniques for hand washing, cough/sneeze etiquette.
- Receive and provide vaccine/anti-viral medications direct (probably) from manufacturers for at risk populations using prioritization Tier groups established through state and local pandemic flu plan. (see Appendix A)

### **III GENERAL GUIDELINES FOR COMMUNITY DISEASE CONTAINMENT AND PREVENTION — PANDEMIC PERIOD:**

#### **A. Department for Public Health Responsibilities:**

During this period:

- A novel influenza A virus has been detected in humans through sporadic animal to human transmission in an affected area (e.g. direct contact with infected poultry), and few cases of limited, local human-to-human transmission have occurred (small clusters of cases).
- A novel influenza A virus has been detected in humans in larger clusters in an affected area, suggesting that the virus is becoming better adapted to spread among people.
- Human infection with human influenza viruses or other viruses will occur and should still be considered.

#### **KDPH will continue efforts used during earlier periods and:**

- Regularly consult updates on case definitions, screening, laboratory testing, and treatment algorithms for pandemic influenza noting if any of the following have occurred within the state:
- Issue medical alerts on Kentucky Health Alert Network (HAN) for medical personnel, public health workers and LHD's
- Through the Division of Communications, (Commissioner and /or Governor's office) provide medical information and background to general public via public service announcements listed on radio, television and specific websites for self isolation / quarantine
- Begin early with first and fewest cases reported to help slow spread of disease. Issue information on guidelines, transmission and spread of virus
- Individuals who are sick, have been exposed, or are caring for an individual who is sick should "self-isolate" or "self quarantine" themselves for a period of ten days until the possibility of transmission has passed
- Suspend communal gatherings, (e.g., ballgames, school, church, shopping malls, and other social functions )
- Limit travel to a minimum thus reducing the possibility of transmission of virus during pandemic period
- Travel to known infected areas should be avoided at all times during pandemic period

#### **B. Local Health Departments will continue efforts used during earlier periods and:**

- Implement standard precautions and procedures for reduction and spread of disease
- Encourage respiratory hygiene/ cough etiquette in the community
- Control measures for persons with symptoms of a respiratory infection; implement at first point of encounter (e.g. triage/ reception areas within a healthcare setting).
  - Cover the mouth/nose when sneezing/coughing; use tissues and dispose in no-touch receptacles; perform hand hygiene after contact with respiratory

secretions; wear a mask (procedure or surgical) if tolerated; sit or stand as far away as possible (more than 3 feet) from persons who are ill.

- Hand washing: wash hands after touching blood, bodily fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Wash hands immediately after gloves are removed, between patients' contacts, and when otherwise indicated to avoid transfer of microorganism to other patients or environments.
- Use plain non-antimicrobial soap for routine hand washing
- Wash hands with either a non-antimicrobial soap and water or an antimicrobial soap and water when hands are visibly soiled.
- When hands are not visibly soiled, use an **alcohol-based hand rub** or waterless antiseptic agent when soap and water are not immediately available.

#### **IV. MANAGING TRAVEL-RELATED RISK OF DISEASE TRANSMISSION INTER-PANDEMIC AND PANDEMIC ALERT PERIOD:**

##### **A. Department for Public Health Responsibilities:**

- Provide public health information to LHD for travelers who visit counties where avian or animal influenza strains that can infect humans (e.g., influenza A (H5N1) or human strains with pandemic potential have been reported
- KDPH will work closely with UDSA /APHIS and Kentucky Department of Agriculture to prevent the importation of influenza- infected birds and animals into the United States
- KDPH will work closely with travel industry (airlines, cruise ships, bus lines) to educate them on procedures for identifying and managing arriving ill passengers and to notify KDPH of suspected cases (see appendix B)
- Local Health Department Inter-pandemic and Pandemic Alert Period:
  - Distribute travel health alert notices to general public especially passengers planning to visit affected countries
  - Post travel health alert notices in airports, bus terminals, travel agencies
  - Distribute health alert notices to prominent places of business such as county court houses, public schools, doctor's offices, hospitals, EMS
- Department for Public Health Pandemic Period:
  - Minimize travel-related disease transmission using various containment strategies
  - Suspend social gatherings in areas known to have Influenza A virus (H5N1) (e.g., ballgames, church meetings, concerts, shopping malls)
  - Suspend travel into and from known infected areas having Influenza A virus (H5N1)
  - Post alerts for LHD informing them of areas that are under quarantine due to infection of Influenza A virus (H5N1)
  - Issue travel health precautions and warnings
  - Avoid travel to high risk settings and communities where transmission is occurring
  - Postpone nonessential travel during pandemic period

- Provide guidance on infection control procedures for travel industry, (e.g., airplanes, ships, busses) to separate ill passengers from other passengers and provide ill passenger with a mask or tissues to prevent viral spread via coughing
- Recommend the cancellation of nonessential travel to other countries or areas affected by Influenza A virus (H5N1)
- Isolate ill passengers arriving on domestic flights and quarantine passengers and crew following protocols developed for international flights (see appendix C)
- KDPH will work closely with Governor's office, Kentucky Department of Transportation and state EOC concerning closing mass transit systems (e.g., buses, trains,)
- KDPH will work closely with Governor's office, Kentucky Department of Transportation and state EOC concerning closing interstate bus and train routes

**B. Local Health Department Responsibilities:**

- Stress proper hand washing techniques especially when frequenting public places, (e.g., restaurants, churches, schools, bus and airport terminals)
- During periods of increased respiratory infection in the community, persons who are coughing should wear either a procedure mask or a surgical mask to contain respiratory secretions or be encouraged to sit as far away as possible (at least 3 feet) from others in common waiting areas
- LHD should notify local authorities of individuals who have traveled to known areas of infection and have possibly been exposed to influenza A virus and who are under self-isolation/ quarantine. Each quarantined person should receive a preliminary medical assessment and should be interviewed to ascertain their travel and exposure histories.
- LHD should quarantine travel contacts (i.e., passengers, crew, response workers) only when there is a high probability that the ill passenger is infected with a novel influenza strain that is transmitted between people. If a decision is made to initiate quarantine, persons who cannot be quarantined at home should be housed in a pre-designated temporary care facility until the diagnosis of the ill passenger is confirmed or disproved (see Appendix D)
- LHD Regional Epidemiologist or infection control nurses should monitor “hot zones” and outbreaks of individuals with influenza like symptoms until definitive diagnosis is confirmed
- Minimize travel-related disease transmission using containment strategies and then evaluate the need to implement or terminate travel-related containment measures as the pandemic evolves

## **V. LEGAL AUTHORITY FOR PUBLIC HEALTH EMERGENCIES:**

### **A. KY Revised Statutes**

- KRS 39A. 100(1), Kentucky State Law states; (1) In the event of the occurrence or threatened or impending occurrence of any of the situations or events contemplated by KRS 39A.010 (et seq.), the Governor may declare, in writing, that a state of emergency exists. Conditions enumerated in KRS 30A.010 include “threats to public safety and health”
- KRS 214.020 Cabinet to adopt regulations and take other action to prevent spread of disease. When the Cabinet for Health Services believes that there is a probability that any infectious or contagious disease will invade this state, it shall take such action and adopt and enforce such rules and regulations as it deems efficient in preventing the introduction or spread of such infectious or contagious disease or diseases within the state, and to accomplish these objects shall establish and strictly maintain quarantine and isolation at such places as it deems proper.
- 902 KAR 2:050 Control procedures; application. Relates to: KRS 211.180. 214.020 Statutory Authority: KRS 195.040, 211.090 Necessity, Function, and Conformity: KRS 211.180 mandates the Cabinet for Human Resources to implement a statewide program for the detection, prevention and control of communicable diseases. This regulation insures the application of control procedures necessary to prevent transmission of communicable diseases after the sources of infection are identified
- KRS 158-160 Notification to school by parent or guardian of child’s medical condition threatening school safety – Exclusion of child with communicable disease from school – Closing of school during epidemic.

## **Appendix 1: Prioritization Tier Groups:**

### **Vaccine**

- Tier 1 A: vaccine and antiviral manufacturers and others essential to manufacturing and critical support; medical workers and public health workers who are involved in direct patient contact;
- Tier 1 B: persons > 65 years with 1 or more influenza high-risk conditions and residents in long term care facilities; persons 6 months to 64 years with 2 or more influenza high risk conditions; persons 6 months or older with history of hospitalization for pneumonia or influenza or other influenza high risk condition in the past year
- Tier C: Pregnant women; household contacts of severely immunocompromised persons who would not be vaccinated due to likely poor response to vaccine; household contacts of children < 6 months olds
- Tier D: Public health emergency response workers critical to pandemic response; key government leaders
- Tier 2 A: Healthy 65 years and older; 6 months to 64 years with 1 high risk condition; 6- 23 months old, healthy
- Tier 2 B: other public health emergency responders; public safety workers including police, fire, 911 dispatchers, and correctional facility staff; utility workers essential for maintenance of power, water, and sewage system functioning; transportation workers transporting fuel, water, food, and medical supplies; telecommunications/ IT for essential network operations and maintenance
- Tier 3: Other key government health decision makers; funeral directors/ embalmers
- Tier 4: Healthy person 2-64 years not included in the above categories

### **Anti-viral Prioritization**

- Patients admitted to hospital
- Health care workers (HCW) with direct patient contact and emergency medical services (EMS) providers
- Highest risk outpatients -immunocompromised persons and pregnant women
- Pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision-makers
- Increased risk outpatients –young children 12-23 months old, persons > 65 years old, and persons with underlying medical conditions
- Outbreak response in nursing homes and other residential settings
- HCW in emergency departments, intensive care units, dialysis centers and EMS providers
- Pandemic societal responders (e.g., critical infrastructure groups as defined in the vaccine priorities) and HCW without direct patient contact
- Other outpatients
- Highest risk outpatients
- Other HCW with direct patient contact

## **Appendix 2: Travel Industry:**

Interim Guidance for Airline Flight Crews and Persons Meeting Passengers Arriving from areas with Avian Influenza; Updated March 13  
[http://www.cdc.gov/travel/other/avian\\_flu\\_ig\\_airlines\\_021804.htm](http://www.cdc.gov/travel/other/avian_flu_ig_airlines_021804.htm)

Interim Guidance for Airline Cleaning Crew, Maintenance Crew, and Baggage/Package and Cargo Handlers for Airlines Returning from Areas Affected by Avian Influenza A (H5N1)- Updated March 13  
[http://www.cdc.gov/travel/other/avian\\_flu\\_airlines\\_cleaning\\_update\\_120505.htm](http://www.cdc.gov/travel/other/avian_flu_airlines_cleaning_update_120505.htm)

Kentucky Department of Tourism -<http://travel.ky.gov>

## **Appendix 3: Protocols Developed for International Flights:**

In collaboration with law enforcement authorities and other partners, public health officials and quarantine officers should develop protocols for managing ill arriving passengers identified by airplane or cruise ship personnel. The protocols should include provisions for:

- Meeting flights or ships with a reported ill passenger
- Establishing notification procedures and communication links among organizations involved in the response
- Reporting potential cases to health authorities both local and state
- Providing a medical assessment of the ill traveler and referral for evaluation and care
- Separating the ill traveler from other passengers during the initial medical assessment
- Transporting the ill traveler to a designated healthcare facility
- Identifying other ill passengers and separating them from passengers who are not sick
- Transporting and quarantining contacts, if necessary
- Enforcing isolation and quarantine, if necessary, when ill travelers or their contacts are uncooperative

#### **Appendix 4: Isolation and Quarantine Locations:**

**Home isolation and quarantine:** determine the situations and attendant types of monitoring that will occur for people in home isolation and quarantine

- *Self monitoring:* Patient status is monitored by the individual
- *Active monitoring:* Patient status is monitored in-person, via telephone, or other (video) methods by LHD personnel (e.g., infection control nurse, epidemiologist, regional epidemiologist)
- *Other:* Any other type of monitoring that may occur
- *Temporary quarantine:* a few days, or until the results of diagnostic test become available
- *Longer-term quarantine:* up to 10 days if a diagnosis of pandemic influenza is confirmed

**Hospital and special facility:** if influenza pandemic results in severe illness overwhelming the capacity of existing healthcare resources, it may become necessary to provide care at alternative sites (e.g., schools, auditoriums, conference centers, hotels). The same principles of infection control apply in these settings as in other healthcare settings.

Support for persons in isolation: essential services (e.g., food, water, sanitary needs) will be provided to persons quarantined in alternative designated sites. (Alternative means other than hospital, special facility or home)

#### **Appendix 5: School Notification-Concerning Communicable Disease:**

158.160 Notification to school by parent or guardian of child's medical condition threatening school safety- Exclusion of child with communicable disease from school- Closing of school during epidemic.

(1) A parent, legal guardian, or other person or agency responsible for a student shall notify the student's school if the student has any medical condition which is defined by the Cabinet for Health Services in administrative regulation as threatening the safety of the condition becomes known and upon each subsequent enrollment by the student in a school. The principal, guidance counselor, or other school official who has knowledge of the medical condition shall notify the student's teachers in writing of the nature of the medical condition.



# Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—

Early, Targeted, Layered Use of Nonpharmaceutical Interventions



**Interim Pre-Pandemic Planning Guidance:  
Community Strategy for Pandemic Influenza Mitigation in the United States—  
Early, Targeted, Layered Use of Nonpharmaceutical Interventions**



**February 2007**



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# Executive Summary

## Purpose

This document provides interim planning guidance for State, territorial, tribal, and local communities that focuses on several measures other than vaccination and drug treatment that might be useful during an influenza pandemic to reduce its harm. Communities, individuals and families, employers, schools, and other organizations will be asked to plan for the use of these interventions to help limit the spread of a pandemic, prevent disease and death, lessen the impact on the economy, and keep society functioning. This interim guidance introduces a Pandemic Severity Index to characterize the severity of a pandemic, provides planning recommendations for specific interventions that communities may use for a given level of pandemic severity, and suggests when these measures should be started and how long they should be used. The interim guidance will be updated when significant new information about the usefulness and feasibility of these approaches emerges.

## Introduction

The Centers for Disease Control and Prevention, U.S. Department of Health and Human Services in collaboration with other Federal agencies and partners in the public health, education, business, healthcare, and private sectors, has developed this interim planning guidance on the use of nonpharmaceutical interventions to mitigate an influenza pandemic. These measures may serve as one component of a comprehensive community mitigation strategy that includes both pharmaceutical and nonpharmaceutical

measures, and this interim guidance includes initial discussion of a potential strategy for combining the use of antiviral medications with these interventions. This guidance will be updated as new information becomes available that better defines the epidemiology of influenza transmission, the effectiveness of control measures, and the social, ethical, economic, and logistical costs of mitigation strategies. Over time, exercises at the local, State, regional, and Federal level will help define the feasibility of these recommendations and ways to overcome barriers to successful implementation.

The goals of the Federal Government's response to pandemic influenza are to limit the spread of a pandemic; mitigate disease, suffering, and death; and sustain infrastructure and lessen the impact on the economy and the functioning of society. Without mitigating interventions, even a less severe pandemic would likely result in dramatic increases in the number of hospitalizations and deaths. In addition, an unmitigated severe pandemic would likely overwhelm our nation's critical healthcare services and impose significant stress on our nation's critical infrastructure. This guidance introduces, for the first time, a Pandemic Severity Index in which the case fatality ratio (the proportion of deaths among clinically ill persons) serves as the critical driver for categorizing the severity of a pandemic. The severity index is designed to enable better prediction of the impact of a pandemic and to provide local decision-makers with recommendations that are matched to the severity of future influenza pandemics.

It is highly unlikely that the most effective tool for mitigating a pandemic (i.e., a well-matched pandemic strain vaccine) will be available when a pandemic begins. This means that we must be prepared to face the first wave of the next pandemic without vaccine and potentially without sufficient quantities of influenza antiviral medications. In addition, it is not known if influenza antiviral medications will be effective against a future pandemic strain. During a pandemic, decisions about how to protect the public before an effective vaccine is available need to be based on scientific data, ethical considerations, consideration of the public's perspective of the protective measures and their impact on society, and common sense. Evidence to determine the best strategies for protecting people during a pandemic is very limited. Retrospective data from past influenza pandemics and the conclusions drawn from those data need to be examined and analyzed within the context of modern society. Few of those conclusions may be completely generalizable; however, they can inform contemporary planning assumptions. When these assumptions are integrated into the current mathematical models, the limitations need to be recognized, as they were in a recent Institute of Medicine report (Institute of Medicine. Modeling Community Containment for Pandemic Influenza. A Letter Report. Washington, DC.: The National Academies Press; 2006).

The pandemic mitigation framework that is proposed is based upon an early, targeted, layered application of multiple partially effective nonpharmaceutical measures. It is recommended that the measures be initiated early before explosive growth of the epidemic and, in the case of severe pandemics, that they be maintained consistently during an epidemic wave in a community. The pandemic mitigation interventions described in this document include:

1. **Isolation and treatment (as appropriate) with influenza antiviral medications of all persons with confirmed or probable pandemic influenza.** Isolation may occur in the home or healthcare setting, depending on the severity of an individual's illness and /or the current capacity of the healthcare infrastructure.
2. **Voluntary home quarantine of members of households with confirmed or probable influenza case(s) and consideration of combining this intervention with the prophylactic use of antiviral medications, providing sufficient quantities of effective medications exist and that a feasible means of distributing them is in place.**
3. **Dismissal of students from school (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing.**
4. **Use of social distancing measures to reduce contact between adults in the community and workplace, including, for example, cancellation of large public gatherings and alteration of workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services. Enable institution of workplace leave policies that align incentives and facilitate adherence with the nonpharmaceutical interventions (NPIs) outlined above.**

All such community-based strategies should be used in combination with individual infection control measures, such as hand washing and cough etiquette.

Implementing these interventions in a timely and coordinated fashion will require advance planning. Communities must be prepared for the cascading second- and third-order consequences of the interventions, such as increased workplace absenteeism related to child-minding responsibilities if schools dismiss students and childcare programs close.

Decisions about what tools should be used during a pandemic should be based on the observed severity of the event, its impact on specific subpopulations, the expected benefit of the interventions, the feasibility of success in modern society, the direct and indirect costs, and the consequences on critical infrastructure, healthcare delivery, and society. The most controversial elements (e.g., prolonged dismissal of students from schools and closure of childcare programs) are not likely to be needed in less severe pandemics, but these steps may save lives during severe pandemics. Just as communities plan and prepare for mitigating the effect of severe natural disasters (e.g., hurricanes), they should plan and prepare for mitigating the effect of a severe pandemic.

### **Rationale for Proposed Nonpharmaceutical Interventions**

The use of NPIs for mitigating a community-wide epidemic has three major goals: 1) delay the exponential growth in incident cases and shift the epidemic curve to the right in order to “buy time” for production and distribution of a well-matched pandemic strain vaccine, 2) decrease the epidemic peak, and 3) reduce the total number of incident cases, thus reducing community morbidity and mortality. Ultimately, reducing the number of persons infected is a primary goal of pandemic planning. NPIs may help reduce influenza transmission by reducing contact between sick and uninfected persons, thereby reducing the number of infected persons. Reducing the number of persons infected will, in turn, lessen the need for healthcare services and minimize the impact of a pandemic on the economy and society. The surge of need for medical care that would occur following a poorly mitigated severe pandemic can be addressed only partially by increasing capacity within hospitals and other care settings. Reshaping the demand for healthcare services by using NPIs is an important component of the overall mitigation strategy. In practice, this means reducing the burdens on the medical and public

health infrastructure by decreasing demand for medical services at the peak of the epidemic and throughout the epidemic wave; by spreading the aggregate demand over a longer time; and, to the extent possible, by reducing net demand through reduction in patient numbers and case severity.

No intervention short of mass vaccination of the public will dramatically reduce transmission when used in isolation. Mathematical modeling of pandemic influenza scenarios in the United States, however, suggests that pandemic mitigation strategies utilizing multiple NPIs may decrease transmission substantially and that even greater reductions may be achieved when such measures are combined with the targeted use of antiviral medications for treatment and prophylaxis. Recent preliminary analyses of cities affected by the 1918 pandemic show a highly significant association between the early use of multiple NPIs and reductions in peak and overall death rates. The rational targeting and layering of interventions, especially if these can be implemented before local epidemics have demonstrated exponential growth, provide hope that the effects of a severe pandemic can be mitigated. It will be critical to *target* those at the nexus of transmission and to *layer* multiple interventions together to reduce transmission to the greatest extent possible.

### **Pre-Pandemic Planning: the Pandemic Severity Index**

This guidance introduces, for the first time, a Pandemic Severity Index, which uses case fatality ratio as the critical driver for categorizing the severity of a pandemic (Figure A, abstracted and reprinted here from Figure 4 in the main text). The index is designed to enable estimation of the severity of a pandemic on a population level to allow better forecasting of the impact of a pandemic and to enable recommendations to be made on the use of mitigation interventions that are matched to the severity of future influenza pandemics.

Future pandemics will be assigned to one of five discrete categories of increasing severity (Category 1 to Category 5). The Pandemic Severity Index provides communities a tool for scenario-based contingency planning to guide local pre-pandemic preparedness efforts. Accordingly, communities facing the imminent arrival of pandemic disease will be able to use the pandemic severity assessment to define which pandemic mitigation interventions are indicated for implementation.

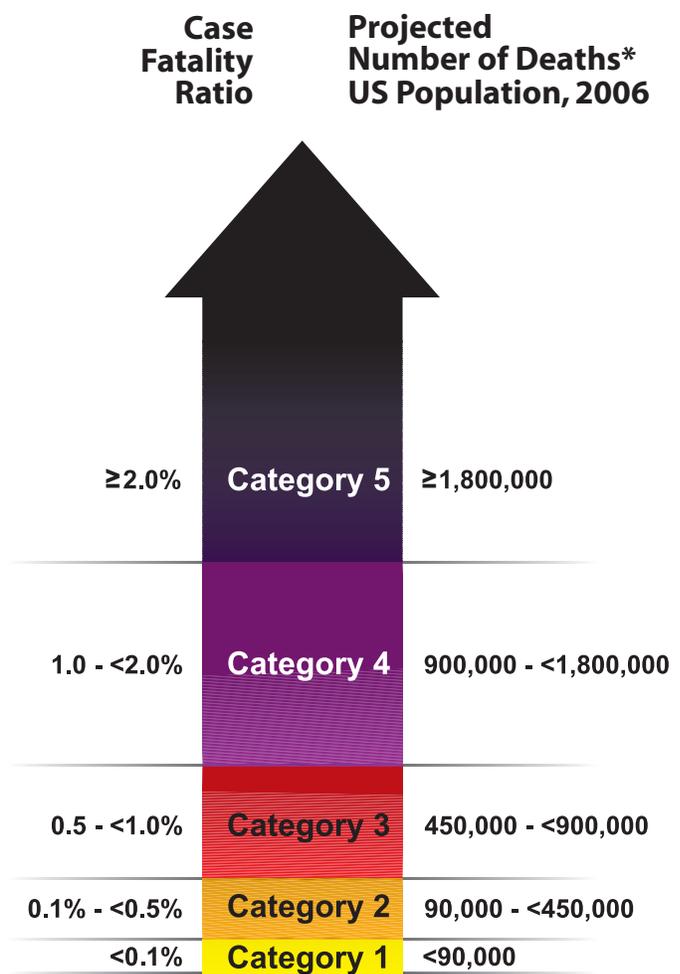
### Use of Nonpharmaceutical Interventions by Severity Category

This interim guidance proposes a community mitigation strategy that matches recommendations on planning for use of selected NPIs to categories of severity of an influenza pandemic. These planning recommendations are made on the basis of an assessment of the possible benefit to be derived from implementation of these measures weighed against the cascading second- and third-order consequences that may arise from their use. Cascading second- and third-order consequences are chains of effects that may arise because of the intervention and may require additional planning and intervention to mitigate. The term generally refers to foreseeable unintended consequences of intervention. For example, dismissal of students from school may lead to the second-order effect of workplace absenteeism for child minding. Subsequent workplace absenteeism and loss of household income could be especially problematic for individuals and families living at or near subsistence levels. Workplace absenteeism could also lead to disruption of the delivery of goods and services essential to the viability of the community.

For Category 4 or Category 5 pandemics, a planning recommendation is made for use of all listed NPIs (Table A, abstracted and reprinted here from Table 2. in the main text). In addition, planning for dismissal of students

from schools and school-based activities and closure of childcare programs, in combination with means to reduce out-of-school social contacts and community mixing for these children, should encompass up to 12 weeks of intervention in the most severe scenarios. This approach to pre-pandemic planning will provide a baseline of readiness for community response. Recommendations for use of these measures for pandemics of lesser severity may include a subset of these same interventions and potentially for shorter durations, as in the case of social distancing measures for children.

**Figure A. Pandemic Severity Index**



\*Assumes 30% Illness Rate and Unmitigated Pandemic Without Interventions

For Category 2 and Category 3 pandemics, planning for voluntary isolation of ill persons is recommended; however, other mitigation measures (e.g., voluntary quarantine of household members and social distancing measures for children and adults) should be implemented only if local decision-makers determine their use is warranted due to characteristics of the pandemic within their community. Pre-pandemic planning for the use of mitigation strategies within these two Pandemic Severity Index categories should be done with a focus on a duration of 4 weeks or less, distinct from the longer timeframe recommended for the more severe Category 4 and Category 5 pandemics. For Category 1 pandemics, voluntary isolation of ill persons is generally the only community-wide recommendation, although local communities may choose to tailor their response to Category 1-3 pandemics by applying NPIs on the basis of local epidemiologic parameters, risk assessment, availability of countermeasures, and consideration of local healthcare surge capacity. Thus, from a pre-pandemic planning perspective for Category 1, 2, and 3 pandemics, capabilities for both assessing local public health capacity and healthcare surge, delivering countermeasures, and implementing these measures in full and in combination should be assessed.

### Triggers for Initiating Use of Nonpharmaceutical Interventions

The timing of initiation of various NPIs will influence their effectiveness. Implementing these measures prior to the pandemic may result in economic and social hardship without public health benefit and over time, may result in “intervention fatigue” and erosion of public adherence. Conversely, implementing these interventions after extensive spread of pandemic influenza illness in a community may limit the public health benefits of employing these measures. Identifying the optimal time

for initiation of these interventions will be challenging because implementation needs to be early enough to preclude the initial steep upslope in case numbers and long enough to cover the peak of the anticipated epidemic curve while avoiding intervention fatigue.

This guidance suggests that the primary activation trigger for initiating interventions be the arrival and transmission of pandemic virus. This trigger is best defined by a laboratory-confirmed cluster of infection with a novel influenza virus and evidence of community transmission (i.e., epidemiologically linked cases from more than one household).

Defining the proper geospatial-temporal boundary for this cluster is complex and should recognize that our connectedness as communities goes beyond spatial proximity and includes ease, speed, and volume of travel between geopolitical jurisdictions (e.g., despite the physical distance, Hong Kong, London, and New York City may be more epidemiologically linked to each other than they are to their proximate rural provinces/areas). In order to balance connectedness and optimal timing, it is proposed that the geopolitical trigger be defined as the cluster of cases occurring within a U.S. State or proximate epidemiological region (e.g., a metropolitan area that spans more than one State’s boundary). It is acknowledged that this definition of “region” is open to interpretation; however, it offers flexibility to State and local decision-makers while underscoring the need for regional coordination in pre-pandemic planning.

From a pre-pandemic planning perspective, the steps between recognition of a pandemic threat and the decision to activate a response are critical to successful implementation. Thus, a key component is the development of scenario-specific contingency plans for pandemic response that identify key personnel, critical resources, and processes. To emphasize the importance of this concept, the guidance section on triggers introduces the terminology of *Alert*,

**Table A. Summary of the Community Mitigation Strategy by Pandemic Severity**

Interventions* by Setting	Pandemic Severity Index		
	1	2 and 3	4 and 5
<b>Home</b> <b>Voluntary isolation</b> of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	<b>Recommend†§</b>	<b>Recommend†§</b>	<b>Recommend†§</b>
<b>Voluntary quarantine</b> of household members in homes with ill persons¶ (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	<b>Generally not recommended</b>	<b>Consider**</b>	<b>Recommend**</b>
<b>School</b> <b>Child social distancing</b>  -dismissal of students from schools and school based activities, and closure of child care programs  -reduce out-of-school social contacts and community mixing	<b>Generally not recommended</b>  <b>Generally not recommended</b>	<b>Consider:</b> ≤4 weeks††  <b>Consider:</b> ≤4 weeks††	<b>Recommend:</b> ≤12 weeks§§  <b>Recommend:</b> ≤12 weeks§§
<b>Workplace / Community</b> <b>Adult social distancing</b>  -decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)  -increase distance between persons (e.g., reduce density in public transit, workplace)  -modify postpone, or cancel selected public gatherings to promote social distance (e.g., postpone indoor stadium events, theatre performances)  -modify work place schedules and practices (e.g., telework, staggered shifts)	<b>Generally not recommended</b>  <b>Generally not recommended</b>  <b>Generally not recommended</b>  <b>Generally not recommended</b>	<b>Consider</b>  <b>Consider</b>  <b>Consider</b>  <b>Consider</b>	<b>Recommend</b>  <b>Recommend</b>  <b>Recommend</b>  <b>Recommend</b>

Generally Not Recommended = Unless there is a compelling rationale for specific populations or jurisdictions, measures are generally not recommended for entire populations as the consequences may outweigh the benefits.

Consider = Important to consider these alternatives as part of a prudent planning strategy, considering characteristics of the pandemic, such as age-specific illness rate, geographic distribution, and the magnitude of adverse consequences. These factors may vary globally, nationally, and locally.  
Recommended = Generally recommended as an important component of the planning strategy.

†All these interventions should be used in combination with other infection control measures, including hand hygiene, cough etiquette, and personal protective equipment such as face masks. Additional information on infection control measures is available at [www.pandemicflu.gov](http://www.pandemicflu.gov).

‡This intervention may be combined with the treatment of sick individuals using antiviral medications and with vaccine campaigns, if supplies are available.

§Many sick individuals who are not critically ill may be managed safely at home.

¶The contribution made by contact with asymptotically infected individuals to disease transmission is unclear. Household members in homes with ill persons may be at increased risk of contracting pandemic disease from an ill household member. These household members may have asymptomatic illness and may be able to shed influenza virus that promotes community disease transmission. Therefore, household members of homes with sick individuals would be advised to stay home.

\*\*To facilitate compliance and decrease risk of household transmission, this intervention may be combined with provision of antiviral medications to household contacts, depending on drug availability, feasibility of distribution, and effectiveness; policy recommendations for antiviral prophylaxis are addressed in a separate guidance document.

††Consider short-term implementation of this measure—that is, less than 4 weeks.

§§Plan for prolonged implementation of this measure—that is, 1 to 3 months; actual duration may vary depending on transmission in the community as the pandemic wave is expected to last 6-8 weeks.

*Standby*, and *Activate*, which reflect key steps in escalation of response action. *Alert* includes notification of critical systems and personnel of their impending activation, *Standby* includes initiation of decision-making processes for imminent activation, including mobilization of resources and personnel, and *Activate* refers to implementation of the specified pandemic mitigation measures. Pre-pandemic planning for use of these interventions should be directed to lessening the transition time between *Alert*, *Standby*, and *Activate*. The speed of transmission may drive the amount of time decision-makers are allotted in each mode, as does the amount of time it takes to fully implement the intervention once a decision is made to *Activate*.

For the most severe pandemics (Categories 4 and 5), *Alert* is implemented during WHO Phase 5/U.S. Government Stage 2 (confirmed human outbreak overseas), and *Standby* is initiated during WHO Phase 6/ U.S. Government Stage 3 (widespread human outbreaks in multiple locations overseas). *Standby* is maintained through Stage 4 (first human case in North America), with the exception of the State or region in which a cluster of laboratory-confirmed human pandemic influenza cases with evidence of community transmission is identified. The recommendation for that State or region is to *Activate* the appropriate NPIs when identification of a cluster with community transmission is made. Other States or regions *Activate* appropriate interventions when they identify laboratory-confirmed human pandemic influenza case clusters with evidence of community transmission in their jurisdictions.

For Category 1, 2, and 3 pandemics, *Alert* is declared during U.S. Government Stage 3, with step-wise progression by States and regions to *Standby* based on U.S. Government declaration of Stage 4 and the identification of the first human pandemic influenza case(s) in the United States. Progression to *Activate* by a given State or region occurs when that State or region identifies a cluster of laboratory-confirmed human pandemic influenza cases, with evidence

of community transmission in their jurisdiction.

## Duration of Implementation of Nonpharmaceutical Interventions

It is important to emphasize that as long as susceptible individuals are present in large numbers, disease spread may continue. Immunity to infection with a pandemic strain can only occur after natural infection or immunization with an effective vaccine. Preliminary analysis of historical data from selected U.S. cities during the 1918 pandemic suggests that duration of implementation is significantly associated with overall mortality rates. Stopping or limiting the intensity of interventions while pandemic virus was still circulating within the community was temporally associated with increases in mortality due to pneumonia and influenza in many communities. It is recommended for planning purposes that communities be prepared to maintain interventions for up to 12 weeks, especially in the case of Category 4 or Category 5 pandemics, where recrudescence epidemics may have significant impact. However, for less severe pandemics (Category 2 or 3), a shorter period of implementation may be adequate for achieving public health benefit. This planning recommendation acknowledges the uncertainty around duration of circulation of pandemic virus in a given community and the potential for recrudescence disease when use of NPIs is limited or stopped, unless population immunity is achieved.

## Critical Issues for the Use of Nonpharmaceutical Interventions

A number of outstanding issues should be addressed to optimize the planning for use of these measures. These issues include the establishment of sensitive and timely surveillance, the planning and conducting of multi-level exercises to evaluate the feasibility of implementation, and the identification and establishment of appropriate monitoring

and evaluation systems. Policy guidance in development regarding the use of antiviral medications for prophylaxis, community and workplace-specific use of personal protective equipment, and safe home management of ill persons must be prioritized as part of future components of the overall community mitigation strategy. In addition, generating appropriate risk communication content/materials and an effective means for delivery, soliciting active community support and involvement in strategic planning decisions, and assisting individuals and families in addressing their own preparedness needs are critical factors in achieving success.

### **Assessment of the Public on Feasibility of Implementation and Compliance**

A Harvard School of Public Health public opinion poll on community mitigation interventions, conducted with a nationally representative sample of adults over the age of 18 years in the United States in September and October 2006, indicated that most respondents were willing to follow public health recommendations for the use of NPIs, but it also uncovered financial and other concerns. More information on “Pandemic Influenza and the Public: Survey Findings” is available at [www.keystone.org/Public\\_Policy/Pandemic\\_control.html](http://www.keystone.org/Public_Policy/Pandemic_control.html).

The Public Engagement Project on Community Control Measures for Pandemic Influenza (see link at [www.keystone.org/Public\\_Policy/Pandemic\\_control.html](http://www.keystone.org/Public_Policy/Pandemic_control.html)), carried out in October and November 2006, found that approximately two-thirds of both citizens and stakeholders supported all the nonpharmaceutical measures. Nearly half of the citizens and stakeholders supported implementation when pandemic influenza first strikes the United States, and approximately one-third of the public supported implementation when influenza first strikes in their State.

Although the findings from the poll and public engagement project reported high levels of willingness to follow pandemic mitigation recommendations, it is uncertain how the public might react when a pandemic occurs. These results need to be interpreted with caution in advance of a severe pandemic that could cause prolonged disruption of daily life and widespread illness in a community. Issues such as the ability to stay home if ill, job security, and income protection were repeatedly cited as factors critical to ensuring compliance with these NPI measures.

### **Planning to Minimize Consequences of Community Mitigation Strategy**

It is recognized that implementing certain NPIs will have an impact on the daily activities and lives of individuals and society. For example, some individuals will need to stay home to mind children or because of exposure to ill family members, and for some children, there will be an interruption in their education or their access to school meal programs. These impacts will arise in addition to the direct impacts of the pandemic itself. Communities should undertake appropriate planning to address both the consequences of these interventions and direct effects of the pandemic. In addition, communities should pre-identify those for whom these measures may be most difficult to implement, such as vulnerable populations and persons at risk (e.g., people who live alone or are poor/working poor, elderly [particularly those who are homebound], homeless, recent immigrants, disabled, institutionalized, or incarcerated). To facilitate preparedness and to reduce untoward consequences from these interventions, Pandemic Influenza Community Mitigation Interim Planning Guides have been included (see Appendices 4-9) to provide broad planning guidance tailored for businesses and other employers, childcare programs, elementary and secondary schools, colleges and universities, faith-based and community organizations, and individuals and families. It is also critical

for communities to begin planning their risk communication strategies. This includes public engagement and messages to help individuals, families, employers, and many other stakeholders to prepare.

The U.S. Government recognizes the significant challenges and social costs that would be imposed by the coordinated application of the measures described above. It is important to bear in mind, however, that if the experience of the 1918 pandemic is relevant, social distancing and other NPI strategies would, in all likelihood, be implemented in most communities at some point during a pandemic. The potential exists for such interventions to be implemented in an uncoordinated, untimely, and inconsistent manner that would impose economic and social costs similar to those imposed by strategically implemented interventions but with dramatically reduced effectiveness. The development of clear interim pre-pandemic guidance for planning that outlines a coordinated strategy, based upon the best scientific evidence available, offers communities the best chance to secure the benefits that such strategies may provide. As States and local communities exercise the potential tools for responding to a pandemic, more will be learned about the practical realities of their implementation. Interim recommendations will be updated accordingly.

## **Testing and Exercising Community Mitigation Interventions**

Since few communities have experienced disasters on the scale of a severe pandemic, drills and exercises are critical in testing the efficacy of plans. A severe pandemic would challenge all facets of governmental and community functions. Advance planning is necessary to ensure a coordinated communications strategy and the continuity of essential services. Realistic exercises considering the effect of these proposed interventions and the cascading second- and third-order consequences will identify planning and resource shortfalls.

## **Research Needs**

It is recognized that additional research is needed to validate the proposed interventions, assess their effectiveness, and identify adverse consequences. This research will be conducted as soon as practicable and will be used in providing updated guidance as required. A proposed research agenda is outlined within this document.

## **Conclusions**

Planning and preparedness for implementing mitigation strategies during a pandemic are complex tasks requiring participation by all levels of government and all segments of society. Community-level intervention strategies will call for specific actions by individuals, families, employers, schools, and other organizations. Building a foundation of community and individual and family preparedness and developing and delivering effective risk communication for the public in advance of a pandemic are critical. If embraced earnestly, these efforts will result in enhanced ability to respond not only to pandemic influenza but also to multiple other hazards and threats. While the challenge is formidable, the consequences of facing a severe pandemic unprepared will be intolerable. This interim pre-pandemic planning guidance is put forth as a step in our commitment to address the challenge of mitigating a pandemic by building and enhancing community resiliency.

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## Introduction

A severe pandemic in a fully susceptible population, such as the 1918 pandemic or one of even greater severity, with limited quantities of antiviral medications and pre-pandemic vaccine represents a worst-case scenario for pandemic planning and preparedness.<sup>1</sup> However, because pandemics are unpredictable in terms of timing, onset, and severity, communities must plan and prepare for the spectrum of pandemic severity that could occur. The purpose of this document is to provide interim planning guidance for what are believed currently to be the most effective combinations of pharmaceutical and nonpharmaceutical interventions (NPIs) for mitigating the impact of an influenza pandemic across a wide range of severity scenarios.

The community strategy for pandemic influenza mitigation supports the goals of the Federal Government's response to pandemic influenza to limit the spread of a pandemic; mitigate disease, suffering, and death; and sustain infrastructure and lessen the impact to the economy and the functioning of society.<sup>2</sup> In a pandemic, the overarching public health imperative must be to reduce morbidity and mortality. From a public health perspective, if we fail to protect human health we are likely to fail in our goals of preserving societal function and mitigating the social and economic consequences of a severe pandemic.<sup>3-8</sup>

A severe pandemic could overwhelm acute care services in the United States and challenge our nation's healthcare system.<sup>9-11</sup> To preserve as many lives as possible, it is essential to keep the healthcare system functioning and to deliver the best care possible.<sup>12</sup> The projected peak demand

for healthcare services, including intensive care unit (ICU) admissions and the number of individuals requiring mechanical ventilation, would vastly exceed current inventories of physical assets (emergency services capacity, inpatient beds, ICU beds, and ventilators) and numbers of healthcare professionals (nurses and physicians). The most prudent approach, therefore, would appear to be to expand medical surge capacity as much as possible while reducing the anticipated demand for services by limiting disease transmission. Delaying a rapid upswing of cases and lowering the epidemic peak to the extent possible would allow a better match between the number of ill persons requiring hospitalization and the nation's capacity to provide medical care for such people (see Figure 1).

The primary strategies for combating influenza are 1) vaccination, 2) treatment of infected individuals and prophylaxis of exposed individuals with influenza antiviral medications, and 3) implementation of infection control and social distancing measures.<sup>5,7,8,13,14</sup> The single most effective intervention will be vaccination. However, it is highly unlikely that a well-matched vaccine will be available when a pandemic begins unless a vaccine with broad cross-protection is developed.<sup>15-18</sup> With current vaccine technology, pandemic strain vaccine would not become available for at least 4 to 6 months after the start of a pandemic, although this lag time may be reduced in the future. Furthermore, once an effective pandemic vaccine is developed and being produced, it is likely that amounts will be limited due to the production process and will not be sufficient to cover the

entire population. Pre-pandemic vaccine may be available at the onset of a pandemic, but there is no guarantee that it will be effective against the emerging pandemic strain. Even if a pre-pandemic vaccine did prove to be effective, projected stockpiles of such a vaccine would be sufficient for only a fraction of the U.S. population.

These realities mean that we must be prepared to face the first wave of the next pandemic without vaccine—the best countermeasure—and potentially without sufficient quantities of influenza antiviral medications.<sup>19</sup> In addition, it is not known if influenza antiviral medications will be effective against a future pandemic strain. During a pandemic, decisions about how to protect the public before an effective vaccine is available need to be based on scientific data, ethical considerations, consideration of the

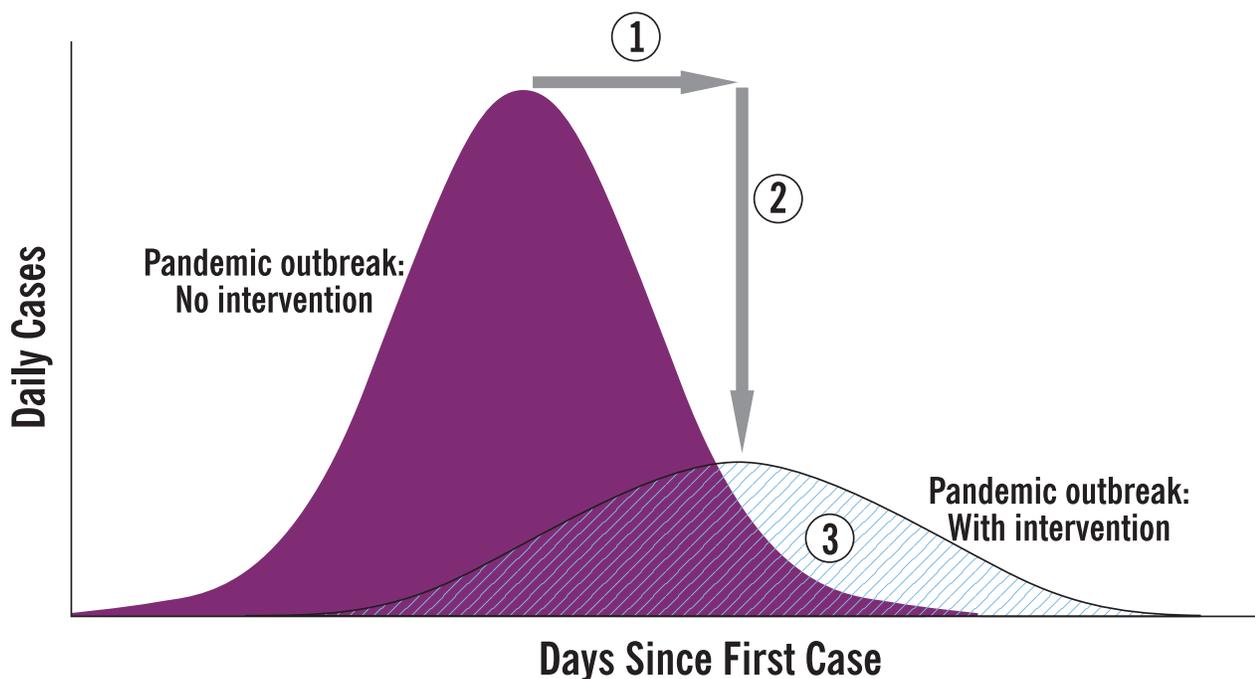
public's perspective of the protective measures and their impact on society, and common sense. Evidence to determine the best strategies for protecting people during a pandemic is very limited. Retrospective data from past epidemics and the conclusions drawn from those data need to be examined and analyzed within the context of modern society. Few of those conclusions may be completely generalizable; however, they can inform contemporary planning assumptions. When these assumptions are integrated into the current mathematical models, the limitations need to be recognized, as they were in a recent Institute of Medicine report.<sup>20</sup>

This document provides interim pre-pandemic planning guidance for the selection and timing of selected NPIs and recommendations for their use matched to the severity of a future influenza pandemic. While it is not possible, prior to

**Figure 1.**

### Goals of Community Mitigation

- ① Delay outbreak peak
- ② Decompress peak burden on hospitals / infrastructure
- ③ Diminish overall cases and health impacts



emergence, to predict with certainty the severity of a pandemic, early and rapid characterization of the pandemic virus and initial clusters of human cases may give insight into its potential severity and determine the initial public health response. The main determinant of a pandemic's severity is its associated mortality.<sup>21-27</sup> This may be defined by case fatality ratio or excess mortality rate—key epidemiological parameters that may be available shortly after the emergence of a pandemic strain from investigations of initial outbreaks or from more routine surveillance data. Other factors, such as efficiency of transmission, are important for consideration as well.

The Centers for Disease Control and Prevention (CDC) developed this guidance with input from other Federal agencies, key stakeholders, and partners, including a working group of public health officials and other stakeholders (see Appendix 2, Interim Guidance Development Process). A community mitigation framework is proposed that is based upon an early, targeted, layered mitigation strategy involving the directed application of multiple partially effective nonpharmaceutical measures initiated early and maintained consistently during an epidemic wave.<sup>20, 28-33</sup> These interventions include the following:

1. Isolation and treatment (as appropriate) with influenza antiviral medications of all persons with confirmed or probable pandemic influenza. Isolation may occur in the home or healthcare setting, depending on the severity of an individual's illness and /or the current capacity of the healthcare infrastructure.
2. Voluntary home quarantine of members of households with confirmed or probable influenza case(s) and consideration of combining this intervention with the prophylactic use of antiviral medications, providing sufficient quantities of effective medications exist and that a feasible means of distributing them is in place.

3. Dismissal of students from school (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing.

4. Use of social distancing measures to reduce contact among adults in the community and workplace, including, for example, cancellation of large public gatherings and alteration of workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services. Enable institution of workplace leave policies that align incentives and facilitate adherence with the nonpharmaceutical interventions (NPIs) outlined above.

The effectiveness of individual infection control measures (e.g., cough etiquette, hand hygiene) and the role of surgical masks or respirators in preventing the transmission of influenza are currently unknown. However, cough etiquette and hand hygiene will be recommended universally, and the use of surgical masks and respirators may be appropriate in certain settings (specific community face mask and respirator use guidance is forthcoming as is guidance for workplaces and will be available on [www.pandemicflu.gov](http://www.pandemicflu.gov)).

Decisions about what tools should be used during a pandemic should be based on the observed severity of the event, its impact on specific subpopulations, the expected benefit of the interventions, the feasibility of success in modern society, the direct and indirect costs, and the consequences on critical infrastructure, healthcare delivery, and society. The most controversial elements (e.g., prolonged dismissal of students from schools and closure of childcare programs) are not likely to be needed in less severe pandemics, but these steps may save lives

during severe pandemics. Just as communities plan and prepare for mitigating the effect of severe natural disasters (e.g., hurricanes), they should plan and prepare for mitigating the effect of a severe pandemic.

The U.S. Government recognizes the significant challenges and social costs that would be imposed by the coordinated application of the measures described above.<sup>2, 10, 34</sup> It is important to bear in mind, however, that if the experience of the 1918 pandemic is relevant, social distancing and other NPI strategies would, in all likelihood, be implemented in most communities at some point during a pandemic. The potential exists for such interventions to be implemented in an uncoordinated, untimely, and inconsistent manner that would impose economic and social costs similar to those imposed by strategically implemented interventions but with dramatically reduced effectiveness. The development of clear interim pre-pandemic guidance for planning that outlines a coordinated strategy, based upon the best scientific evidence available, offers communities the best chance to secure the benefits that such strategies may provide. As States and local communities exercise the potential tools for responding to a pandemic, more will be learned about the practical realities of their implementation. Interim recommendations will be updated accordingly.

This document serves as interim public health planning guidance for State, local, territorial, and tribal jurisdictions developing plans for using community mitigation interventions in response to a potential influenza pandemic in the United States. Given the paucity of evidence for the effectiveness of some of the interventions and the potential socioeconomic implications, some interventions may draw considerable disagreement and criticism.<sup>20</sup> Some interventions that may be highly useful tools in the framework of a disease control strategy will need to be applied judiciously to balance socioeconomic realities of community functioning. CDC will regularly review this document and, as

appropriate, issue updates based on the results from various ongoing historical, epidemiological, and field studies. Response guidance will need to remain flexible and likely will require modification during a pandemic as information becomes available and it can be determined if ongoing pandemic mitigation measures are useful for mitigating the impact of the pandemic. Pandemic planners need to develop requirements for community-level data collection during a pandemic and develop and test a tool or process for accurate real-time and post-wave evaluation of pandemic mitigation measures, with guidelines for modifications.

Communities will need to prepare in advance if they are to accomplish the rapid and coordinated introduction of the measures described while mitigating the potentially significant cascading second- and third-order consequences of the interventions themselves. Cascading second- and third-order consequences are chains of effects that may arise because of the intervention and may require additional planning and intervention to mitigate. The terms generally refer to foreseeable unintended consequences of intervention. For example, dismissal of students from school classrooms may lead to the second-order effect of workplace absenteeism for child minding. Subsequent workplace absenteeism and loss of household income could be especially problematic for individuals and families living at or near subsistence levels. Workplace absenteeism could also lead to disruption of the delivery of goods and services essential to the viability of the community. If communities are not prepared for these untoward effects, the ability of the public to comply with the proposed measures and, thus, the ability of the measures to reduce suffering and death may be compromised.

Federal, State, local, territorial, and tribal governments and the private sector all have important and interdependent roles in preparing for, responding to, and recovering from a pandemic. To maintain public confidence and to enlist the support of private citizens in disease

mitigation efforts, public officials at all levels of government must provide unambiguous and consistent guidance that is useful for planning and can assist all segments of society to recognize and understand the degree to which their collective actions will shape the course of a pandemic. The potential success of community mitigation interventions is dependent upon building a foundation of community and individual and family preparedness. To facilitate preparedness, Pandemic Influenza Community Mitigation Interim Planning Guides have been included as appendices to provide broad but tailored planning guidance for businesses and other employers, childcare programs, elementary and secondary schools, colleges and universities, faith-based and community organizations, and individuals and families (see Appendices 4-9). See also the Department of Homeland Security's *Pandemic Influenza Preparedness, Response and Recovery Guide for Critical Infrastructure and Key Resources* (available at [www.pandemicflu.gov/plan/pdf/cikrpanemicinfluenzaguide.pdf](http://www.pandemicflu.gov/plan/pdf/cikrpanemicinfluenzaguide.pdf)).

## U.S. and Global Preparedness Planning

The suggested strategies contained in this document are aligned with the World Health Organization (WHO) phases of a pandemic.<sup>35</sup> WHO has defined six phases, occurring before and during a pandemic, that are linked to the characteristics of a new influenza virus and its spread through the population (see Appendix 2. WHO Phases of a Pandemic/U.S. Government Stages of a Pandemic). This document specifically provides pre-pandemic planning guidance for the use of NPIs in WHO Phase 6. These phases are described below:

### Inter-Pandemic 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 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.

### 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 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 phase: increased and sustained transmission in general population.

The WHO phases provide succinct statements about the global risk for a pandemic and provide benchmarks against which to measure global response capabilities. However, to describe the U.S. Government's approach to the pandemic response, it is more useful to characterize the stages of an outbreak in terms of the immediate and specific threat a pandemic virus poses to the U.S. population.<sup>2</sup> The following stages provide a framework for Federal Government actions:

Stage 0: New Domestic Animal Outbreak in At-Risk Country

Stage 1: Suspected Human Outbreak Overseas

Stage 2: Confirmed Human Outbreak Overseas

Stage 3: Widespread Human Outbreaks in Multiple Locations Overseas

Stage 4: First Human Case in North America

Stage 5: Spread throughout United States

Stage 6: Recovery and Preparation for Subsequent Waves

Using the Federal Government's approach, this document provides pre-pandemic planning guidance from Stages 3 through 5 for step-wise escalation of activity, from pre-implementation preparedness, through active preparation for initiation of NPIs, to actual use.

# Rationale for Proposed Nonpharmaceutical Interventions

The three major goals of mitigating a community-wide epidemic through NPIs are 1) delay the exponential increase in incident cases and shift the epidemic curve to the right in order to “buy time” for production and distribution of a well-matched pandemic strain vaccine, 2) decrease the epidemic peak, and 3) reduce the total number of incident cases and, thus, reduce morbidity and mortality in the community (Figure 1). These three major goals of epidemic mitigation may all be accomplished by focusing on the single goal of saving lives by reducing transmission. NPIs may help reduce influenza transmission by reducing contact between sick persons and uninfected persons, thereby reducing the number of infected persons. Reducing the number of persons infected will also lessen the need for healthcare services and minimize the impact of a pandemic on the economy and society. The surge of need for medical care associated with a poorly mitigated severe pandemic can be only partially addressed by increasing capacity within hospitals and other care settings. Thus, reshaping the demand for healthcare services by using NPIs is an important component of the overall strategy for mitigating a severe pandemic

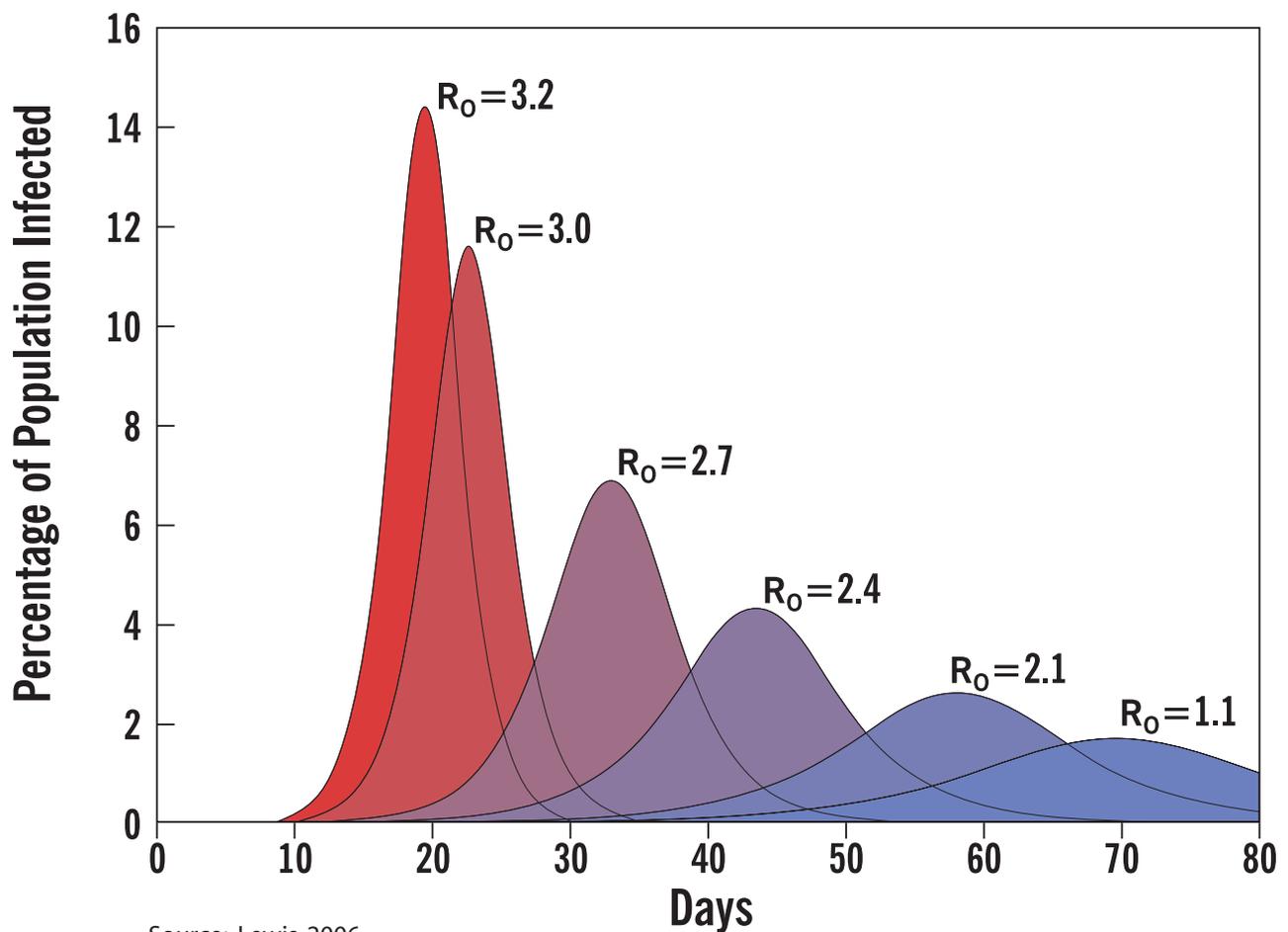
## Principles of Disease Transmission

### *Decreasing the Basic Reproductive number, $R_0$*

The basic reproductive number,  $R_0$ , is the average number of new infections that a typical infectious person will produce during the course of his/her infection in a fully susceptible population in the absence of interventions.<sup>36-38</sup>  $R_0$  is not an intrinsic property of the infectious agent but is rather an epidemic characteristic

of the agent acting within a specific host within a given milieu. For any given duration of infection and contact structure,  $R_0$  provides a measure of the transmissibility of an infectious agent. Alterations in the pathogen, the host, or the contact networks can result in changes in  $R_0$  and thus in the shape of the epidemic curve. Generally speaking, as  $R_0$  increases, epidemics have a sharper rise in the case curve, a higher peak illness rate (clinical attack rate), a shorter duration, and a higher percentage of the population infected before the effects of herd immunity begin to exert an influence (in homogeneous contact networks, herd immunity effects should dominate when the percentage of the population infected or otherwise rendered immune is equivalent to  $1 - 1/R_0$ ).  $R_t$  is the change in the reproductive number at a given point in time. Thus, as shown in Figure 2, decreasing  $R_t$  by decreasing host susceptibility (through vaccination or the implementation of individual infection control measures) or reducing transmission by diminishing the number of opportunities for exposure and transmission (through the implementation of community-wide NPIs) will achieve the three major goals of epidemic mitigation.<sup>39</sup> Mathematical modeling of pandemic influenza scenarios in the United States suggests that pandemic mitigation strategies utilizing NPIs separately and in combination with medical countermeasures may decrease the  $R_t$ .<sup>20, 28-31, 40</sup> This potential to reduce  $R_t$  is the rationale for employing early, targeted, and layered community-level NPIs as key components of the public health response.

Figure 2.

Effect of  $R_0$  on Epidemic Curves*Influenza: Infectiousness and Transmissibility*

Assuming the pandemic influenza strain will have transmission dynamics comparable to those for seasonal influenza and recent pandemic influenza strains, the infection control challenges posed will be considerable. Factors responsible for these challenges include 1) a short incubation period (average of 2 days, range 1-4 days); 2) the onset of viral shedding (and presumably of infectiousness) prior to the onset of symptoms; and 3) the lack of specific clinical signs and symptoms that can reliably discriminate influenza infections from other causes of respiratory illness.<sup>41, 42</sup> Although the hallmarks of a pandemic strain will not be known until emergence, patients with influenza may

shed virus prior to the onset of clinical symptoms and may be infectious on the day before illness onset. Most people infected with influenza develop symptomatic illness (temperature of 100.4° F or greater, plus cough or sore throat), and the amount of virus they shed correlates with their temperature; however, as many as one-third to one-half of those who are infected may either have very mild or asymptomatic infection. This possibility is important because even seemingly healthy individuals with influenza infection as well as those with mild symptoms who are not recognized as having influenza could be infectious to others.

## Early, Targeted Implementation of Interventions

The potential for significant transmission of pandemic influenza by asymptomatic or minimally symptomatic individuals to their contacts suggests that efforts to limit community transmission that rely on targeting only symptomatic individuals would result in diminished ability to mitigate the effects of a pandemic. Additionally, the short intergeneration time of influenza disease suggests that household members living with an ill individual (who are thus at increased risk of infection with pandemic virus) would need to be identified rapidly and targeted for appropriate intervention to limit community spread.<sup>20, 28-31, 40</sup> Recent estimates have suggested that while the reproductive number for most strains of influenza is less than 2, the intergeneration time may be as little as 2.6 days. These parameters predict that in the absence of disease mitigation measures, the number of cases of epidemic influenza will double about every 3 days, or about a tenfold increase every 1-2 weeks. Given the potential for exponential growth of a pandemic, it is reasonable to expect that the timing of interventions will be critical. Planning for community response that is predicated on reactive implementation of these measures may limit overall effectiveness. Measures instituted earlier in a pandemic would be expected to be more effective than the same measures instituted after a pandemic is well established. Although subject to many limitations, mathematical models that explored potential source mitigation strategies that make use of vaccine, antiviral medications, and other infection control and social distancing measures for use in an influenza outbreak identified critical time thresholds for success.<sup>20, 28, 31</sup> These results suggest that the effectiveness of pandemic mitigation strategies will erode rapidly as the cumulative illness rate prior to implementation climbs above 1 percent of the population in an affected area. Thus, pre-pandemic, scenario-based contingency planning for the early, targeted use of NPIs likely provides

the greatest potential for an effective public health response.

To summarize, isolation of ill individuals will reduce the onward transmission of disease after such individuals are identified. However, influenza is a disease in which infected persons may shed virus prior to onset of symptoms and thus are potentially infectious for approximately 1 day before becoming symptomatic. In addition, not all infected individuals will be identified because mild or asymptomatic cases may be relatively common. Isolation strategies are thus, at best, a partial solution. Similarly, voluntary quarantine of members of households with ill persons will facilitate the termination of transmission chains, but quarantine strategies are limited to the extent that they can be implemented only after cases are identified. Consequently, only a percentage of transmission chains will be interrupted in this fashion. Given the very short generation times (time between a primary and secondary case) observed with influenza and the fact that peak infectiousness occurs around the time of symptom onset, the identification of cases and simultaneous implementation of isolation and quarantine must occur very rapidly or the efficacy of these strategies will erode significantly.

### *Antiviral Therapy/Prophylaxis*

Four approved influenza antiviral agents are available in the United States: amantadine, rimantadine, zanamivir, and oseltamivir. The role of influenza antiviral medications as therapy for symptomatic individuals is primarily to improve individual outcomes not to limit the further transmission of disease; although, recent clinical trials have demonstrated that prophylaxis of household contacts of symptomatic individuals with neuraminidase inhibitors can reduce household transmission.<sup>43-48</sup>

Current antiviral medication stockpiles are thought to be inadequate to support antiviral prophylaxis of members of households with ill individuals.<sup>49, 50</sup> Moreover, the feasibility

of rapidly (within 48 hours after exposure) providing these medications to ill individuals and those who live in household with ill individuals has not been tested and mechanisms to support such distribution need to be developed. As with the use of antiviral medications for treatment, concerns exist regarding the emergence of resistance if the use of antiviral medications for prophylaxis is widespread.<sup>51, 52</sup> Although mathematical models illustrate the additive effects that antiviral prophylaxis offers in reducing disease transmission, these challenges must be addressed to make this a realistic measure for implementation during a pandemic.<sup>20</sup> Future updates of this guidance will address feasibility concerns and incorporate any new recommendations regarding use of antiviral prophylaxis for members of households with ill individuals.

### Targeting Interventions by Exploiting Heterogeneities in Disease Transmission

Our social connectedness provides a disease transmission network for a pandemic to spread.<sup>50, 53-58</sup> Variation exists with respect to individual social connectedness and contribution to disease transmission. Such a distribution is characteristic of a “scale-free” network. A scale-free network is one in which connectivity between nodes follows a distribution in which there are a few highly connected nodes among a larger number of less connected nodes. Air travel provides an example of this concept. In this example, a relatively small number of large hub airports are highly connected with large numbers of originating and connecting flights from a much larger number of small regional airports with a limited number of flights and far lesser degree of connectedness to other airports. Because of the differences in connectivity, the closure of a major hub airport, compared with closure of a small regional airport, would have a disproportionately greater effect on air travel. Given the variation of social connectedness and its contribution to the formation of disease transmission networks, it is useful to identify the nodes of high connectivity since eliminating transmission at

these nodes could most effectively reduce disease transmission.

#### *Social Density*

One measure for decreasing transmission of an influenza virus is by increasing the distances among people in work, community, and school settings.<sup>31, 50, 59</sup> Schools and pre-schools represent the most socially dense of these environments. Social density is greatest in pre-school classrooms, with guidelines for occupancy density specifying 35-50 square feet per child.<sup>60, 61</sup> Published criteria for classroom size based upon the number of students and one teacher recommend an elementary school and high school classroom density of 49 and 64 square feet per person, respectively.<sup>62</sup> There is more space per person in work and healthcare settings, with high variability from one setting to another; for example, occupancy density in hospitals is about 190 square feet per person.<sup>63</sup> Office buildings and large retail buildings have an average occupational density of 390-470 square feet per person.<sup>64, 65</sup> Homes represent the least socially dense environment (median occupancy density of 734 square feet per person in single-family homes).<sup>66</sup>

Public transportation, including subways and transit buses, represents another socially dense environment. There were on average 32.8 million unlinked passenger trips each weekday for all public transportation across the United States in 2004—nearly 20 million of which were by bus.<sup>67</sup> More than half these 32.8 million passenger trips are work related (54 percent) and about 15 percent of these trips are school related.<sup>68</sup> Each day, 144,000 public transit vehicles, including 81,000 buses, are in use.

More than half the children attending school (K-12) in the United States travel on a school bus—that equates to an estimated 58 million person trips daily (to school and back home).<sup>69</sup> The number of schoolchildren traveling via school bus and via public transportation during a school day is twice the number of people

taking all public transportation in the United States in terms of number of trips and number of individuals during a weekday.

### *Targeting Schools, Childcare, and Children*

Biological, social, and maturational factors make children especially important in the transmission of influenza. Children without pre-existing immunity to circulating influenza viruses are more susceptible than adults to infection and, compared with adults, are responsible for more secondary transmission within households.<sup>70, 71</sup> Compared with adults, children usually shed more influenza virus, and they shed virus for a longer period. They also are not skilled in handling their secretions, and they are in close proximity with many other children for most of the day at school. Schools, in particular, clearly serve as amplification points of seasonal community influenza epidemics, and children are thought to play a significant role in introducing and transmitting influenza virus within their households.<sup>20, 27, 70-76, 78</sup> A recent clinical trial demonstrated that removing a comparatively modest number of school children from the transmission pool through vaccination (vaccinating 47 percent of students with a live attenuated vaccine whose efficacy was found in a separate trial to be no greater than 57 percent) resulted in significant reductions in influenza-related outcomes in households of children (whether vaccinated or unvaccinated) attending intervention schools.<sup>77</sup>

Therefore, given the disproportionate contribution of children to disease transmission and epidemic amplification, targeting their social networks both within and outside of schools would be expected to disproportionately disrupt influenza spread. Given that children and teens are together at school for a significant portion of the day, dismissal of students from school could effectively disrupt a significant portion of influenza transmission within these age groups. There is evidence to suggest that school closure can in fact interrupt influenza spread. While the applicability to a U.S.

pandemic experience is not clear, nationwide school closure in Israel during an influenza epidemic resulted in significant decreases in the diagnoses of respiratory infections (42 percent), visits to physicians (28 percent) and emergency departments (28 percent), and medication purchases (35 percent).<sup>56</sup> The New York City Department of Health and Mental Hygiene recently examined the impact of routine school breaks (e.g., winter break) on emergency department visits for influenza-like illness from 2001 to 2006. Emergency department visits for complaints of febrile illness among school-age children (aged 5 to 17 years) typically declined starting 2-3 days after a school break began, remained static during the school break, and then increased within several days after school recommenced. A similar pattern was not seen in the adult age group.<sup>78</sup>

Dismissal of students from schools could eliminate a potential amplifier of transmission. However, re-congregation and social mixing of children at alternate settings could offset gains associated with disruption of their social networks in schools. For this reason, dismissal of students from schools and, to the extent possible, protecting children and teenagers through social distancing in the community, to include reductions of out-of-school social contacts and community mixing, are proposed as a bundled strategy for disrupting their social networks and, thus, the associated disease transmission pathways for this age group.<sup>79</sup>

### *Targeting Adults—Social Distancing at Work and in the Community*

Eliminating schools as a focus of epidemic amplification and reducing the social contacts for children and teens outside the home will change the locations and dynamics of influenza virus transmission. The social compartments within which the majority of disease transmission will likely take place will be the home and workplace, and adults will play a more important role in sustaining transmission chains.<sup>20, 53, 73</sup> Disrupting adult-to-adult transmission will offer additional

opportunities to suppress epidemic spread. The adoption by individuals of infection control measures, such as hand hygiene and cough etiquette, in the community and workplace will be strongly encouraged.

In addition, adults may further decrease their risk of infection by practicing social distancing and minimizing their non-essential social contacts and exposure to socially dense environments. Low-cost and sustainable social distancing strategies can be adopted by individuals within their community (e.g., going to the grocery store once a week rather than every other day, avoiding large public gatherings) and at their workplace (e.g., spacing people farther apart in the workplace, teleworking when feasible, substituting teleconferences for meetings) for the duration of a community outbreak. Employers will be encouraged to establish liberal/unscheduled leave policies, under which employees may use available paid or unpaid leave without receiving prior supervisory approval so that workers who are ill or have ill family members are excused from their responsibilities until their or their family members' symptoms have resolved. In this way, the amount of disease transmission that occurs in the workplace can be minimized, making the workplace a safer environment for other workers.

Healthcare workers may be prime candidates for targeted antiviral prophylaxis once supplies of the drugs are adequate to support this use. Moreover, beyond the healthcare arena, employers who operate or contract for occupational medical services could consider a cache of antiviral drugs in anticipation of a pandemic and provide prophylactic regimens to employees who work in critical infrastructure businesses, occupy business-critical roles, or hold jobs that put them at repeated high risk of exposure to the pandemic virus. This use of antiviral drugs may be considered for inclusion in a comprehensive pandemic influenza response and may be coupled with NPIs. Strategies ensuring workplace safety will increase worker

confidence and may discourage unnecessary absenteeism.

## Value of Partially Effective Layered Interventions

Pandemic mitigation strategies generally include 1) case containment measures, such as voluntary case isolation, voluntary quarantine of members of households with ill persons, and antiviral treatment/prophylaxis; 2) social distancing measures, such as dismissal of students from classrooms and social distancing of adults in the community and at work; and 3) infection control measures, including hand hygiene and cough etiquette. Each of these interventions may be only partially effective in limiting transmission when implemented alone.

To determine the usefulness of these partially effective measures alone and in combination, mathematical models were developed to assess these types of interventions within the context of contemporary social networks. The “Models of Infectious Disease Agents Study” (MIDAS), funded by the National Institutes of Health, has been developing agent-based computer simulations of pandemic influenza outbreaks with various epidemic parameters, strategies for using medical countermeasures, and patterns of implementation of community-based interventions (case isolation, household quarantine, child and adult social distancing through school or workplace closure or restrictions, and restrictions on travel).<sup>20, 28-30, 32, 39,</sup>

<sup>40</sup>

Mathematical modeling conducted by MIDAS participants demonstrates general consistency in outcome for NPIs and suggests the following within the context of the model assumptions:

- Interventions implemented in combination, even with less than complete levels of public adherence, are effective in reducing transmission of pandemic influenza virus, particularly for lower values of  $R_0$ .
- School closure and generic social distancing are important components of a community

mitigation strategy because schools and workplaces are significant compartments for transmission.

- Simultaneous implementation of multiple tools that target different compartments for transmission is important in limiting transmission because removing one source of transmission may simply make other sources relatively more important.
- Timely intervention may reduce the total number of persons infected with pandemic influenza.

Each of the models generally suggest that a combination of targeted antiviral medications and NPIs can delay and flatten the epidemic peak, but the degree to which they reduce the overall size of the epidemic varies. Delay of the epidemic peak is critically important because it allows additional time for vaccine development and antiviral production. However, these models are not validated with empiric data and are subject to many limitations.<sup>20</sup>

Supporting evidence for the role of combinations of NPIs in limiting transmission can also be found in the preliminary results from several historical analyses.<sup>20</sup> One statistical model being developed based on analysis of historical data for the use of various combinations of selected NPIs in U.S. cities during the 1918 pandemic demonstrates a significant association between early implementation of these measures by cities and reductions in peak death rate.<sup>80, 81</sup>

Taken together, these strands of evidence are consistent with the hypothesis that there may be benefit in limiting or slowing the community transmission of a pandemic virus by the use of combinations of partially effective NPIs. At the present time, this hypothesis remains unproven, and more work is needed before its validity can be established.

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## Pre-pandemic Planning: The Pandemic Severity Index

Appropriate matching of the intensity of intervention to the severity of a pandemic is important to maximize the available public health benefit that may result from using an early, targeted, and layered strategy while minimizing untoward secondary effects. To assist pre-pandemic planning, this interim guidance introduces the concept of a Pandemic Severity Index based primarily on case fatality ratio<sup>23-27</sup>, a measurement that is useful in estimating the severity of a pandemic on a population level and which may be available early in a pandemic for small clusters and outbreaks. Excess mortality rate may also be available early and may supplement and inform the determination of the Pandemic Severity Index.<sup>82</sup> Pandemic severity is described within five discrete categories of increasing severity (Category 1 to Category 5). Other epidemiologic features that are relevant in overall analysis of mitigation plans include total illness rate, age-specific illness and mortality rates, the reproductive number, intergeneration time, and incubation period. However, it is unlikely that estimates will be available for most of these parameters during the early stages of a pandemic; thus, they are not as useful from a planning perspective.

The Pandemic Severity Index provides U.S. communities a tool for scenario-based contingency planning to guide pre-pandemic planning efforts. Upon declaration by WHO of having entered the Pandemic Period (Phase 6) and further determination of U.S. Government Stage 3, 4, or 5, the CDC's Director shall designate the category of the emerging pandemic based on the Pandemic Severity Index and

consideration of other available information. Pending this announcement, communities facing the imminent arrival of pandemic disease will be able to define which pandemic mitigation interventions are most indicated for implementation based on the level of pandemic severity.

Multiple parameters may ultimately provide a more complete characterization of a pandemic. The age-specific and total illness and mortality rates, reproductive number, intergeneration time, and incubation period as well as population structure and healthcare infrastructure are important factors in determining pandemic impact. Although many factors may influence the outcome of an event, it is reasonable to maintain a single criterion for classification of severity for the purposes of guiding contingency planning. If additional epidemiologic characteristics become well established during the course of the next pandemic through collection and analysis of surveillance data, then local jurisdictions may develop a subset of scenarios, depending upon, for example, age-specific mortality rates.

Table 1 provides a categorization of pandemic severity by case fatality ratio—the key measurement in determining the Pandemic Severity Index—and excess mortality rate. In addition, Table 1 displays ranges of illness rates with potential numbers of U.S. deaths per category, with recent U.S. pandemic experience and U.S. seasonal influenza to provide historical context. Figure 3a plots prior U.S. pandemics from the last century and a severe annual

**Table 1. Pandemic Severity Index by Epidemiological Characteristics**

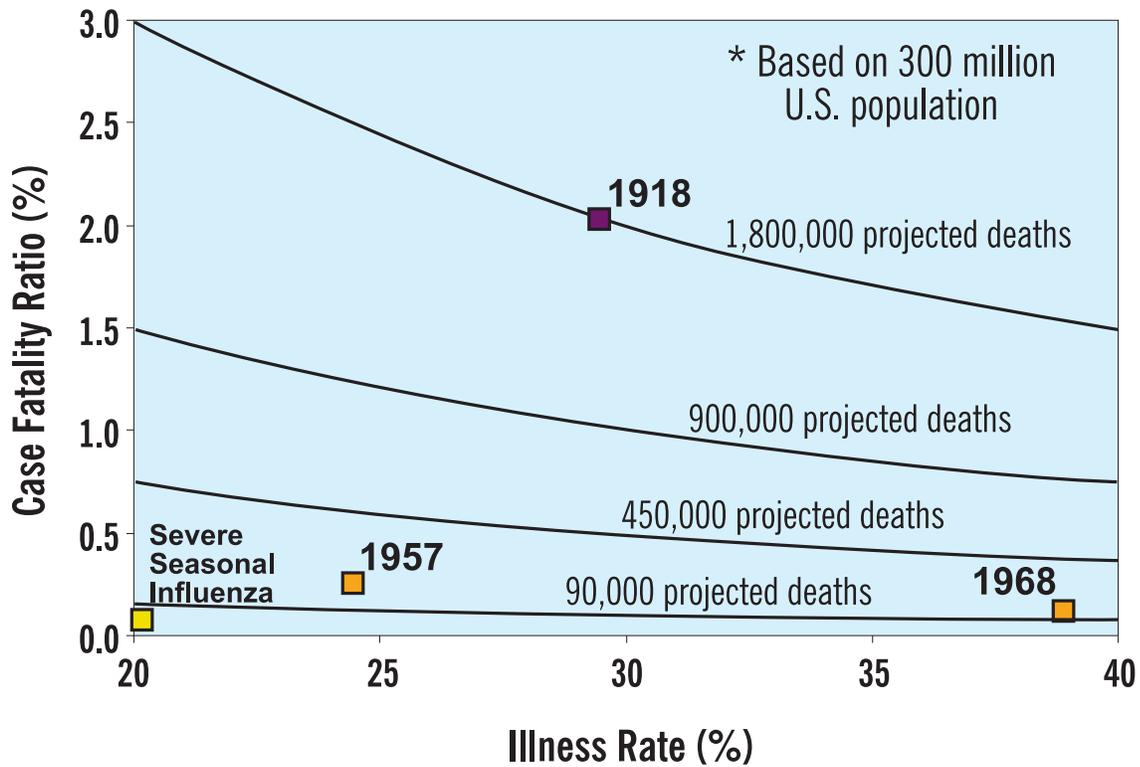
Characteristics	Pandemic Severity Index				
	Category 1	Category 2	Category 3	Category 4	Category 5
Case Fatality Ratio (percentage)	<0.1	0.1-<0.5	0.5-<1.0	1.0-<2.0	≥2.0
Excess Death Rate (per 100,000)	<30	30-<150	150-<300	300-<600	≥600
Illness Rate (percentage of the population)	20-40	20-40	20-40	20-40	20-40
Potential Number of Deaths (based on 2006 U.S. population)	<90,000	90,000-<450,000	450,000-<900,000	900,000-<1.8 million	≥1.8 million
20 <sup>th</sup> Century U.S. Experience	Seasonal Influenza (illness rate 5-20%)	1957,1968 Pandemic	None	None	1918 Pandemic

influenza season based on case fatality ratio and illness rate and demonstrates the great variability in pandemics based on these parameters (and the clear distinctiveness of pandemics from even a severe annual influenza season). Figure 3b demonstrates that the primary factor determining pandemic severity is case fatality ratio. Incremental increases in case fatality ratio result in proportionally greater mortality in comparison to increasing illness rates, which result in proportionally much smaller increases in mortality. Figure 4 provides a graphic depiction of the U.S. Pandemic Severity Index by case fatality ratio, with ranges of projected U.S. deaths at a constant 30 percent illness rate and without mitigation by any intervention.

Data on case fatality ratio and excess mortality in the early course of the next pandemic will be collected during outbreak investigations of initial clusters of human cases, and public

health officials may make use of existing influenza surveillance systems once widespread transmission starts. However, it is possible that at the onset of an emerging pandemic, very limited information about cases and deaths will be known. Efforts now to develop decision algorithms based on partial data and efforts to improve global surveillance systems for influenza are needed.

**Figure 3A. Projected Mortality\* of a Modern Influenza Pandemic Compared with that of 20th Century Pandemics (1918, 1957, 1968)**



**Figure 3B. Pandemic Severity Categories as Determined by Differences in Case Fatality Ratio**

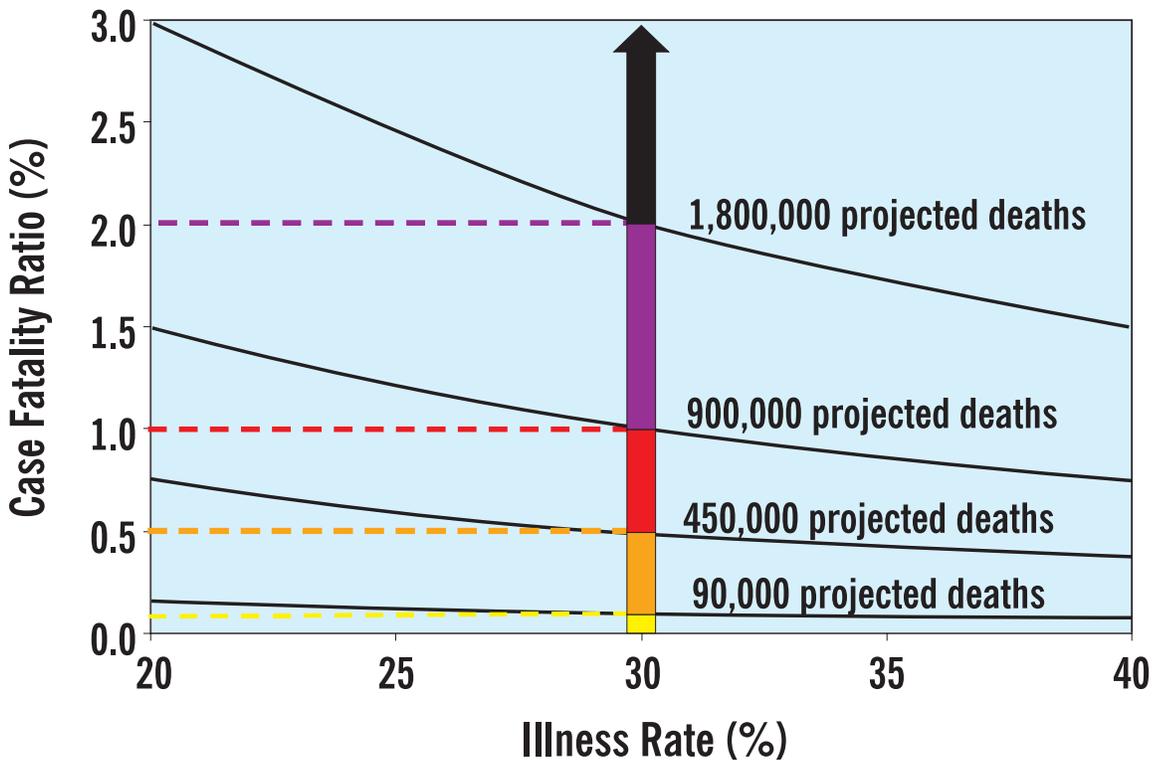
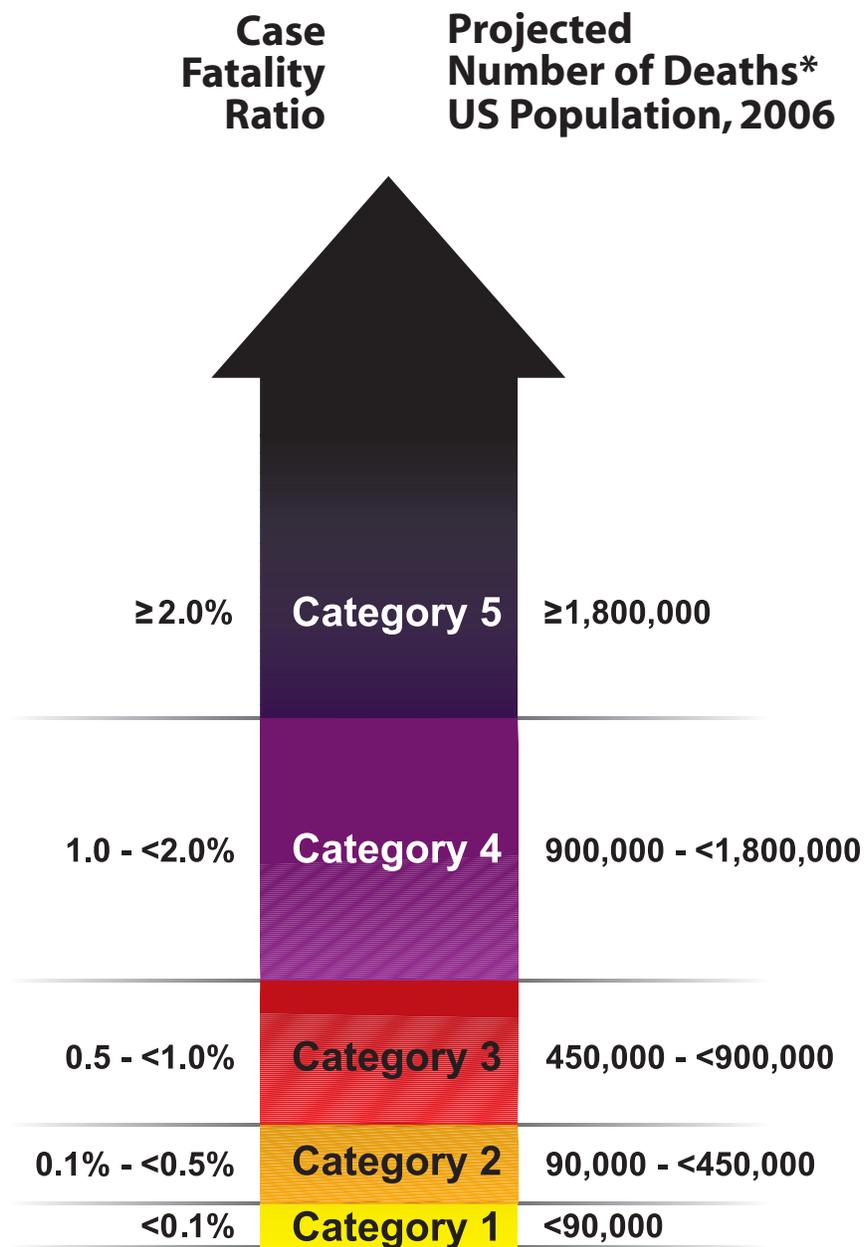


Figure 4. Pandemic Severity Index



\*Assumes 30% Illness Rate and Unmitigated  
Pandemic Without Interventions

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## Use of Nonpharmaceutical Interventions by Pandemic Severity Category

This section provides interim pre-pandemic planning recommendations for use of pandemic mitigation interventions to limit community transmission. These planning recommendations are likely to evolve as more information about their effectiveness and feasibility becomes available. To minimize economic and social costs, it will be important to judiciously match interventions to the pandemic severity level. However, at the time of an emerging pandemic, depending on the location of the first detected cases, there may be scant information about the number of cases and deaths resulting from infection with the virus. Although surveillance efforts may initially only detect the “herald” cases, public health officials may choose to err on the side of caution and implement interventions based on currently available data and iteratively adjust as more accurate and complete data become available. These pandemic mitigation measures include the following:

1. Isolation and treatment (as appropriate) with influenza antiviral medications of all persons with confirmed or probable pandemic influenza. Isolation may occur in the home or healthcare setting, depending on the severity of an individual’s illness and /or the current capacity of the healthcare infrastructure.
2. Voluntary home quarantine of members of households with confirmed or probable influenza case(s) and consideration of combining this intervention with the prophylactic use of antiviral medications, providing sufficient quantities of effective medications exist and that a feasible means of distributing them is in place.
3. Dismissal of students from school (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing.
4. Use of social distancing measures to reduce contact between adults in the community and workplace, including, for example, cancellation of large public gatherings and alteration of workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services. Enable institution of workplace leave policies that align incentives and facilitate adherence with the nonpharmaceutical interventions (NPIs) outlined above.

Planning for use of these NPIs is based on the Pandemic Severity Index, which may allow more appropriate matching of the interventions to the magnitude of the pandemic. These recommendations are summarized in Table 2. All interventions should be combined with infection control practices, such as good hand hygiene and cough etiquette. In addition, the use of personal protective equipment, such as surgical masks or respirators, may be appropriate in some cases, and guidance on community face mask and respirator use will be forthcoming. Guidance on infection control measures, including those for workplaces, may be accessed at [www.pandemicflu.gov](http://www.pandemicflu.gov).

**Table 2. Summary of the Community Mitigation Strategy by Pandemic Severity**

Interventions* by Setting	Pandemic Severity Index		
	1	2 and 3	4 and 5
<b>Home</b> <b>Voluntary isolation</b> of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	<b>Recommend†§</b>	<b>Recommend†§</b>	<b>Recommend†§</b>
<b>Voluntary quarantine</b> of household members in homes with ill persons¶ (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	<b>Generally not recommended</b>	<b>Consider**</b>	<b>Recommend**</b>
<b>School</b> <b>Child social distancing</b>  -dismissal of students from schools and school based activities, and closure of child care programs  -reduce out-of-school social contacts and community mixing	<b>Generally not recommended</b>	<b>Consider: ≤4 weeks††</b>	<b>Recommend: ≤12 weeks§§</b>
<b>Workplace / Community</b> <b>Adult social distancing</b>  -decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)  -increase distance between persons (e.g., reduce density in public transit, workplace)  -modify postpone, or cancel selected public gatherings to promote social distance (e.g., postpone indoor stadium events, theatre performances)  -modify work place schedules and practices (e.g., telework, staggered shifts)	<b>Generally not recommended</b>	<b>Consider</b>	<b>Recommend</b>
	<b>Generally not recommended</b>	<b>Consider</b>	<b>Recommend</b>
	<b>Generally not recommended</b>	<b>Consider</b>	<b>Recommend</b>
	<b>Generally not recommended</b>	<b>Consider</b>	<b>Recommend</b>

Generally Not Recommended = Unless there is a compelling rationale for specific populations or jurisdictions, measures are generally not recommended for entire populations as the consequences may outweigh the benefits.

Consider = Important to consider these alternatives as part of a prudent planning strategy, considering characteristics of the pandemic, such as age-specific illness rate, geographic distribution, and the magnitude of adverse consequences. These factors may vary globally, nationally, and locally.  
Recommended = Generally recommended as an important component of the planning strategy.

\*All these interventions should be used in combination with other infection control measures, including hand hygiene, cough etiquette, and personal protective equipment such as face masks. Additional information on infection control measures is available at [www.pandemicflu.gov](http://www.pandemicflu.gov).

†This intervention may be combined with the treatment of sick individuals using antiviral medications and with vaccine campaigns, if supplies are available

§Many sick individuals who are not critically ill may be managed safely

at home

¶The contribution made by contact with asymptotically infected individuals to disease transmission is unclear. Household members in homes with ill persons may be at increased risk of contracting pandemic disease from an ill household member. These household members may have asymptomatic illness and may be able to shed influenza virus that promotes community disease transmission. Therefore, household members of homes with sick individuals would be advised to stay home.

\*\*To facilitate compliance and decrease risk of household transmission, this intervention may be combined with provision of antiviral medications to household contacts, depending on drug availability, feasibility of distribution, and effectiveness; policy recommendations for antiviral prophylaxis are addressed in a separate guidance document.

††Consider short-term implementation of this measure—that is, less than 4 weeks.

§§Plan for prolonged implementation of this measure—that is, 1 to 3 months; actual duration may vary depending on transmission in the community as the pandemic wave is expected to last 6-8 weeks.

For Category 4 or Category 5 pandemics, a planning recommendation is made for use of all listed NPIs (Table 2). In addition, planning for dismissal of students from schools and school-based activities and closure of childcare programs, in combination with means to reduce out-of-school social contacts and community mixing for these children, should encompass up to 12 weeks of intervention in the most severe scenarios. This approach to pre-pandemic planning will provide a baseline of readiness for community response even if the actual response is shorter. Recommendations for use of these measures for pandemics of lesser severity may include a subset of these same interventions and, possibly, suggestions that they be used for shorter durations, as in the case of the social distancing measures for children.

For Category 2 or Category 3 pandemics, planning for voluntary isolation of ill persons is recommended, whereas other measures (voluntary quarantine of household contacts, social distancing measures for children and adults) are to be implemented only if local decision-makers have determined that characteristics of the pandemic in their community warrant these additional mitigation measures. However, within these categories, pre-pandemic planning for social distancing measures for children should be undertaken with a focus on a duration of 4 weeks or less, distinct from the longer timeframe recommended for pandemics with a greater Pandemic Severity Index. For Category 1 pandemics, only voluntary isolation of ill persons is recommended on a community-wide basis, although local communities may still choose to tailor their response to Category 1-3 pandemics differently by applying NPIs on the basis of local epidemiologic parameters, risk assessment, availability of countermeasures, and consideration of local healthcare surge capacity. Thus, from a pre-pandemic planning perspective for Category 1, 2, and 3 pandemics, capabilities for both assessing local public

health capacity and healthcare surge, delivering countermeasures, and implementing these measures in full and in combination should be assessed.

## Nonpharmaceutical Interventions

### *Voluntary Isolation of Ill Persons*

The goal of this intervention is to reduce transmission by reducing contact between persons who are ill and those who are not. Ill individuals not requiring hospitalization would be requested to remain at home voluntarily for the infectious period, approximately 7-10 days after symptom onset. This would usually be in their homes, but could be in a home of a friend or relative. Voluntary isolation of ill children and adults at home is predicated on the assumption that many ill individuals who are not critically ill can, and will need to be cared for in the home. In addition, this intervention may be combined with the use of influenza antiviral medications for treatment (as appropriate), as long as such medications are effective and sufficient in quantity and that feasible plans and protocols for distribution are in place.

Requirements for success include prompt recognition of illness, appropriate use of hygiene and infection control practices in the home setting (specific guidance is forthcoming and will be available on [www.pandemicflu.gov](http://www.pandemicflu.gov)); measures to promote voluntary compliance (e.g., timely and effective risk communications); commitment of employers to support the recommendation that ill employees stay home; and support for the financial, social, physical, and mental health needs of patients and caregivers. In addition, ill individuals and their household members need clear, concise information about how to care for an ill individual in the home and when and where to seek medical care. Special consideration should be made for persons who live alone, as many of these individuals may be unable to care for themselves if ill.

### *Voluntary Quarantine of Household Members of Ill Persons*

The goal of this intervention is to reduce community transmission from members of households in which there is a person ill with pandemic influenza. Members of households in which there is an ill person may be at increased risk of becoming infected with a pandemic influenza virus. As determined on the basis of known characteristics of influenza, a significant proportion of these persons may shed virus and present a risk of infecting others in the community despite having asymptomatic or only minimally symptomatic illness that is not recognized as pandemic influenza disease. Thus, members of households with ill individuals may be recommended to stay home for an incubation period, 7 days (voluntary quarantine) following the time of symptom onset in the household member. If other family members become ill during this period, the recommendation is to extend the time of voluntary home quarantine for another incubation period, 7 days from the time that the last family member becomes ill. In addition, consideration may be given to combining this intervention with provision of influenza antiviral medication to persons in quarantine if such medications are effective and sufficient in quantity and if a feasible means of distributing them is in place.

Requirements for success of this intervention include the prompt and accurate identification of an ill person in the household, voluntary compliance with quarantine by household members, commitment of employers to support the recommendation that employees living in a household with an ill individual stay home, the ability to provide needed support to households that are under voluntary quarantine, and guidance for infection control in the home. Additionally, adherence to ethical principals in use of quarantine during pandemics, along with proactive anti-stigma measures should be assured.<sup>83, 84</sup>

### *Child Social Distancing*

The goal of these interventions is to protect children and to decrease transmission among children in dense classroom and non-school settings and, thus, to decrease introduction into households and the community at large. Social distancing interventions for children include dismissal of students from classrooms and closure of childcare programs, coupled with protecting children and teenagers through social distancing in the community to achieve reductions of out-of-school social contacts and community mixing. Childcare facilities and schools represent an important point of epidemic amplification, while the children themselves, for reasons cited above, are thought to be efficient transmitters of disease in any setting. The common sense desire of parents to protect their children by limiting their contacts with others during a severe pandemic is congruent with public health priorities, and parents should be advised that they could protect their children by reducing their social contacts as much as possible.

However, it is acknowledged that maintaining the strict confinement of children during a pandemic would raise significant problems for many families and may cause psychosocial stress to children and adolescents. These considerations must be weighed against the severity of a given pandemic virus to the community at large and to children in particular. Risk of introduction of an infection into a group and subsequent transmission among group members is directly related to the functional number of individuals in the group. Although the available evidence currently does not permit the specification of a “safe” group size, activities that recreate the typical density and numbers of children in school classrooms are clearly to be avoided. Gatherings of children that are comparable to family-size units may be acceptable and could be important in facilitating social interaction and play behaviors for children and promoting emotional and psychosocial stability.

A recent study of children between the ages of 25 and 36 months found that children in group care with six or more children were 2.2 times as likely to have an upper respiratory tract illness as children reared at home or in small-group care (defined as fewer than six children).<sup>85</sup> If a recommendation for social distancing of children is advised during a pandemic and families must nevertheless group their children for pragmatic reasons, it is recommended that group sizes be held to a minimum and that mixing between such groups be minimized (e.g., children should not move from group to group or have extended social contacts outside the designated group).

Requirements for success of these interventions include consistent implementation among all schools in a region being affected by an outbreak of pandemic influenza, community and parental commitment to keeping children from congregating out of school, alternative options for the education and social interaction of the children, clear legal authorities for decisions to dismiss students from classes and identification of the decision-makers, and support for parents and adolescents who need to stay home from work. Interim recommendations for pre-pandemic planning for this intervention include a three-tiered strategy: 1) no dismissal of students from schools or closure of childcare facilities in a Category 1 pandemic, 2) short-term (up to 4 weeks) dismissal of students and closure of childcare facilities during a Category 2 or Category 3 pandemic, and 3) prolonged (up to 12 weeks) dismissal of students and closure of childcare facilities during a severe influenza pandemic (Category 4 or Category 5). The conceptual thinking behind this recommendation is developed more fully in Section VII, *Duration of Implementation of Nonpharmaceutical Interventions*.

Colleges and universities present unique challenges in terms of pre-pandemic planning because many aspects of student life and activity encompass factors that are common to both

the child school environment (e.g., classroom/dormitory density) and the adult sphere (e.g., commuting longer distances for university attendance and participating in activities and behaviors associated with an older student population). Questions remain with regard to the optimal strategy for managing this population during the early stages of an influenza pandemic.

The number of college students in the United States is significant. There are approximately 17 million college students attending both 2- and 4-year universities<sup>86</sup>, a large number of whom live away from home.<sup>87</sup> Of the 8.3 million students attending public or private 4-year colleges and universities, less than 20 percent live at home with their parents.

At the onset of a pandemic, many parents may want their children who are attending college or university to return home from school. Immediately following the announcement of an outbreak, colleges and universities should prepare to manage or assist large numbers of students departing school and returning home within a short time span. Where possible, policies should be explored that are aligned with the travel of large numbers of students to reunite with family and the significant motivations behind this behavior. Pre-pandemic planning to identify those students likely to return home and those who may require assistance for imminent travel may allow more effective management of the situation. In addition, planning should be considered for those students who may be unable to return home during a pandemic.

### *Adult Social Distancing*

Social distancing measures for adults include provisions for both workplaces and the community and may play an important role in slowing or limiting community transmission pressure. The goals of workplace measures are to reduce transmission within the workplace and thus into the community at large, to ensure a safe working environment and promote confidence

in the workplace, and to maintain business continuity, especially for critical infrastructure. Workplace measures such as encouragement of telework and other alternatives to in-person meetings may be important in reducing social contacts and the accompanying increased risk of transmission. Similarly, modifications to work schedules, such as staggered shifts, may also reduce transmission risk.

Within the community, the goals of these interventions are to reduce community transmission pressures and thus slow or limit transmission. Cancellation or postponement of large gatherings, such as concerts or theatre showings, may reduce transmission risk. Modifications to mass transit policies/ridership to decrease passenger density may also reduce transmission risk, but such changes may require running additional trains and buses, which may be challenging due to transit employee absenteeism, equipment availability, and the transit authority's financial ability to operate nearly empty train cars or buses.

Requirements for success of these various measures include the commitment of employers to providing options and making changes in work environments to reduce contacts while maintaining operations; whereas, within communities, the support of political and business leaders as well as public support is critical.

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## Triggers for Initiating Use of Nonpharmaceutical Interventions

The timing of initiation of various NPIs will influence their effectiveness. Implementing these measures prior to the pandemic may result in economic and social hardship without public health benefit and may result in compliance fatigue. Conversely, implementing these interventions after extensive spread of a pandemic influenza strain may limit the public health benefits of an early, targeted, and layered mitigation strategy. Identifying the optimal time for initiation of these interventions will be challenging, as implementation likely needs to be early enough to preclude the initial steep upslope in case numbers and long enough to cover the peak of the anticipated epidemic curve while avoiding intervention fatigue. In this document, the use of these measures is aligned with declaration by WHO of having entered the Pandemic Period Phase 6 and a U.S. Government declaration of Stage 3, 4, or 5.

Case fatality ratio and excess mortality rates may be used as a measure of the potential severity of a pandemic and, thus, suggest the appropriate nonpharmaceutical tools; however, mortality estimates alone are not suitable trigger points for action. This guidance suggests the primary activation trigger for initiating interventions be the arrival and transmission of pandemic virus. This trigger is best defined by a laboratory-confirmed cluster of infection with a novel influenza virus and evidence of community transmission (i.e., epidemiologically linked cases from more than one household). Other factors that will inform decision-making by public health officials include the average number of new infections that a typical infectious person will produce during the

course of his/her infection ( $R_0$ ) and the illness rate. For the recommendations in this interim guidance, trigger points for action assume an  $R_0$  of 1.5-2.0 and an illness rate of 20 percent for adults and 40 percent for children. In this context, in all categories of pandemic severity, it is recommended that State health authorities activate appropriate interventions (as described in Table 2) when a laboratory-confirmed human pandemic influenza case cluster is reported in their State or region (as appropriate) and there is evidence of community transmission.

Defining the proper geospatial-temporal boundary for this cluster is complex and should recognize that our connectedness as communities goes beyond spatial proximity and includes ease, speed, and volume of travel between geopolitical jurisdictions (e.g., despite the physical distance, Hong Kong, London, and New York City may be more epidemiologically linked to each other than they are to their proximate rural provinces/areas). In this document in order to balance connectedness and the optimal timing referenced above, it is proposed that the geopolitical trigger be defined as the cluster of cases occurring within a U.S. State or proximate epidemiological region (e.g., a metropolitan area that spans more than one State's boundary). It is acknowledged this definition of region is open to interpretation; however, it offers flexibility to State and local decision-makers while underscoring the need for regional coordination in pre-pandemic planning.

From a pre-pandemic planning perspective, the steps between recognition of pandemic threat and the decision to activate a response are critical to successful implementation. Thus, a

key component is the development of scenario-specific contingency plans for pandemic response that identify key personnel, critical resources, and processes. To emphasize the importance of this concept, this guidance section on triggers introduces the terminology of *Alert*, *Standby*, and *Activate*, which reflect key steps in escalation of response action. *Alert* includes notification of critical systems and personnel of their impending activation, *Standby* includes initiation of decision-making processes for imminent activation, including mobilization of resources and personnel, and *Activate* refers to implementation of the specified pandemic mitigation measures. Pre-pandemic planning for use of these interventions should be directed

to lessening the transition time between *Alert*, *Standby*, and *Activate*. The speed of transmission may drive the amount of time decision-makers are allotted in each mode, as does the amount of time it takes to truly implement the intervention once a decision is made to activate.

These triggers for implementation of NPIs will be most useful early in a pandemic and are summarized in Table 3. This table provides recommendations arrayed by Pandemic Severity Index and U.S. Government Stage for step-wise escalation of action from *Alert*, to *Standby*, to *Activate*.

**Table 3. Triggers for Implementation of Mitigation Strategy by Pandemic Severity Index and U.S. Government Stages**

Pandemic Severity Index	WHO Phase 6, U.S. Government stage 3*	WHO Phase 6, U.S. Government Stage 4† and First human case in the United States	WHO Phase 6, U.S. Government Stage 5§ and First laboratory confirmed cluster in state or region¶
1	Alert	Standby	Activate
2 and 3	Alert	Standby	Activate
4 and 5	Standby**	Standby/Activate††	Activate

Alert: Notification of critical systems and personnel of their impending activation.

Standby: Initiate decision-making processes for imminent activation, including mobilization of resources and personnel.

Activate: Implementation of the community mitigation strategy.

\*Widespread human outbreaks in multiple locations overseas.

†First human case in North America.

§Spread throughout the United States.

¶Recommendations for regional planning acknowledge the tight

linkages that may exist between cities and metropolitan areas that are not encompassed within state boundaries.

\*\*Standby applies. However, Alert actions for Category 4 and 5 should occur during WHO Phase 5, which corresponds to U.S. Government Stage 2.

††Standby/Activate Standby applies unless the laboratory-confirmed case cluster and community transmission occurs within a given jurisdiction, in which case that jurisdiction should proceed directly to Activate community interventions defined in Table 2.

For the most severe pandemics (Categories 4 and 5), *Alert* is implemented during WHO Phase 5/U.S. Government Stage 2 (confirmed human outbreak overseas), and *Standby* is initiated during WHO Phase 6/U.S. Government Stage 3 (widespread human outbreaks in multiple locations overseas). *Standby* is maintained through Stage 4 (first human case in North America), with the exception of the State or region in which a laboratory-confirmed human pandemic influenza case cluster with evidence of community transmission is identified. The recommendation for that State or region is to *Activate* the appropriate NPIs as defined in Table 2 when identification of a cluster and community transmission is made. Other States or regions *Activate* appropriate interventions when they identify laboratory-confirmed human pandemic influenza case clusters with evidence of community transmission in their jurisdictions.

For Category 1, 2, and 3 pandemics, *Alert* is declared during U.S. Government Stage 3, with step-wise progression by States and regions to *Standby* based on U.S. Government declaration of Stage 4 and the identification of the first human pandemic influenza case(s) in the United States. Progression to *Activate* by a given State or region occurs when that State or region identifies a laboratory-confirmed human pandemic influenza case cluster with evidence of community transmission.

Determining the likely time frames for progression through *Alert*, *Standby*, and *Activate* postures is difficult. Predicting this progression would involve knowing 1) the speed at which the pandemic is progressing and 2) the segments of the population most likely to have severe illness. These two factors are dependent on a complex interaction of multiple factors, including but not limited to the novelty of the virus, efficiency of transmission, seasonal effects, and the use of countermeasures. Thus it is not possible to use these two factors to forecast progression prior to recognition and characterization of a pandemic

outbreak, and predictions within the context of an initial outbreak investigation are subject to significant limitations. Therefore, from a pre-pandemic planning perspective and given the potential for exponential spread of pandemic disease, it is prudent to plan for a process of rapid implementation of the recommended measures.

Once the pandemic strain is established in the United States, it may not be necessary for States to wait for documented pandemic strain infections in their jurisdictions to guide their implementation of interventions, especially for a strain that is associated with a high case fatality ratio or excess mortality rate. When a pandemic has demonstrated spread to several regions within the United States, less direct measures of influenza circulation (e.g., increases in influenza-like illness, hospitalization rates, or other locally available data demonstrating an increase above expected rates of respiratory illness) may be used to trigger implementation; however, such indirect measures may play a more prominent role in pandemics within the lower Pandemic Severity Index categories.

Once WHO has declared that the world has entered Pandemic Phase 5 (substantial pandemic risk), CDC will frequently provide guidance on the Pandemic Severity Index. These assessments of pandemic severity will be based on the most recent data available, whether obtained from the United States or from other countries, and may use case fatality ratio data, excess mortality data, or other data, whether available from outbreak investigations or from existing surveillance.

## Duration of Implementation of Nonpharmaceutical Interventions

Preliminary analysis of historical data from selected U.S. cities during the 1918 pandemic suggests that duration of implementation of NPI's is significantly associated with overall mortality rates. Stopping or limiting the intensity of interventions while pandemic virus was still circulating within the community was temporally associated with recrudescent increases in mortality due to pneumonia and influenza in some communities.<sup>20, 81</sup> Total duration of implementation for the measures specified in this guidance will depend on the severity of the pandemic and the total duration of the pandemic wave in the community, which may average about 6-8 weeks in individual communities. However, because early implementation of pandemic mitigation interventions may reduce the virus's basic reproductive number, a *mitigated* pandemic wave may have lower amplitude but longer wavelength than an unmitigated pandemic wave (see Figure 2). Communities should therefore be prepared to maintain these measures for up to 12 weeks in a Category 4 or 5 pandemic.

It is important to emphasize that as long as susceptible individuals are present in large numbers, spread may continue. Immunity to infection with a pandemic strain can only occur after natural infection or immunization with an effective vaccine. The significant determinants for movement of a pandemic wave through a community are immunity and herd effect, and there is likely to be a residual pool of susceptible individuals in the community at all times. Thus, while NPIs may limit or slow community transmission, persisting pandemic virus circulating in a community with a susceptible population is a risk factor for re-emergence of the

pandemic. Monitoring of excess mortality, case fatality ratios, or other surrogate markers over time will be important for determining both the optimal duration of implementation and the need for resumption of these measures.

While the decisions to stop or limit the intensity of implementation are crucial factors in pandemic response, this document is primarily oriented to providing pre-pandemic planning guidance. It is recommended for planning purposes that a total duration of 12 weeks for implementation of these measures be considered, particularly with regard to severe pandemics of Category 4 or 5 in which recrudescent disease may have significant impact. However, for less severe pandemics, a shorter period of implementation may be adequate to achieving public health benefit.

This guidance recommends a three-tiered strategy for planning with respect to the duration of dismissal of children from schools, colleges and universities, and childcare programs (Table 2):

- No dismissal of students from schools or closure of childcare facilities in a Category 1 pandemic
- Short-term (up to 4 weeks) dismissal of students and closure of childcare facilities during a Category 2 or Category 3 pandemic
- Prolonged (up to 12 weeks) dismissal of students and closure of childcare facilities during a severe influenza pandemic (Category 4 or Category 5 pandemic)

This planning recommendation acknowledges the uncertainty around the length of time a pandemic virus will circulate in a given community and around the potential for recrudescence when use of NPIs is limited or stopped. When dismissals and closures are indicated for the most severe pandemics, thoughtful pre-planning for their prolonged duration may allow continued use of this intervention.

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## Critical Issues for the Use of Nonpharmaceutical Interventions

A number of outstanding issues should be addressed to optimize the planning for use of these measures. These issues include the establishment of sensitive and timely surveillance, the planning and conducting of multi-level exercises to evaluate the feasibility of implementation, and the identification and establishment of appropriate monitoring and evaluation systems. Policy guidance in development regarding the use of antiviral medications for prophylaxis, community and workplace-specific use of personal protective equipment, and safe home management of ill persons must be fast-tracked and prioritized as part of future versions of the overall community mitigation strategy. As well, developing appropriate and effective risk communication content and a means for its effective delivery, soliciting active community support and involvement in strategic planning decisions, and assisting individuals and families in identifying their own preparedness needs are critical community factors in achieving success.

Establishing and maintaining sensitive and timely surveillance at national, State, and local levels is critical. Achieving this goal will require enhancing the capability of local physicians and public health authorities to rapidly identify suspect cases of pandemic influenza. This increased capability may be facilitated by the development of point-of-care testing and the appropriate laboratory capacity and ability to transmit specimens and data to reference laboratories.

In addition, establishing protocols for notification of Federal authorities and establishing

effective reporting and feedback systems to ensure information is shared appropriately with State and local decision-makers is a key requirement. Within this framework, focused support of established systems, such as the 121 Cities Mortality Reporting System<sup>88</sup>, and the establishment of electronic mortality records may facilitate the rapid robust reporting of data elements to support the timely and appropriate implementation of NPIs. Similarly, establishing surveillance systems to monitor trends in disease in a community and to provide guidance on adjusting implementation of interventions and determining appropriate durations for intervention are critical components for implementation and will provide valuable data for decision-making around lifting interventions.

Critical issues remain with regard to ensuring both timely implementation and appropriate layering of interventions. Preliminary analysis of historical data and mathematical modeling suggest that the early, coordinated application of multiple interventions may be more effective in reducing transmission than the use of a single intervention. Multi-level exercises to evaluate the feasibility of implementation and identify critical enablers for use of these measures are required. In addition, early planning for appropriate monitoring and evaluation systems to provide assessment of the effectiveness of all proposed pandemic influenza interventions is needed. Policies and plans are required to ensure the availability of rapid diagnostic testing to distinguish influenza-like illness due to seasonal influenza strains and other respiratory pathogens from illnesses due to pandemic influenza strains. Accurate ascertainment of pandemic influenza

cases is needed early during the course of a pandemic to minimize unnecessary application of mitigation interventions and in later stages of the pandemic to ascertain persisting community transmission.

Policies and planning for distribution of antiviral medications for treatment (and prophylaxis) needs to account for local capabilities, availability of the antiviral medications, and systems for distribution that could leverage the combined capabilities of public health organizations, the private sector, community organizations, and local governments. As well, guidance for community- and workplace-specific use of personal protective equipment is required, as are policies and planning to support their use.

Clear and consistent guidance is required for planning for home care of ill individuals, such as when and where to seek medical care, how to safely care for an ill individual at home, and how to minimize disease transmission in the household. In addition, guidance is required for appropriate use of community resources, such as home healthcare services, telephone care, the 9-1-1 emergency telephone system, emergency medical services, and triage services (nurse-advice lines, self-care guidance, and at-home monitoring systems) that could be deployed to provide resources for home care.

Community engagement is another critical issue for successful implementation and includes building a foundation of community preparedness to ensure compliance with pandemic mitigation measures. Community planners should use media and trusted sources in communities to 1) explain the concepts of pandemic preparedness, 2) explain what individuals and families can do to be better prepared, and 3) disseminate clear information about what the public may be asked to do in the case of a pandemic. In addition, developing and delivering effective risk communications in advance of and during a pandemic to guide the public in following official recommendations and to minimize fear and panic will be crucial to maintaining public trust.

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## Assessment of the Public on Feasibility of Implementation and Adherence

A Harvard School of Public Health public opinion poll was conducted with a nationally representative sample of adults over the age of 18 years in the United States in September-October 2006 to explore the public's willingness to adhere to community mitigation strategies. A majority of the almost 1,700 respondents reported their willingness to follow public health recommendations for the use of NPIs, but this poll also uncovered serious financial and other concerns.<sup>89</sup> The respondents were first read a scenario about an outbreak of pandemic influenza that spreads rapidly among humans and causes severe illness. They were then asked how they would respond to and be affected by the circumstances that would arise from such an outbreak.<sup>90</sup>

Recognizing that their lives would be disrupted, most participants expressed willingness to limit contact with others at the workplace and in public places. More than three-fourths of respondents said they would cooperate if public health officials recommended that for 1 month they curtail various activities of their daily lives, such as using public transportation, going to the mall, and going to church/religious services. However, the poll respondents were not asked if they would be willing to follow those recommendations for longer periods in the case of a severe pandemic.

More than nine in ten (94 percent) said they would stay at home away from other people for 7-10 days if they had pandemic influenza. Nearly three-fourths (73 percent) said they would have someone to take care of them at home if they became ill with pandemic influenza and had to remain at home for seven to ten days. However,

about one in four (24 percent) said they would not have someone to take care of them.

In addition, 85 percent of the respondents said they and all members of their household would stay at home for seven to ten days if another member of their household was ill. However, about three-fourths (76 percent) said they would be worried that if they stayed at home with a household member who was ill from pandemic influenza, they themselves would become ill from the disease. A substantial proportion of the public believed that they or a household member would be likely to experience various problems, such as losing pay, being unable to get the healthcare or prescription drugs they need, or being unable to get care for an older person or a person with a disability, if they stayed at home for 7-10 days and avoided contact with anyone outside their household.

If schools and daycare were closed for 1 month, 93 percent of adults who have major responsibility for children under age 5 who are normally in daycare or for children 5 to 17 years of age and who have at least one employed adult in the household think they would be able to arrange care so that at least one employed adult in the household could go to work. Almost as many (86 percent) believe they would be able to do so if schools were closed for 3 months.

When asked about possible financial difficulties due to missed work, a greater number of respondents reported they would face financial problems. While most employed people (74 percent) believed they could miss 7-10 days of work without having serious financial problems,

one in four (25 percent) said they would face such problems. A majority (57 percent) think they would have serious financial problems if they had to miss work for 1 month, and three-fourths of respondents (76 percent) thought they would have such problems if they were away from work for 3 months.

The Public Engagement Project on Community Control Measures Against a Severe Pandemic of Influenza was carried out in October and November 2006.<sup>91</sup> Two to three representatives from the organized stakeholder public were chosen from approximately ten major sectors likely to be affected by the measures (e.g., public health, education, private sector) to form a 50-member national level panel. In addition, a representative sample of approximately 260 citizens from the general public was recruited from Seattle, Washington; Syracuse, New York; Lincoln, Nebraska; and Atlanta, Georgia. Participants were presented with a scenario describing a severe pandemic and asked to consider their support for the use of the NPIs outlined above.

Approximately 95 percent or more of the citizens and stakeholders supported encouraging ill persons to stay at home, and the same high percentage supported canceling large public gatherings and altering work patterns for the purpose of social distancing. A lower percentage (83-84 percent) supported encouraging the members of households with ill persons to stay at home, and a similar percentage favored closing schools and large day care facilities for an extended period. Overall, approximately two-thirds of both citizens and stakeholders (64-70 percent) supported all of the interventions. Based on the scenario of a severe pandemic, nearly half (44-48 percent) of the citizens and stakeholders supported implementation of the interventions when pandemic influenza first strikes the United States, and approximately one-third of the public supported implementation when influenza first strikes in their State.

Although the findings from this poll and public engagement activity reported high levels of willingness to follow pandemic mitigation recommendations, it is uncertain how the public might react when a pandemic occurs. These results need to be interpreted with caution in advance of a severe pandemic that could cause prolonged disruption of daily life and widespread illness in a community. Adherence rates may be higher during the early stages of a pandemic and adherence fatigue may increase in the later stages. These results may not be able to predict how the public would respond to a severe pandemic in their community nor predict how the public will tolerate measures that must be sustained for several months. Changes in perceived risk from observed mortality and morbidity during a pandemic relative to the need for income and the level of community and individual/family disruption caused by the mitigation interventions may be major determinants of changes in public adherence.

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## Planning to Minimize Consequences of Community Mitigation Strategy

Pandemic mitigation interventions will pose challenges for individuals and families, employers (both public and private), and local communities. Some cascading second- and third-order effects will arise as a consequence of the use of NPIs. However, until a pandemic-strain vaccine is widely available during a pandemic, these interventions are key measures to reduce disease transmission and protect the health of Americans. The community mitigation strategy emphasizes care in the home and underscores the need for individual, family, and employer preparedness. Adherence to these interventions will test the resiliency of individuals, families, and employers.

The major areas of concern derive from the recommendation to dismiss children from school and closure of childcare programs. The concerns include 1) the economic impact to families; 2) the potential disruption to all employers, including businesses and governmental agencies; 3) access to essential goods and services; and 4) the disruption of school-related services (e.g., school meal programs). Other interventions, such as home isolation and voluntary home quarantine of members of households with ill persons, would also contribute to increased absenteeism from work and affect both business operations and employees. These issues are of particular concern for vulnerable populations who may be disproportionately impacted.

However, these and other consequences may occur in the absence of community-wide interventions because of spontaneous action by the public or as a result of closures of schools and workplaces related to absenteeism of students

and employees. These consequences associated with the pandemic mitigation interventions must be weighed against the economic and social costs of an unmitigated pandemic.

Many families already employ a number of strategies to balance childcare and work responsibilities. Pandemic mitigation interventions, especially dismissal of students from school classes and childcare programs, will be even more challenging. These efforts will require the active planning and engagement of all sectors of society.

### **Impact of School Closure on the Workforce**

Workplace absenteeism is the primary issue underlying many of the concerns related to the pandemic mitigation strategies. Absenteeism for child minding could last as long as 12 weeks for a severe pandemic. The potential loss of personal income or employment due to absenteeism related to prolonged cancellation of school classes and the need for child minding can lead to financial insecurity, fear, and worry. Workplace absenteeism, if severe enough, could also affect employers and contribute to some workplaces reducing or closing operations (either temporarily or permanently). Depending on the employers affected, this could limit the availability of essential goods and services provided by the private sector and the government, interrupting critical business supply chains and potentially threatening the ability to sustain critical infrastructure. Workplace absenteeism and the resulting interruption of household income would test the resiliency

of all families and individuals but would be particularly challenging for vulnerable populations. The potential impact on society underscores the need for preparedness of individuals, families, businesses, organizations, government agencies, and communities. There are 300 million Americans living in 116 million households in the United States.<sup>92</sup> Approximately one-third of U.S. households (40 million) include children less than 18 years of age. In slightly more than half of these households (22 million), all adults present are working. Five million of these households have only a single working adult present. These households with children and only one working adult would be impacted disproportionately—potentially requiring the single working adult in the household to remain home to mind the children if students were dismissed from schools or childcare facilities were closed.

Depending upon the age threshold assumed for children requiring adult supervision, the impact of dismissing students from school and closure of childcare programs on working families would vary. The number of households impacted could range from 12.4 million (assuming children <13 years of age would require adult supervision) to 15.4 million (assuming children <15 years of age would require full-time adult supervision).

The projected impact of these estimates, however, does not fully account for the strategies families already employ to care for their children and remain in the workforce. Families with all adults in the household working currently utilize a number of strategies for child minding, including the assistance of other family members, such as grandparents and siblings, assistance from separated/divorced spouses, children minding themselves, staggered work/child-minding shifts for parents, and parents working from home. There are 60 million children under the age of 15. Over half these children (32 million or 56 percent) have a working mother. Nearly one-third (29 percent) of these children

have a mother who works a non-day shift. Nearly one-third (29 percent) have a mother working part time. Nearly one-third (30 percent) of children under age 5 living with only their father in the household were regularly cared for by their mother while their father was working or in school. One of seven (14 percent) school age children, 5-14 years of age, living with only one parent in the household were regularly cared for by the other parent while their father or mother was working or attending school.<sup>93</sup>

The Harvard School of Public Health public opinion poll reported that 86 percent of families with children under age 5 in childcare or children 5-17 years of age would be able to arrange for childcare to allow at least one adult in the household to continue to work if classes and childcare were cancelled for 3 months.<sup>89</sup> These findings, when applied to the overall population, suggest that approximately one in seven households with children attending school or childcare would be unable to have at least one adult continue to work during a prolonged period of school and childcare cancellation.

### **Impact of Voluntary Home Isolation and Voluntary Home Quarantine**

The impacts of pandemic mitigation interventions on workplace absenteeism are overlapping. In contrast to possible prolonged absenteeism for child minding, voluntary home quarantine would require all household members of an ill individual to remain home for approximately 1 week (single-person households, representing 27 percent of all U.S. households, would not be impacted by this intervention). In addition, ill individuals would stay home from work for a period of approximately 7-10 days. When estimating overall absenteeism, this hierarchy suggests first considering the impact of child minding, then illness, then quarantine. For example, if a working single parent remains home from work for 12 weeks to mind her children, workplace absenteeism is unaffected if one of her children becomes ill and the home

voluntarily quarantines itself (the adult will remain absent from the workplace for 12 weeks due to child minding). If a working adult living in a household of two or more people becomes ill and is absent due to illness, the additional impact of absenteeism related to voluntary home quarantine would only apply if there are other non-ill working adults present in the household.

Absenteeism due to illness is directly related to the rate of clinical illness in the population. The proposed community interventions attempt to reduce disease transmission and illness rates. As illness rates are reduced, absenteeism related to illness and quarantine would be expected to decline, whereas absenteeism related to child minding would remain constant.

The feasibility of following pandemic mitigation interventions is of particular concern for vulnerable populations (e.g., people who are living alone, the poor or working poor, elderly, [particularly those who are homebound], homeless, recent immigrants, disabled, institutionalized, or incarcerated). More than 31 million individuals in the United States live alone (27 percent of all households) and one-third of these individuals are age 65 years or older. According to the Harvard School of Public Health public opinion poll, 45 percent of respondents living in one-adult households report they would not have anyone to take care of them in the event of a pandemic.<sup>90</sup> More than four in ten respondents living in one-adult households (45 percent) and about one-third of low-income (36 percent), African-American (34 percent), disabled (33 percent), or chronically ill (32 percent) adults said they would not have anyone to take care of them if they were ill and had to remain at home. Similarly among people age 65 or over, those who live in one-adult households were far more likely (41 percent vs 15 percent) than those who lived in two-adult households with another person age 65 or over to say they would have no one to take care of them. Additionally, the millions of frail elderly

individuals who require life-sustaining supports to remain in the community would need additional consideration. Planning should begin now to include solutions to address the needs of the frail elderly. Of the approximately 45 million seniors (age 65 years and older) currently in the United States, 5 percent, or 2.25 million are considered frail. Currently the Elderly Nutrition Program provides meals for approximately 3 million elderly participants, including the frail elderly, in congregate settings, or through volunteers who provide homebound seniors with home-delivered meals. Participants receive approximately half of their daily nutritional needs from those meals. In addition, other related community-based services, such as transportation and healthcare, are critical for seniors, particularly the frail elderly, who receive this assistance in order to maintain their independence.<sup>94, 95</sup> Communities will need to plan for how these vital supports can continue both for this population as well as for other groups with unique physical and mental challenges in light of efforts to protect lives and limit the spread of disease.

### Strategies to Minimize Impact of Workplace Absenteeism

Solutions or strategies for minimizing the impact of dismissal of students from school and closure of childcare programs and workplace absenteeism may include the following: 1) employing child-minding strategies to permit continued employment; 2) employing flexible work arrangements to allow persons who are minding children or in quarantine to continue to work; 3) minimizing the impact on household income through income replacement; and 4) ensuring job security.

In contrast to the unpredictable nature of workplace absenteeism related to illness (unpredictability of who will be affected and who will be absent from work), it may be easier to forecast who is likely to be impacted by the dismissal of students from school and/or the

closure of childcare. Accordingly, early planning and preparedness by employers, communities, individuals, and families is critical to minimizing the impact of this intervention on families and businesses.

In a severe pandemic, parents would be advised to protect their children by reducing out-of-school social contacts and mixing with other children.<sup>96</sup> The safest arrangement would be to limit contact to immediate family members and for those family members to care for children in the home. However, if this is not feasible, families may be able to develop support systems with co-workers, friends, families, or neighbors, to meet ongoing childcare needs. For example, they could prepare a plan in which two to three families work together to supervise and provide care for a small group of infants and young children.

As was noted in the Harvard School of Public Health public opinion poll, parents reported that they would primarily depend upon family members to assist with child minding (self/family member in the home, 82 percent; children caring for themselves, 6 percent; family member outside the home, 5 percent; and combination, 5 percent). One of four households with children under age 5 in childcare or children 5-17 years of age estimated that they would be able to work from home and care for their children. Students returning home from colleges and universities may also be available to assist with child minding.<sup>90</sup>

More than half (57 percent) of private-sector employees have access to paid sick leave.<sup>97</sup> More than three-fourths (77 percent) have paid vacation leave, and 37 percent have paid personal leave. Currently, leave policies would likely not cover the extended time associated with child minding. Expanded leave policies and use of workplace flexibilities, including staggered shifts and telework, would help employees balance their work and family responsibilities during a

severe pandemic. Additional options to offset the income loss for some employees meeting specific requirements include provisions for Unemployment Insurance. In addition, following a “major disaster” declaration under the Stafford Act, additional individual assistance, including Disaster Unemployment Assistance, may become available to eligible persons. The Family and Medical Leave Act may also offer protections in terms of job security for up to 12 weeks for covered and eligible employees who have a serious health condition or who are caring for a family member with a serious health condition.

In addition to employers expanding leave policies and adopting workplace flexibilities, Federal, State, local, tribal, and territorial officials should review laws, regulations, and policies to identify ways to help mitigate the economic impact of a severe pandemic and implementation of the pandemic mitigation measures on employers, individuals, and families, especially vulnerable populations. Clarity on such policies from employers and the government will help workers plan and prepare for the potential threat of a severe pandemic and to plan and comply with the pandemic mitigation intervention. Many of these programs and policies would also be applicable if no pandemic mitigation measures were in place and absences were due to personal illness or the need to care for an ill family member.

## **Interruption of School Meal Programs**

An additional concern related to dismissal of students is the interruption of services provided by schools, including nutritional assistance through the school meal programs. This would alter the nature of services schools provide and require that essential support services, including nutritional assistance to vulnerable children, be sustained through alternative arrangements.

The National School Lunch Program operates in more than 100,000 public and non-profit private schools and residential childcare institutions<sup>98</sup>, and the School Breakfast Program operates

in approximately 80,000 schools<sup>99</sup>. School lunch and breakfast are free for students at or below 130 percent of the poverty level and are available at reduced price for students between 130 percent and 185 percent poverty level. Half of the thirty million students that participate in the School Lunch Program received free meals in 2006. During the summer, a Summer Food Service Program operates at more than 30,000 sites, providing breakfast, lunch and snacks to children living in low-income areas; the program served approximately 1.9 million total students in 2005.<sup>100</sup>

According to the Harvard School of Public Health public opinion poll, 13 percent of households with children receiving free school meals reported that they would have a major problem if schools were closed and meals discontinued.<sup>90</sup> Approximately 15 million children currently receive free school meals; thus, it is anticipated that about 2 million would have a major problem associated with the interruption of school meals.

Many of these households also depend upon other Federal nutrition programs, including the Food Stamp Program, the Special Supplemental Nutrition Program for Women, Infants, and Children, and the Child and Adult Care Food Program, and community food pantries.

### **Strategies to Minimize the Impact of Interrupting School Meals**

During a severe pandemic, it will be important for individuals and families to plan to have extra supplies on hand, as people may not be able to get to a store, stores may be out of supplies, and other services (e.g., community soup kitchens and food pantries) may be disrupted. Communities and families with school-age children who rely on school meal programs should anticipate and plan as best they can for a disruption of these services and school meal programs for up to 12 weeks.

This may be particularly challenging for families with children who already depend on a number of these programs. The Federal Government is working together with State and local emergency response planners to find creative solutions to meet nutrition assistance needs for vulnerable populations. Local government and faith-based and community leaders are being encouraged to work closely with nutrition program administrators at the local, State, and Federal level to:

- Develop plans to address community nutrition assistance needs during a pandemic
- Identify nutrition program adaptations needed to respond to social distancing, voluntary quarantines, and possible disruption of the normal food supply
- Address challenges related to the supply and delivery of food through commercial markets
- Identify current program flexibilities/authorities and determine if others are needed

### **School Resources Available for Community Service**

If students are dismissed from school but schools remain open, school- and education-related assets, including school buildings, school kitchens, school buses, and staff, may continue to remain operational and potentially be of value to the community in many other ways. In addition, faculty and staff may be able to continue to provide lessons and other services to students by television, radio, mail, Internet, telephone, or other media. Continued instruction is not only important for maintaining learning but also serves as a strategy to engage students in a constructive activity during the time that they are being asked to remain at home.

### **Impact on Americans Living Abroad**

Although this document primarily considers a domestic influenza pandemic, it provides guidance that is relevant to American organizations and individuals based abroad.

There are approximately 7 million American citizens living overseas. About 3 million of these are working abroad on behalf of more than 50 Federal agencies, although the vast majority are employees of the U.S. Department of Defense and their dependents.<sup>101, 102</sup> In addition, there are 194 American Overseas Schools that have students in all grades, the vast majority of whom are children of U.S. citizens working in government or for private companies and contractors. Excluding the military, approximately one-third of American households overseas have children under 18 years of age, and approximately half are households in which both parents work.<sup>103</sup> (“American households” in this context is defined as households in which the head of household is a U.S. citizen without dual citizenship.) The impact of pandemic mitigation measures on Americans overseas would be similar to that in the United States, except that there are very few extended family members overseas to assist in childcare should schools be closed. As a result, a decision to dismiss students from school and close childcare could result in increased workplace absenteeism. This might be partially offset by the fact that single-parent households with children are less common among Americans abroad than in the United States.

During a pandemic, security for Americans abroad could become an increased concern, particularly in those countries that are unstable or lack the capability to prevent lawlessness. In such instances, the desire to close institutions, such as schools or embassies, must be balanced against the greater protection that can be provided to American citizens who are gathered in one place, rather than distributed in their homes. Additionally, an estimated one-third (80 of 250) of U.S. diplomatic posts abroad have undependable infrastructure for water, electricity, and food availability, which may impair the ability of people to adhere to NPIs.<sup>103</sup>

In consideration of these factors, many Americans may wish to repatriate to the United

States at the outset of a pandemic, and this should be considered in decisions to implement closure of institutions and other NPIs in the international setting.

### **Strategy to Reduce Impact on Americans Living Abroad**

Americans abroad should review pandemic preparedness recommendations issued by the U.S. Department of State and the U.S. Department of Health and Human Services. Updated regional and country-specific information is provided on [www.pandemicflu.gov](http://www.pandemicflu.gov), the CDC travel website ([www.cdc.gov/travel/](http://www.cdc.gov/travel/)), and the U.S. Department of State’s travel site ([www.travel.state.gov](http://www.travel.state.gov)). In addition, two million of the estimated 4.5 million non-military affiliated Americans abroad are registered with U.S. Embassies and Consulates, and are thus able to receive warnings and announcements from these diplomatic posts. Those preparing to travel overseas can register for country-specific announcements online at <https://travelregistration.State.gov/ibrs/>.

Americans should not assume that international transportation would be available during a pandemic. As a result, Americans abroad should identify local sources of healthcare and prepare to “shelter-in-place” if necessary. In those areas with potentially limited water and food availability, Americans living abroad are encouraged to maintain supplies of food and water to last at least two and as long as 12 weeks. Additional recommendations for preparing for a pandemic while abroad are available in the State Department fact sheet *How to Prepare for “Sheltering-In-Place,”* which is available at [travel.State.gov/travel/tips/health/health\\_3096.html](http://travel.State.gov/travel/tips/health/health_3096.html).

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## Testing and Exercising Community Mitigation Interventions

Because pandemics occur rarely, drills and exercises are required to test plans and to maintain response proficiency. Such real-world operational experience could yield invaluable empirical evidence regarding how readily particular pandemic mitigation measures might be implemented and how well they might work if applied on a larger scale and/or for longer duration. Drills and exercises permit individuals and organizations to carry out their normal duties and relate to each other under unusual circumstances in simulated environments that are far less costly and threatening than real events.

Discussion-based exercises (e.g., tabletop exercises) are a first step to help identify “gaps” in the plans, policies, protocols, processes, and procedures, included in planning for pandemic mitigation interventions. Such gaps should be filled before expensive, resource-intensive, operations-based drills and exercises are conducted. For example, developing community communications plans to notify the public about the status of a pandemic, what protective actions should be taken, and where to seek medical advice during a pandemic, as well as planning for distribution of antiviral medications, determining the process for dismissal of students from schools and closure of childcare facilities, and planning for possible closure of mass gatherings should be decided before conducting a full-scale exercise.

As responders practice the plan through exercising, they learn which aspects of response do not go “as planned.” After the exercise, responders debrief (“hot wash”) and create

an after-action-report to describe corrective actions to fix response problems, including who is responsible for fixing what by when (a “corrective action plan”). Proposed solutions should be re-tested to ensure that they adequately correct the response problem.

In July 2006, CDC’s Coordinating Office of Terrorism Preparedness and Emergency Response provided supplemental guidance for recipients of Federal funding through the *Public Health Preparedness and Response Cooperative Agreement* (Cooperative Agreement AA154) specifically intended to foster developing and exercising pandemic influenza plans. Specific performance measures for testing and exercising plans are listed in that guidance, which can be accessed at [www.bt.cdc.gov/planning/coopagreement/pdf/phase2-panflu-guidance.pdf](http://www.bt.cdc.gov/planning/coopagreement/pdf/phase2-panflu-guidance.pdf).

## Research Needs

A comprehensive research agenda for pandemic influenza is needed to improve the evidence base of the proposed NPIs described in this interim guidance. This agenda should include conducting studies to gain more knowledge of the epidemiology of influenza, the effectiveness of community-based interventions, the use of medical countermeasures that complement community interventions, the modification of existing mathematical modeling to include adverse societal consequences, and the development of new modeling frameworks to assess the effectiveness of interventions.<sup>6, 13, 14, 19, 20, 104-108</sup> Research to clarify or expand upon these issues may be necessary during a pandemic outbreak. Thus, planning for accelerated Institutional Review Board approval in the setting of a pandemic may facilitate important research conducted in hospitals, public health departments, and universities.

### Key areas for further research include the following:

- *Enhancing epidemiologic and laboratory surveillance systems for influenza:* Existing influenza surveillance systems have gaps in timeliness and completeness that will hamper adequate functioning during a pandemic. A high priority must be given to the development of more timely surveillance for laboratory-confirmed cases of human infections with novel influenza A viruses, methods to rapidly estimate the excess mortality rate during a pandemic, better use of existing electronic data sources, and the development of platforms that can be used to assess the effectiveness of pandemic interventions, including vaccines, antiviral medications, and NPIs.
- *Development of rapid diagnostics:* The development of sensitive and specific point-of-care rapid tests for influenza A subtypes with pandemic potential may play an important role in pandemic preparedness. Laboratory diagnosis of influenza is critical for treatment, prophylaxis, surveillance, vaccine development and efficacy, and the timing of the initiation of pandemic mitigation strategies.
- *Measurement of effectiveness of personal protective equipment (PPE, e.g., surgical masks and respirators) in community settings:* Quantification of the effectiveness of PPE for infection prevention, the ability of community members to correctly use PPE, the relative benefit of fit-testing for respirator-use in community settings, the utility of PPE for children and the elderly for whom PPE is not currently designed, and the relative contribution of PPE to safety in the context of other NPIs should be undertaken.
- *Determination of the trigger points for implementation of NPIs:* Infection with influenza results in annual community-based epidemics. While the historic data from 1918 on use of NPIs indicate an ecological relationship between timing and effectiveness, additional prospective data on timing of each of these measures will usefully complement the value of historic evidence. Studies of some of the NPIs can be conducted during sporadic outbreaks of seasonal influenza.

- *Determination of markers to signal that it might be appropriate to end or lift pandemic mitigation interventions:* Pandemic mitigation measures may be employed in communities until sufficient vaccine is available to that population or until other parameters are reached. Retrospective and other studies could provide detailed information regarding these predictive factors.
- *Advancing the knowledge base on pharmaceutical interventions:* Antiviral medications and vaccines are integral components of pandemic mitigation strategies. Availability and use of medications can complement the effectiveness of voluntary isolation and quarantine and enhance compliance within communities. Therefore, the capacity to rapidly obtain data on antiviral and vaccine effectiveness, the development of resistance, and the assessment of distribution dynamics is important to successful implementation of pandemic mitigation strategies.
- *Determination, through prospective field studies, of the effectiveness of interventions required to achieve reduced transmission:* The evidence base for most of the interventions currently suggested for use is based on historic reviews, common sense, and biological plausibility. Evidence should be obtained through prospective trials or observational studies conducted during seasonal influenza outbreaks. Given the socioeconomic ramifications of pandemic mitigation interventions such as social distancing measures for children and adults, adherence with prolonged use of interventions is likely to be limited. Therefore, in addition to the assessment of effectiveness, studies should also be done to assess factors that promote compliance and the optimal duration of interventions.
- *Improved understanding of fundamental questions of influenza transmission and epidemiology:* Prospective epidemiological studies to address gaps in understanding of influenza epidemiology and transmission and the natural history of disease may guide the application of NPIs in the community.
- *Improved understanding of environmental factors that may influence influenza survival and transmissibility:* Studies to elucidate the impact of temperature, humidity, radiation, seasonality, and other factors and their relation to influenza transmission in communities are needed to identify complementary mitigation interventions.
- *Improved measures of uncertainty with regard to parameter and model estimates for mathematical modeling of NPIs:* Development of improved metrics of uncertainty around interpretation of modeling outputs may more appropriately guide the incorporation of modeling results into development of policy for community use of these measures.
- *Characterize and determine the potential psychosocial sequelae of voluntary home quarantine and social distancing strategies:* Investigation of the use of home quarantine and social distancing strategies in simulations and in severe seasonal influenza outbreaks could determine key issues that might arise during a severe pandemic requiring long-term social distancing strategies and might suggest possible strategies to reduce untoward effects. Studies that focus on incidences of school closure that might be used for other disease outbreaks might help to better understand facilitators and barriers to adherence with public health recommendations.
- *Expanded parameter inputs for modeling the potential effectiveness of school and workplace interventions in mitigating an influenza pandemic:* The current mathematical models have been prepared with a single option for each of the interventions. For example, the recommendation for dismissing students from schools is absolute and does not include options to partially implement

this intervention. Given the societal consequences of this protective intervention, as well as other measures, it is recommended that models be further developed to study a broader range of options for each intervention.

- *Appropriate modeling of effect of interventions to limit the impact of cascading second- and third-order consequences of the use of NPIs:* The implementation challenges and cascading consequences of both the pandemic and of the interventions should be considered in the mathematical models. For example, broader outcome measures beyond influenza-related public health outcomes might include costs and benefits of intervention strategies.
- *Development of process indicators:* Given the need to assess community-level response capacity in any Incident of National Significance, a research agenda related to mitigation of pandemic influenza should include development of tools to assess ongoing response capacity. These tools may include ways to assess adherence with interventions and to determine factors that influence adherence fatigue. Such tools would be most useful for the implementing jurisdictions in development of preparedness plans and for evaluating the implementation dynamics during a pandemic.

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## Conclusions

The goals of planning for an influenza pandemic are to save lives and to reduce adverse personal, social, and economic consequences of a pandemic; however, it is recognized that even the best plans may not completely protect everyone. Such planning must be done at the individual, local, tribal, State, Federal, and international levels, as well as by businesses and employers and other organizations, in a coordinated manner. Interventions intended for mitigating a pandemic pose challenges for individuals and families, employers (both public and private), schools, childcare programs, colleges and universities, and local communities. Pre-pandemic, scenario-based planning offers an opportunity to better understand and weigh the benefits of possible interventions as well as identify strategies to maximize the number of people protected while reducing, to the greatest extent possible, the adverse social, logistical, and economic effects of proposed interventions.

The early use of combinations of NPIs that are strategically targeted, layered, and implemented in a coordinated manner across neighboring jurisdictions and tailored to the severity of the pandemic is a critical component of a comprehensive strategy to reduce community disease transmission and mitigate illness and death. This guidance introduces, for the first time, a Pandemic Severity Index in which case fatality ratio serves as the critical driver for categorizing the severity of a pandemic. The severity index is designed to enable better forecasting of the impact of a pandemic and allows for fine-tuning the selection of the most appropriate tools and interventions, balancing the

potential benefits against the expected costs and risks. Decision-makers may find the Pandemic Severity Index useful in a wide range of pandemic planning scenarios beyond pandemic mitigation, including, for example, in plans for assessing the role for pre-pandemic vaccine or estimating medical ventilator supply and other healthcare surge requirements.

This planning guidance should be viewed as the first iteration of a dynamic process that will be revisited and refined on a regular basis and informed by new knowledge gained from research, exercises, and practical experience. The array of public health measures available for pandemic mitigation is also evolving, and future versions of this document will need to incorporate the changing landscape. Some critical priority issues for inclusion in subsequent drafts are highlighted in actions being pursued under the National Implementation Plan Action Items. These include the role and further development of point-of-care rapid influenza diagnostics, antiviral medications, pre-pandemic vaccines, face mask and respirator use in community settings, and home-care infection control management strategies. The development of sensitive and specific diagnostic tests for pandemic strains not only enables a more efficient use of antiviral medication for treatment and prophylaxis but also helps minimize the need for isolation and quarantine for persons with nonspecific respiratory infections. The increasing availability of antiviral medications will prompt new discussions about the role of antiviral prophylaxis for households and workers in critical infrastructure to further reduce

transmission potential and to provide incentives to comply with voluntary home quarantine recommendations and for healthcare and other workers to report to work. Changes in the technology and availability of personal protective equipment will influence guidance on community use of face masks and respirators. Guidance for safe management of ill family members in the household should serve to decrease the risk of household transmission of influenza, once again aligning incentives for compliance and increasing the effectiveness of pandemic mitigation interventions.

Planning and preparedness for implementing pandemic mitigation strategies is complex and requires participation by all levels of government and all segments of society. Pandemic mitigation strategies call for specific actions by individuals, families, businesses and employers, and organizations. Building a foundation of community and individual and family preparedness and developing and delivering effective risk communication for the public in advance of a pandemic is critical. If embraced earnestly, these efforts will result in enhanced ability to respond not only to pandemic influenza but also to multiple hazards and threats. While the challenge is formidable, the consequences of facing a severe pandemic unprepared will be intolerable. This interim pre-pandemic planning guidance is put forth as a step in our commitment to address the challenge of mitigating a pandemic by building and enhancing community resiliency.

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## Appendices

### Appendix 1 – Glossary of Terms

*Absenteeism rate:* Proportion of employed persons absent from work at a given point in time or over a defined period of time.

*Antiviral medications:* Medications presumed to be effective against potential pandemic influenza virus strains and which may prove useful for treatment of influenza-infected persons or for prophylactic treatment of persons exposed to influenza to prevent them from becoming ill. These antiviral medications include the neuraminidase inhibitors oseltamivir (Tamiflu®) and zanamivir (Relenza®).

*Case fatality ratio:* Proportion of deaths among clinically ill persons.

*Childcare:* Childcare programs discussed in this guidance include 1) centers or facilities that provide care to any number of children in a nonresidential setting, 2) large family childcare homes that provide care for seven or more children in the home of the provider, and 3) small family childcare homes that provide care to six or fewer children in the home of the provider.

*Children:* In this document children are defined as 17 years of age or younger unless an age is specified or 12 years of age or younger if teenagers are specified.

*Clinically ill:* Those persons who are infected with pandemic influenza and show signs and symptoms of illness.

*Colleges:* Post-high school educational institutions (i.e., beyond 12th grade).

*Community mitigation strategy:* A strategy for the implementation at the community level of interventions designed to slow or limit the transmission of a pandemic virus.

*Cough etiquette:* Covering the mouth and nose while coughing or sneezing; using tissues and disposing in no-touch receptacles; and washing of hands often to avoid spreading an infection to others.

*Countermeasures:* Refers to pre-pandemic and pandemic influenza vaccine and antiviral medications.

*Critical infrastructure:* Systems and assets, whether physical or virtual, so vital to the United States that the incapacitation or destruction of such systems and assets would have a debilitating impact on national security, economy, or public health and/or safety, either alone or in any combination. Specifically, it refers to the critical infrastructure sectors identified in Homeland Security Presidential Directive 7 (HSPD-7).

*Early, targeted, and layered nonpharmaceutical interventions (NPIs) strategy:* A strategy for using combinations of selected community-level NPIs implemented early and consistently to slow or limit community transmission of a pandemic virus.

**Excess rate:** Rate of an outcome (e.g., deaths, hospitalizations) during a pandemic above the rate that occurs normally in the absence of a pandemic. It may be calculated as a ratio over baseline or by subtracting the baseline rate from the total rate.

**Face mask:** Disposable surgical or procedure mask covering the nose and mouth of the wearer and designed to prevent the transmission of large respiratory droplets that may contain infectious material.

**Faith-based organization:** Any organization that has a faith-inspired interest.

**Generation time:** Average number of days taken for an ill person to transmit the infection to another person.

**Hand hygiene:** Hand washing with either plain soap or antimicrobial soap and water or use of alcohol-based products (gels, rinses, foams containing an emollient) that do not require the use of water.

**Illness rate or clinical attack rate:** Proportion of people in a community who develop illness (symptomatic cases ÷ population size).

**Incident of National Significance:** Designation is based on criteria established in Homeland Security Presidential Directive 5 and include events with actual or potential high-impact that requires a coordinated and effective response by Federal, State, local, tribal, nongovernmental, and/or private sector entities in order to save lives, minimize damage, and provide the basis for long-term community recovery and mitigation activities.

**Incubation period:** The interval (in hours, days, or weeks) between the initial, effective exposure to an infectious organism and the first appearance of symptoms of the infection.

**Infection control:** Hygiene and protective measures to reduce the risk of transmission of an infectious agent from an infected person to uninfected persons (e.g., hand hygiene, cough etiquette, use of personal protective equipment, such as face masks and respirators, and disinfection).

**Influenza pandemic:** A worldwide epidemic caused by the emergence of a new or novel influenza strain to which humans have little or no immunity and which develops the ability to infect and be transmitted efficiently for a sustained period of time in the community between humans.

**Isolation of ill people:** Separation or restriction of movement of persons ill with an infectious disease in order to prevent transmission to others.

**Mortality rate:** Number of deaths in a community divided by population size of community over a specific period of time (e.g., 20 deaths per 100,000 persons per week).

**Nonpharmaceutical intervention (NPI):** Mitigation measure implemented to reduce the spread of an infectious disease (e.g., pandemic influenza) but one that does not include pharmaceutical products, such as vaccines and medicines. Examples include social distancing and infection control measures.

**Pandemic vaccine:** Vaccine for a specific influenza virus strain that has evolved the capacity for sustained and efficient human-to-human transmission. This vaccine can only be developed once the pandemic strain emerges.

**Personal protective equipment (PPE):** PPE is any type of clothing, equipment, or respiratory protection device (respirators) used to protect workers against hazards they encounter while doing their jobs. PPE can include protection for eyes, face, head, torso, and extremities. Gowns, face shields, gloves, face masks, and respirators

are examples of PPE commonly used within healthcare facilities. When PPE is used in a workplace setting to protect workers against workplace hazards, its use must be consistent with regulations issued by the Occupational Safety and Health Administration ([www.osha.gov/index.html](http://www.osha.gov/index.html)).

*Post-exposure prophylaxis:* The use of antiviral medications in individuals exposed to others with influenza to prevent disease transmission.

*Pre-pandemic vaccine:* Vaccine against strains of influenza virus in animals that have caused isolated infections in humans and which may have pandemic potential. This vaccine is prepared prior to the emergence of a pandemic strain and may be a good or poor match (and hence of greater or lesser protection) for the pandemic strain that ultimately emerges.

*Prophylaxis:* Prevention of disease or of a process that can lead to disease. With respect to pandemic influenza, this specifically refers to the administration of antiviral medications to healthy individuals for the prevention of influenza.

*Quarantine:* A restraint upon the activities or communication (e.g., physical separation or restriction of movement within the community/work setting) of an individual(s) who has been exposed to an infection but is not yet ill to prevent the spread of disease; quarantine may be applied voluntarily (preferred) or on compulsory basis dependent on legal authority.

*Rapid diagnostic test:* Medical test for rapidly confirming the presence of infection with a specific influenza strain.

*Recrudescence:* Reappearance of a disease after it has diminished or disappeared.

*$R_0$  (“reproductive number”):* Average number of infections resulting from a single case in a fully susceptible population without interventions.  $R_t$ :

the reproductive number at a given time,  $t$ .

*Schools:* Refers to public and private elementary, middle, secondary, and post-secondary schools (colleges and universities).

*Schools (K-12):* Refers to schools, both public and private, spanning the grades kindergarten through 12th grade (elementary through high school).

*Seasonal influenza:* Influenza virus infections in familiar annual patterns.

*Second- and third-order consequences:* Chains of effects that may arise as a consequence of intervention and which may require additional planning and intervention to mitigate. These terms generally refer to foreseeable unintended consequences of intervention. For example, dismissal of students from schools may lead to workplace absenteeism for child minding. Subsequent workplace closings due to high absenteeism may lead to loss of income for employees, a third-order effect that could be detrimental to families living at or near subsistence levels.

*Sector:* A subdivision (sociological, economic, or political) of society.

*Social distancing:* Measures to increase the space between people and decrease the frequency of contact among people.

*Surge capacity:* Refers to the ability to expand provision of services beyond normal capacity to meet transient increases in demand. Surge capacity within a medical context includes the ability of healthcare or laboratory facilities to provide care or services above their usual capacity and to expand manufacturing capacity of essential medical materiel (e.g., vaccine) to meet increased demand.

*Surgical mask:* Disposable face mask that covers the mouth and nose and comes in two basic types. The first type is affixed to the head with two ties and typically has a flexible adjustment for the nose bridge. This type of surgical mask may be flat/pleated or duck-billed in shape. The second type of surgical mask is pre-molded, or cup shaped, and adheres to the head with a single elastic strap and usually has a flexible adjustment for the nose bridge. Surgical masks are used to prevent the transmission of large particles.

*Telework:* Refers to activity of working away from the usual workplace (often at home) through telecommunication or other remote access means (e.g., computer, telephone, cellular phone, fax machine).

*Universities:* Educational institutions beyond 12th grade (post high school).

*Viral shedding:* Discharge of virus from an infected person.

*Virulence:* The ability of the pathogen to produce disease; or the factors associated with the pathogen to affect the severity of diseases in the host.

*Voluntary:* Acting or done of one's own free will without legal compulsion (e.g., voluntary household quarantine).

## Appendix 2 – Interim Guidance Development Process

This guidance document was developed through a collaborative process that gathered input from a variety of sources, including subject-matter experts, peer-reviewed scientific literature, current research, and stakeholders (i.e., Federal agencies, public health officials, and the public). A working group composed of Federal, State, and local public health officials and representatives from the Association of State and Territorial Health Officials (ASTHO), the Council of State and Territorial Epidemiologists (CSTE), the National Association of County and City Health Officials (NACCHO), the Infectious Disease Society of America (IDSA), and the National Association of Local Boards of Health (NALBOH) met periodically to review and evaluate evidence derived from the following sources:

- Preliminary statistical analyses of historical data on the implementation of selected NPIs in U.S. cities during the 1918 pandemic.
- Stakeholder input from interagency outreach meetings with public health, private sector, labor unions, faith-based and community partners.
- Proceedings of community public engagement meetings conducted in five U.S. cities (Atlanta, GA; Lincoln, NE; Seattle, WA; Syracuse, NY; Washington, DC) in October-November 2006.
- Public opinion poll results conducted by the Harvard School of Public Health in September-October 2006 surveying 1,697 adults in the United States regarding their willingness to follow public health officials' recommendations for selected pandemic

mitigation interventions.

- Peer-reviewed mathematical modeling to assess potential pandemic mitigation interventions during an influenza pandemic.
- Expert opinion of public health officials, including published findings and recommendations of the Committee on Modeling Community Containment for Pandemic Influenza (Institute of Medicine, 2006).
- Preliminary results from a November 2006 Epi-Aid investigation of a seasonal influenza outbreak with associated school closure.
- Preliminary results from review of legal authorities/policies of school closure in each state conducted by the Center for Law and the Public's Health.

In addition, stakeholders from government, academia, private industry, educational organizations, and faith-based and community organizations reviewed and evaluated these data during public stakeholder meetings in June and December 2006. The opinions from individuals in the working group and stakeholders were considered during the writing of this guidance.

Pandemic planning with respect to the implementation of these pandemic mitigation interventions must be citizen-centric and support the needs of people across society in as equitable a manner as possible. Accordingly, the process for developing this interim pre-pandemic guidance sought input from key stakeholders, including the public. While all views and perspectives were respected, a hierarchy of values did in fact emerge over the course of the deliberations. In all cases, the question

was whether the cost of the interventions was commensurate with the benefits they could potentially provide. Thus, there was more agreement on what should be done when facing a severe pandemic with a high case fatality ratio (e.g., a 1918-like pandemic) than on what should be done when facing a pandemic with a lower case fatality ratio (e.g., a 1968-like pandemic); even with the inherent uncertainties involved, the cost-benefit ratio of the interventions clearly becomes more favorable as the severity increases and the number of lives potentially saved increases. Many stakeholders, for example, expressed concern about the effectiveness of the proposed interventions, which cannot be demonstrated *a priori* and for which the evidence base is limited and of variable quality. However, where high rates of mortality could be anticipated

in the absence of intervention, a significant majority of stakeholders expressed their willingness to “risk” undertaking interventions of uncertain effectiveness in mitigating disease and death. Where scenarios that would result in 1918-like mortality rates were concerned, most stakeholders reported that aggressive measures would be warranted and that the value of the lives potentially saved assumed precedence over other considerations. However, the feasibility of these approaches has not been assessed at the community level. Local, State, regional, and Federal exercises will need to be conducted to obtain more information about the feasibility and acceptance of these measures. In addition, ongoing engagement with the public, especially vulnerable populations, is essential.

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## Appendix 3. – WHO Phases of a Pandemic/U.S. Government Stages of a Pandemic

<b>PANDEMIC INFLUENZA</b>			
<b>WHO Global Pandemic Phases and the Stages for Federal Government Response</b>			
<b>WHO Phases</b>		<b>Federal Government Response Stages</b>	
<b>INTER-PANDEMIC PERIOD</b>			
<b>1</b>	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 disease is considered to be low.	<b>0</b>	New domestic animal outbreak in at-risk country
<b>2</b>	No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.		
<b>PANDEMIC ALERT PERIOD</b>			
<b>3</b>	Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.	<b>0</b>	New domestic animal outbreak in at-risk country
		<b>1</b>	Suspected human outbreak overseas
<b>4</b>	Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.	<b>2</b>	Confirmed human outbreak overseas
<b>5</b>	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).		
<b>PANDEMIC PERIOD</b>			
<b>6</b>	Pandemic phase: increased and sustained transmission in general population.	<b>3</b>	Widespread human outbreaks in multiple locations overseas
		<b>4</b>	First human case in North America
		<b>5</b>	Spread throughout United States
		<b>6</b>	Recovery and preparation for subsequent waves

## Appendix 4 - Pandemic Influenza Community Mitigation Interim Planning Guide for Businesses and Other Employers

### Purpose

This Interim Planning Guide for Businesses and Other Employers is provided as a supplement to the *Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—Early, Targeted, Layered Use of Nonpharmaceutical Interventions*. This guide is intended to assist in pre-pandemic planning. Individuals and families, employers, schools, and other organizations will be asked to take certain steps (described below) to help limit the spread of a pandemic, mitigate disease and death, lessen the impact on the economy, and maintain societal functioning. This guidance is based upon the best available current data and will be updated as new information becomes available. During the planning process, Federal, State, local, tribal, and territorial officials should review the laws, regulations, and policies that relate to these recommendations, and they should include stakeholders in the planning process and resolution of issues.

Businesses and other employers (including local, State, and Federal agencies and other organizations) will be essential partners in protecting the public's health and safety when a pandemic occurs. This *Pandemic Influenza Community Mitigation Interim Planning Guide for Businesses and Other Employers* provides guidance to these groups by describing how they might prepare for, respond to, and recover from an influenza pandemic. When an influenza pandemic starts, public health officials will determine the severity of the pandemic and recommend actions to protect the community's

health. People who become severely ill may need to be cared for in a hospital. However, most people with influenza will be safely cared for at home.

Community mitigation recommendations will be based on the severity of the pandemic and may include the following:

1. Asking ill people to voluntarily remain at home and not go to work or out in the community for about 7-10 days or until they are well and can no longer spread the infection to others (ill individuals may be treated with influenza antiviral medications, as appropriate, if these medications are effective and available).
2. Asking members of households with a person who is ill to voluntarily remain at home for about 7 days (household members may be provided with antiviral medications, if these medications are effective and sufficient in quantity and feasible mechanisms for their distribution have been developed).
3. Dismissing students from schools (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs for up to 12 weeks, coupled with protecting children and teenagers through social distancing in the community, to include reductions of out-of-school social contacts and community mixing. Childcare programs discussed in this guidance include centers or facilities that provide care to any number of children in a nonresidential setting, large family childcare homes that provide care for seven or more children in the home of the

provider, and small family childcare homes that provide care to six or fewer children in the home of the provider.<sup>1</sup>

4. Recommending social distancing of adults in the community, which may include cancellation of large public gatherings; changing workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services; ensuring work-leave policies to align incentives and facilitate adherence with the measures outlined above.

Planning now for a severe pandemic (and adjusting your continuity plan accordingly) will help assure that your business is prepared to implement these community recommendations. Businesses and other employers should be prepared to continue the provision of essential services during a pandemic even in the face of significant and sustained absenteeism. Pandemic preparation should include coordinated planning with employees and employee representatives and critical suppliers. Businesses should also integrate their planning into their communities' planning. These preparedness efforts will be beneficial to your organization, staff, and the community, regardless of the severity of the pandemic. The following provide information to guide business planning for a pandemic: *Business Pandemic Influenza Planning Checklist* ([www.pandemicflu.gov/plan/business/businesschecklist.html](http://www.pandemicflu.gov/plan/business/businesschecklist.html)), the *Pandemic Preparedness Planning for U.S. Businesses with Overseas Operations Checklist*, ([www.pandemicflu.gov/plan/business/businessesoverseaspdf.pdf](http://www.pandemicflu.gov/plan/business/businessesoverseaspdf.pdf)), and the *Pandemic Influenza Preparedness, Response and Recovery Guide for Critical Infrastructure and Key Resources* ([www.pandemicflu.gov/plan/pdf/cikrpandemicinfluenzaguide.pdf](http://www.pandemicflu.gov/plan/pdf/cikrpandemicinfluenzaguide.pdf)). In addition, recommendations for implementation of pandemic mitigation strategies are available at [www.pandemicflu.gov](http://www.pandemicflu.gov). Reliable, accurate, and timely information on the status and severity of the pandemic also will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

[pandemicflu.gov](http://www.pandemicflu.gov). Additional information is available from the Centers for Disease Control and Prevention (CDC) Hotline: 1-800-CDC-INFO (1-800-232-4636). This line is available in English and Spanish, 24 hours a day, 7 days a week. TTY: 1-888-232-6348. Questions can be e-mailed to [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov).

## Recommendations for Planning

### 1. Plan for ill individuals to remain at home

- Plan for staff absences during a pandemic due to personal illness.
  - Encourage ill persons to stay home during a pandemic and establish return-to-work policies after illness.
  - Identify critical job functions and plan for their continuity and how to temporarily suspend non-critical activities, cross-train employees to cover critical functions, and cover the most critical functions with fewer staff.
  - Identify employees who might need extra assistance to stay home when they are ill because, for example, they live alone or have a disability.
  - Review Federal and State employment laws that identify your employer obligations and options for employees.
- Establish and clearly communicate policies on sick (and other) leave and employee compensation.
- Develop a workplace culture that recognizes and encourages behaviors such as voluntarily staying home when ill in order to get well and to avoid spreading infection to others.
- Develop policies on what to do when a person becomes ill at the workplace.
- Provide employees with information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 2. Plan for all household members of a person who is ill to voluntarily remain at home

- Plan for staff absences related to family member illness.
  - Identify critical job functions and plan for their continuity and how to temporarily suspend non-critical activities, cross-train employees to cover critical functions, and cover the most critical functions with fewer staff.
  - Establish policies for an alternate or flexible worksite (e.g., work via the Internet, e-mailed or mailed work assignments) and flexible work hours, where feasible.
  - Develop guidelines to address business continuity requirements created by jobs that will not allow teleworking (e.g., production or assembly line workers).
- Establish and clearly communicate policies on family leave and employee compensation, especially Federal laws and laws in your State regarding leave of workers who need to care for an ill family member or voluntarily remain home.
- Provide employees with information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 3. Plan for dismissal of students and childcare closure

- Identify employees who may need to stay home if schools dismiss students and childcare programs close during a severe pandemic.
- Advise employees not to bring their children to the workplace if childcare cannot be arranged.
- Plan for alternative staffing or staffing schedules on the basis of your identification of employees who may need to stay home.
  - Identify critical job functions and plan now for cross-training employees to cover those functions in case of prolonged

absenteeism during a pandemic.

- Establish policies for employees with children to work from home, if possible, and consider flexible work hours and schedules (e.g., staggered shifts).
- Encourage employees who have children in their household to make plans to care for their children if officials recommend dismissal of students from schools, colleges, universities, and childcare programs. Advise employees to plan for an extended period (up to 12 weeks) in case the pandemic is severe.
- In a severe pandemic, parents would be advised to protect their children by reducing out-of-school social contacts and mixing with other children. Although limiting all outside contact may not be feasible, parents may be able to develop support systems with co-workers, friends, families, or neighbors if they continue to need childcare. For example, they could prepare a plan in which two to three families work together to supervise and provide care for a small group of infants and young children while their parents are at work (studies suggest that childcare group size of less than six children may be associated with fewer respiratory infections).<sup>2</sup>
- Talk with your employees about any benefits, programs, or other assistance they may be eligible for if they have to stay home to mind children for a prolonged period during a pandemic.
- Coordinate with State and local government and faith-based and community-based organizations to assist workers who cannot report to work for a prolonged period.

## 4. Plan for workplace and community social distancing measures

- Become familiar with social distancing methods that may be used during a pandemic to modify the frequency and type of person-to-person contact (e.g., reducing hand-shaking, limiting face-to-face meetings and shared workstations, promoting teleworking,

offering liberal/unscheduled leave policies, staggered shifts).

- Plan to operate businesses and other workplaces using social distancing and other measures to minimize close contact between and among employees and customers. Determine how the work environment may be reconfigured to allow for more distance between employees and between employees and customers during a pandemic. If social distancing is not feasible in some work settings, employ other protective measures (guidance available at [www.pandemicflu.gov](http://www.pandemicflu.gov)).
- Review and implement guidance from the Occupational Safety and Health Administration (OSHA) to adopt appropriate work practices and precautions to protect employees from occupational exposure to influenza virus during a pandemic. Risk of occupational exposure to influenza virus depends in part on whether or not jobs require close proximity to people potentially infected with the pandemic influenza virus or whether employees are required to have either repeated or extended contact with the public. OSHA will post and periodically update such guidance on [www.pandemicflu.gov](http://www.pandemicflu.gov).
- Encourage good hygiene at the workplace. Provide employees and staff with information about the importance of hand hygiene (information can be found at [www.cdc.gov/cleanhands/](http://www.cdc.gov/cleanhands/)) as well as convenient access to soap and water and/or alcohol-based hand gel in your facility. Educate employees about covering their cough to prevent the spread of germs ([www.cdc.gov/flu/protect/covercough.htm](http://www.cdc.gov/flu/protect/covercough.htm)).

## 5. Communicate with your employees and staff

- Disseminate your company's pandemic plan to all employees and stakeholders in advance of a pandemic; include roles/actions expected of employees and other stakeholders during

implementation of the plan.

- Provide information to encourage employees (and their families) to prepare for a pandemic by providing preparedness information. Resources are available at [www.pandemicflu.gov/plan/individual/checklist.html](http://www.pandemicflu.gov/plan/individual/checklist.html).

## 6. Help your community

- Coordinate your business' pandemic plans and actions with local health and community planning.
- Find volunteers in your business who want to help people in need, such as elderly neighbors, single parents of small children, or people without the resources to get the medical or other help they will need.
- Think of ways your business can reach out to other businesses and others in your community to help them plan for a pandemic.
- Participate in community-wide exercises to enhance pandemic preparedness.

## 7. Recovery

- Assess criteria that need to be met to resume normal operations and provide notification to employees of activation of the business resumption plan.
- Assess the availability of medical, mental health, and social services for employees after the pandemic.

## References:

<sup>1</sup> American Academy of Pediatrics. Children in Out-of-Home Child Care: Classification of Care Service. In: Pickering LK, ed. Red Book: 2003 Report of the Committee on Infectious Diseases. 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003:124.

<sup>2</sup> Bradley RH. Child care and common communicable illnesses in children aged 37 to 54 months. Arch Pediatr Adolesc Med. 2003 Feb;157(2):196-200

## Appendix 5 - Pandemic Influenza Community Mitigation Interim Planning Guide for Childcare Programs

### Purpose

This Interim Planning Guide for Childcare Programs is provided as a supplement to the *Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—Early, Targeted, Layered Use of Nonpharmaceutical Interventions*. The guide is intended to assist in pre-pandemic planning. Individuals and families, employers, schools, and other organizations will be asked to take certain steps (described below) to help limit the spread of a pandemic, mitigate disease and death, lessen the impact on the economy, and maintain societal functioning. This guidance is based upon the best available current data and will be updated as new information becomes available. During the planning process, Federal, State, local, tribal, and territorial officials should review the laws, regulations, and policies that relate to these recommendations, and they should include stakeholders in the planning process and resolution of issues.

Childcare programs will be essential partners in protecting the public's health and safety when an influenza pandemic occurs. Childcare programs discussed in this guidance include centers or facilities that provide care to any number of children in a nonresidential setting, large family childcare homes that provide care for seven or more children in the home of the provider and small family childcare homes that provide care to six or fewer children in the home of the provider.<sup>1</sup> This *Pandemic Influenza Community Mitigation Interim Planning Guide for Childcare Programs* provides guidance describing how

such programs might prepare for and respond to an influenza pandemic. When an influenza pandemic starts, public health officials will determine the severity of the pandemic and recommend actions to protect the community's health. People who become severely ill may need to be cared for in a hospital. However, most people with influenza will be safely cared for at home.

Community mitigation recommendations will be based on the severity of the pandemic and may include the following:

1. Asking ill people to voluntarily remain at home and not go to work or out in the community for about 7-10 days or until they are well and can no longer spread the infection to others (ill individuals will be treated with influenza antiviral medications, as appropriate, if these medications are effective and available).
2. Asking members of households with a person who is ill to voluntarily remain at home for about 7 days (household members may be provided with antiviral medications, if these medications are effective and sufficient in quantity and feasible mechanisms for their distribution have been developed).
3. Dismissing students from schools (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs for up to 12 weeks, coupled with protecting children and teenagers through social distancing in the community to include reductions of out-of-school social contacts and community mixing.

4. Recommending social distancing of adults in the community, which may include cancellation of large public gatherings; changing workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services; ensuring work-leave policies to align incentives and facilitate adherence with the measures outlined above.

Recommendations for closing childcare facilities will depend upon the severity of the pandemic. The current three-tiered planning approach includes 1) no closure in a Category 1 pandemic, 2) short-term (up to 4 weeks) closure of childcare facilities in a Category 2 or Category 3 pandemic, and 3) prolonged (up to 12 weeks) closure of childcare facilities in a severe influenza pandemic (Category 4 or Category 5). These actions may only apply to traditional forms of center-based care and large family childcare programs (more than six children). Small family childcare programs (less than seven children) may be able to continue operations.

In the most severe pandemic, the duration of these public health measures would likely be for 12 weeks and will undoubtedly have serious financial implications for childcare workers and their employers as well as for families who depend on their services. In a severe pandemic, parents will be advised to protect their children by reducing out-of-school social contacts and mixing with other children. Although limiting all outside contact may not be feasible, families may be able to develop support systems with co-workers, friends, families, or neighbors if they continue to need childcare. For example, they could prepare a plan in which two or three families work together to supervise and provide care for a small group of infants and young children while their parents are at work (studies suggest that childcare group size of less than six children may be associated with fewer respiratory infections).<sup>2</sup> Planning now for a severe pandemic will help assure that your childcare program is prepared to

implement these community recommendations. These preparedness efforts will be beneficial to your programs, staff, families, and the community, regardless of the severity of the pandemic. The *Pandemic Flu Planning Checklist for Childcare Facilities* ([www.pandemicflu.gov/plan/school/index.html](http://www.pandemicflu.gov/plan/school/index.html)) provides an approach to planning for a pandemic. Recommendations for implementation of pandemic mitigation strategies are available at [www.pandemicflu.gov](http://www.pandemicflu.gov). Reliable, accurate, and timely information on the status and severity of the pandemic will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov). Additional information is available from the Centers for Disease Control and Prevention (CDC) Hotline: 1-800-CDC-INFO (1-800-232-4636). This line is available in English and Spanish, 24 hours a day, 7 days a week. TTY: 1-888-232-6348. Questions can be e-mailed to [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov).

## Recommendations for Planning

### 1. Plan for ill individuals to remain at home

- Develop a plan of childcare operations for implementation during pandemics of all levels of severity.
- Develop a plan for employee absences due to personal illness. Plan for alternative staffing:
  - Identify critical job functions and plan for alternate coverage of those functions during a pandemic. Family childcare programs may consider prearranging childcare coverage with other providers in their areas.
  - Review and analyze Federal and State employment laws that identify employer obligations and options for personnel.
- Establish and clearly communicate policies on sick leave and employee compensation.
- Encourage ill persons to stay home during a pandemic and establish return-to-work policies after illness.
- Establish policies for sick-leave absences unique to a pandemic (e.g., liberal/unscheduled leave).
- Develop policies on observation for illness

and what to do when a child or employee becomes ill at the workplace.

- Advise employees to look for information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 2. Plan for all household members of a person who is ill to voluntarily remain at home

- Develop a plan for employee absences related to family member illness. Plan for alternate staffing:
  - Identify critical job functions and plan now for coverage of those functions.
  - Review Federal and State employment laws that identify your employer obligations and options for employees.
- Establish and clearly communicate policies on family leave and employee compensation.
- Establish policies for sick-leave absences unique to a pandemic (e.g., liberal/unscheduled leave).
- Establish policies for employees who have to stay home because someone in their household is ill with pandemic influenza.
- Be familiar with Federal and State laws regarding leave of workers who need to care for an ill family member or voluntarily remain at home.
- Advise employees to look for information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 3. Plan for dismissal of students from school and childcare closure, considering the impact on employees and parents

- Develop a plan for program operations during all levels of pandemic severity.
- Plan for alternate staffing based on your assessment.
  - Identify critical job functions and plan now for coverage of those functions in case of prolonged absenteeism during a pandemic.

- Work with State and local government and faith-based and community-based organizations to provide any needed assistance to staff who are not able to work for a prolonged period of time.

## 4. Plan for workplace and community social distancing measures

- Become familiar with social distancing actions that may be used during a pandemic to modify frequency and type of person-to-person contact (e.g., reducing hand-shaking, limiting face-to-face meetings, promoting teleworking, and offering liberal/unscheduled leave policies and staggered shifts).
- Plan to operate the workplace using social distancing and other measures to minimize close contact between employees.
- Review and implement guidance from the Occupational Safety and Health Administration (OSHA) on appropriate work practices and precautions to protect employees from occupational exposure to influenza virus during a pandemic. Risks of occupational exposure to influenza virus depends in part on whether jobs require close proximity to people who may be infectious with the pandemic influenza virus or whether employees are required to have either repeated or extended contact with the general public. OSHA will post and periodically update such guidance on [www.pandemicflu.gov](http://www.pandemicflu.gov).
- If the childcare program is to remain in operation during a Category 1-3 pandemic, provide staff with information about the measures that the program will institute in order to reduce virus transmission among staff and children. These may include
  - Restructuring and keeping groups of staff and children from mixing together to minimize social contacts.
  - Asking ill staff to stay home while they are ill.
  - Modifying exclusion policies to include ill children and possibly, based on public

health recommendations made at the time of the pandemic, those with ill family members.

- Implementing staggered shifts.
- Implementing social distancing practices, including
  - Eliminating gatherings of staff and
  - Minimizing contact between staff and parents.
- Encourage good hygiene at the workplace. Provide children and staff with information about the importance of hand hygiene (information can be found at [www.cdc.gov/cleanhands/](http://www.cdc.gov/cleanhands/)) as well as convenient access to soap and water and alcohol-based hand gel in your facility. Educate employees and children about covering their cough to prevent the spread of germs (see [www.cdc.gov/flu/protect/covercough.htm](http://www.cdc.gov/flu/protect/covercough.htm)).
- Promote social distancing of children outside the childcare setting by advising parents that children reduce their social interaction and contacts to the greatest extent possible.

## 5. Communicate with staff and parents/families

- Be prepared to provide parents/families with information about
  - Why programs will be cancelled and the importance of keeping infants and children from congregating with other children in the community.
  - How alternative childcare options may be accessed.
  - How students who need free meals may qualify for other types of nutrition assistance in the community.
- Provide information to staff and parents/families on what they can do to prepare their families for a pandemic. Resources are available at [www.pandemicflu.gov/plan/individual/checklist.html](http://www.pandemicflu.gov/plan/individual/checklist.html) and [www.ready.gov/america/index.html](http://www.ready.gov/america/index.html).
- Provide systematic emergency communications to childcare staff and families during the pandemic. Use a telephone calling tree, an e-mail alert, or call-in voice recording to communicate pandemic status in the community and status of childcare program activities. Messages for staff and families should be targeted and provided in the

different languages that reflect the languages within the community.

- Recommend that parents/families seek further information about pandemic through other sources including key Federal, State, local, tribal, and territorial public health resources and regularly provided pandemic updates at [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 6. Help your community

- Coordinate your pandemic plans and actions with local health and community planning.
- Think of ways your childcare program can reach out to other childcare programs and others in your community to help them plan for a pandemic.
- Participate in community-wide exercises to enhance pandemic preparedness.

## 7. Recovery

- Establish the criteria and procedures for resuming childcare operations and activities.
- Develop communication plans for advising employees, staff, and families of the resumption of programs and activities.
- Develop the procedures, activities, and services needed to restore the childcare environment.

## References:

<sup>1</sup> American Academy of Pediatrics. Children in Out-of-Home Child Care: Classification of Care Service. In: Pickering LK, ed. Red Book: 2003 Report of the Committee on Infectious Diseases. 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003:124.

<sup>2</sup> Bradley RH. Child care and common communicable illnesses in children aged 37 to 54 months. Arch Pediatr Adolesc Med. 2003 Feb;157(2):196-200

## Appendix 6 - Pandemic Influenza Community Mitigation Interim Planning Guide for Elementary and Secondary Schools

### Purpose

This Interim Planning Guide for Elementary and Secondary Schools is provided as a supplement to the *Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—Early, Targeted, Layered Use of Nonpharmaceutical Interventions*. The guide is intended to assist in pre-pandemic planning. Individuals and families, employers, schools, and other organizations will be asked to take certain steps (described below) to help limit the spread of a pandemic, mitigate disease and death, lessen the impact on the economy, and maintain societal functioning. This guidance is based upon the best available current data and will be updated as new information becomes available. During the planning process, Federal, State, local, tribal, and territorial officials should review the laws, regulations, and policies that relate to these recommendations, and they should include stakeholders in the planning process and resolution of issues.

Schools will be essential partners in protecting the public's health and safety when an influenza pandemic occurs. This *Pandemic Influenza Community Mitigation Interim Planning Guide for Elementary and Secondary Schools* provides guidance to educational institutions, describing how they might prepare for and respond to an influenza pandemic. When an influenza pandemic starts, public health officials will determine the severity of the pandemic and recommend actions to protect the community's health. People who become severely ill may need to be cared for in a hospital. However, most people with influenza will be safely

cared for at home.

Community mitigation recommendations will be based on the severity of the pandemic and may include the following:

1. Asking ill people to voluntarily remain at home and not go to work or out in the community for about 7-10 days or until they are well and can no longer spread the infection to others (ill individuals will be treated with influenza antiviral medications, as appropriate, if these medications are effective and available).
2. Asking members of households with a person who is ill to voluntarily remain at home for about 7 days (household members may be provided with antiviral medications, if these medications are effective and sufficient in quantity and feasible mechanisms for their distribution have been developed).
3. Dismissing students from schools (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs for up to 12 weeks, coupled with protecting children and teenagers through social distancing in the community to include reductions of out-of-school social contacts and community mixing. Childcare programs discussed in this guidance include centers or facilities that provide care to any number of children in a nonresidential setting, large family childcare homes that provide care for seven or more children in the home of the provider and small family childcare homes that provide care to six or fewer children in the home of the provider.<sup>1</sup>

4. Recommending social distancing of adults in the community, which may include cancellation of large public gatherings; changing workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services; ensuring work-leave policies to align incentives and facilitate adherence with the measures outlined above.

Recommendations for dismissing students from schools will depend upon the severity of the pandemic. The current three-tiered planning approach includes 1) no dismissals in a Category 1 pandemic, 2) short-term (up to four weeks) dismissal of students from schools during a Category 2 or Category 3 pandemic, and 3) prolonged (up to 12 weeks) dismissal of students from schools during a severe influenza pandemic (Category 4 or Category 5 pandemic).

In the most severe pandemic, the duration of these public health measures would likely be for 12 weeks, which would have educational implications for students. Planning now for a prolonged period of student dismissal may assist schools to be prepared as much as possible to provide opportunities for continued instruction and other assistance to students and staff. Federal, State, local, tribal, and territorial laws, regulations, and policies regarding student dismissal from schools school closures, funding mechanisms, and educational requirements should be taken into account in pandemic planning. If students are dismissed from school but schools remain open, school- and education-related assets, including school buildings, school kitchens, school buses, and staff, may continue to remain operational and potentially be of value to the community in many other ways. In addition, faculty and staff may be able to continue to provide lessons and other services to students by television, radio, mail, Internet, telephone, or other media. Continued instruction is not only important for maintaining learning but also serves as a strategy to engage students in a constructive activity during the time that they are

being asked to remain at home.

Planning now for a severe pandemic will ensure that schools are prepared to implement the community interventions that may be recommended. Be prepared to activate the school district's crisis management plan for pandemic influenza that links the district's incident command system with the local and/or State health department/emergency management system's incident command system(s).

The *Pandemic Flu Planning Checklist for K-12 School Districts* describes approaches to school planning for a pandemic and can be found at [www.pandemicflu.gov/plan/school/index.html](http://www.pandemicflu.gov/plan/school/index.html) and [www.ed.gov/admins/lead/safety/emergencyplan/pandemic/planning-guide/index.html](http://www.ed.gov/admins/lead/safety/emergencyplan/pandemic/planning-guide/index.html). Recommendations for implementation of pandemic mitigation strategies are available at [www.pandemicflu.gov](http://www.pandemicflu.gov), and reliable, accurate, and timely information on the status and severity of a pandemic will also be posted on the Web site. Additional information is available from the Centers for Disease Control and Prevention (CDC) Hotline: 1-800-CDC-INFO (1-800-232-4636). This line is available in English and Spanish, 24 hours a day, 7 days a week. TTY: 1-888-232-6348. Questions can be e-mailed to [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov).

## Recommendations for Planning

### 1. Plan for ill individuals to remain at home

- Develop a plan for faculty and staff absences due to personal illness. Plan for alternative staffing:
  - Identify critical job functions and plan for alternate coverage of those functions during a pandemic.
  - Review and analyze Federal and State employment laws that identify employer obligations and options for personnel.
- Establish and clearly communicate policies on sick leave and employee compensation.
- Encourage ill persons to stay home during

a pandemic and establish return-to-work policies after illness.

- Establish policies for sick-leave absences unique to a pandemic (e.g., liberal/unscheduled leave).
- Develop policies on observation for illness and what to do when a student or staff member becomes ill at the workplace.
- Advise employees to look for information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 2. Plan for all household members of a person who is ill to voluntarily remain at home

- Develop a plan for faculty and staff absences related to family member illness. Plan for alternate staffing:
  - Identify critical job functions and plan now for coverage of those functions.
  - Establish policies for alternate or flexible worksite (e.g., videoconferencing and teleworking) and flexible work hours.
  - Review Federal and State employment laws that identify your employer obligations and options for employees.
- Establish and clearly communicate policies on family leave and employee compensation.
- Establish policies for sick-leave absences unique to a pandemic (e.g., liberal/unscheduled leave).
- Establish policies for employees who have to stay home because someone in their household is ill with pandemic influenza.
- Be familiar with Federal and State laws regarding leave of workers who need to care for an ill family member or voluntarily remain at home.
- Advise employees to look for information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 3. Plan for dismissal of students and childcare closure for employees

- Develop a plan for school operations during all levels of pandemic severity. Even if students are dismissed, schools may remain operational.
- Identify and plan for employees and staff who may have to stay home if schools and childcare programs dismiss students/children during a pandemic.
- Plan for alternate staffing based on your assessment.
  - Identify critical job functions and plan now for coverage of those functions in case of prolonged absenteeism during a pandemic.
  - Establish policies for employees to possibly work flexible work hours and schedules (e.g., staggered shifts) to accommodate their childcare needs.
- Encourage your employees who have children to make their own plans to care for children if officials recommend dismissal of students from schools and closure of childcare programs. Advise that employees plan for an extended period (up to 12 weeks) in case the pandemic is severe. Instruct employees not to bring their children to the workplace if childcare cannot be arranged.
- In a severe pandemic, parents would be advised to protect their children by reducing out-of-school social contacts and mixing with other children. Although limiting all outside contact may not be feasible, families may be able to develop support systems with co-workers, friends, families, or neighbors if they continue to need childcare. For example, they could prepare a plan in which two to three families work together to supervise and provide care for a small group of infants and young children while their parents are at work (studies suggest that childcare group size of less than six children may be associated with fewer respiratory infections).<sup>2</sup>

- Determine if schools must, may, or cannot compensate, continue benefits, and extend leave to employees who are not working during the pandemic. Inform employees of the decision.
- Work with your State legislatures if modifications to State laws are needed for flexibilities regarding, for example, requirements for the number of instruction days, amount of instruction time, and length of the school day.
- Work with State and local governments and faith-based and community-based organizations to provide any needed assistance to staff who cannot report to work for a prolonged period.

#### 4. Plan for dismissal of students

- Develop a plan for continuity of instruction
- Inform teachers, students and parents how alternate learning opportunities will be provided.
  - This may include assignments by radio, television, regular mail, e-mail, telephone, and teleconferencing or through the media
  - Consider potential restructuring of the school calendar
- Provide school nurses, counselors, school psychologists, special-needs teachers, and social workers guidance on maintaining needed health, counseling, and social services for students with physical and mental/emotional healthcare needs.
- Identify and inform parents on how students who need free meals may qualify for other types of nutrition assistance in the community.
- Provide systematic emergency communications to school staff and families during the pandemic, using a telephone calling tree, an e-mail alert, call-in voice recording, or regular mail to communicate.

#### 5. Plan for workplace and community social distancing measures

- Become familiar with social distancing actions that may be used during a pandemic to modify frequency and type of person-to-person contact (e.g., reducing hand-shaking, limiting face-to-face meetings, promoting teleworking, liberal/unscheduled leave policies, and staggered shifts).
- Plan to operate the workplace using social distancing and other measures to minimize close contact between employees.
- Review and implement guidance from the Occupational Safety and Health Administration (OSHA) on appropriate work practices and precautions to protect employees from occupational exposure to influenza virus during a pandemic. Risks of occupational exposure to influenza virus depends in part on whether jobs require close proximity to people who may be infectious with the pandemic influenza virus or whether employees are required to have either repeated or extended contact with the general public. OSHA will post and periodically update such guidance on [www.pandemicflu.gov](http://www.pandemicflu.gov).
- Encourage good hygiene at the workplace. Provide students, faculty, and staff with information about the importance of hand hygiene (information can be found at [www.cdc.gov/cleanhands/](http://www.cdc.gov/cleanhands/)) as well as convenient access to soap and water and alcohol-based hand gel in your facility. Educate employees and students about covering their cough to prevent the spread of germs (see [www.cdc.gov/flu/protect/covercough.htm](http://www.cdc.gov/flu/protect/covercough.htm)).
- Promote social distancing of children and teens outside the school setting by advising they reduce their social interaction and contacts to the greatest extent possible. This may include cancelling after-school and extracurricular group activities.

## 6. Communicate with faculty, staff, students, and parents/families

- Make sure your school’s pandemic plan is explained and understood by faculty, staff, and parents in advance of a pandemic, including expected roles/actions for employees and others during implementation.
- Provide information to school staff and parents/families on what they can do to prepare themselves and their families for the pandemic. Resources are available at [www.pandemicflu.gov/plan/individual/checklist.html](http://www.pandemicflu.gov/plan/individual/checklist.html) and [www.ready.gov/america/index.html](http://www.ready.gov/america/index.html).
  - Be prepared to provide parents/families with information discussing student dismissal from school and the importance of keeping students from congregating with other students in out-of-school settings.
- Provide staff with information on the school district’s plan for
  - Assuring that essential central office functions, including payroll, and communications with staff, students, and families will continue.
  - Adapting school facilities to supplement healthcare delivery if needed by local public health officials.
  - Encouraging school nurses, counselors, school psychologists, and social workers to establish supportive long-distance relationships with particularly vulnerable students via the phone, e-mail, or regular mail.
- Coordinate strategies with other districts in your region.

## 7. Help your community

- Coordinate your pandemic plans and actions with local health and community planning.

- Find volunteers in your school who want to help people in need, such as elderly neighbors, single parents of small children, or people without the resources to get the medical or other help they will need.
- Think of ways your school can help others in your community to plan for a pandemic.
- Participate in community-wide exercises to enhance pandemic preparedness.

## 8. Recovery

- Establish the criteria and procedure with State and local planning teams for resuming school activities.
- Develop communication for advising employees, students, and families of the resumption of school programs and activities.
- Develop the procedures, activities, and services needed to restore the learning environment.

## References:

- <sup>1</sup> American Academy of Pediatrics. Children in Out-of-Home Child Care: Classification of Care Service. In: Pickering LK, ed. Red Book: 2003 Report of the Committee on Infectious Diseases. 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003:124.
- <sup>2</sup> Bradley RH. Child care and common communicable illnesses in children aged 37 to 54 months. Arch Pediatr Adolesc Med. 2003 Feb;157(2):196-200.

## Appendix 7 - Pandemic Influenza Community Mitigation Interim Planning Guide for Colleges and Universities

### Purpose

This Interim Planning Guide for Colleges and Universities is provided as a supplement to the *Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—Early, Targeted, Layered Use of Nonpharmaceutical Interventions*. The guide is intended to assist in pre-pandemic planning. Individuals and families, employers, schools, and other organizations will be asked to take certain steps (described below) to help limit the spread of a pandemic, mitigate disease and death, lessen the impact on the economy, and maintain societal functioning. This guidance is based upon the best available current data and will be updated as new information becomes available. During the planning process, Federal, State, local, tribal, and territorial officials should review the laws, regulations, and policies that relate to these recommendations, and they should include stakeholders in the planning process and resolution of issues.

Colleges and universities will be essential partners in protecting the public's health and safety when an influenza pandemic occurs. This *Pandemic Influenza Community Mitigation Interim Planning Guide for Colleges and Universities* provides guidance to post-secondary institutions, describing how they should prepare for an influenza pandemic. At the onset of an influenza pandemic, public health officials will determine the severity of the pandemic and recommend actions to protect the community's health. People who become severely ill may need to be cared for in a hospital. However,

most people with influenza will be safely cared for at home.

Community mitigation recommendations will be based on the severity of the pandemic and may include the following:

1. Asking ill people to voluntarily remain at home and not go to work or out in the community for about 7-10 days or until they are well and can no longer spread the infection to others (ill individuals will be treated with influenza antiviral medications, as appropriate, if these medications are effective and available).
2. Asking members of households with a person who is ill to voluntarily remain at home for about 7 days (household members may be provided with antiviral medications, if these medications are effective and sufficient in quantity and feasible mechanisms for their distribution have been developed).
3. Dismissing students from schools (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs for up to 12 weeks, coupled with protecting children and teenagers through social distancing in the community to include reductions of out-of-school social contacts and community mixing. Childcare programs discussed in this guidance include centers or facilities that provide care to any number of children in a nonresidential setting, large family childcare homes that provide care for seven or more children in the home of the provider and small family childcare homes that provide care to six or fewer children in the home of the provider.<sup>1</sup>

4. Recommending social distancing of adults in the community, which may include cancellation of large public gatherings; changing workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services; and ensuring work-leave policies to align incentives and facilitate adherence with the measures outlined above.

Recommendations for dismissing students from college and university classes will depend upon the severity of the pandemic. The current three-tiered planning approach includes 1) no dismissals in a Category 1 pandemic, 2) short-term (up to 4 weeks) dismissal from classes in a Category 2 or Category 3 pandemic, and 3) prolonged (up to 12 weeks) dismissal from classes in a severe influenza pandemic (Category 4 or Category 5).

Dismissing students for up to 12 weeks will have educational implications. Planning now for a prolonged period of student dismissal will help colleges and universities to plan for alternate ways to provide continued instruction and services for students and staff. Even if students are dismissed from classes, the college/university facility may remain open during a pandemic and may continue to provide services to students who must remain on campus and provide lessons and other services to off-campus students via Internet or other technologies. Some students, particularly international students, may not be able to rapidly relocate during a pandemic and may need to remain on campus for some period. They would continue to need essential services from the college/university during that time.

Continued instruction is not only important for maintaining learning but also serves as a strategy to reduce boredom and engage students in a constructive activity while group classes are cancelled. Planning now for a severe pandemic will help assure that your college or university is prepared to implement these community recommendations. These preparedness efforts

will be beneficial to your school, staff, students, and the community, regardless of the severity of the pandemic. Be prepared to activate the university's crisis management plan for pandemic influenza, which links the university's incident command system with the local and/or State health department/emergency management system's incident command system(s).

The *Pandemic Flu Planning Checklist for Colleges and Universities* describes approaches to school planning for a pandemic and can be found at [www.pandemicflu.gov/plan/school/index.html](http://www.pandemicflu.gov/plan/school/index.html) and [www.ed.gov/admins/lead/safety/emergencyplan/pandemic/planning-guide/index.html](http://www.ed.gov/admins/lead/safety/emergencyplan/pandemic/planning-guide/index.html). Recommendations for implementation of pandemic mitigation strategies are available at [www.pandemicflu.gov](http://www.pandemicflu.gov), and reliable, accurate, and timely information on the status and severity of a pandemic will also be posted on this site. Additional information is available from the Centers for Disease Control and Prevention (CDC) Hotline: 1-800-CDC-INFO (1-800-232-4636). This line is available in English and Spanish, 24 hours a day, 7 days a week. TTY: 1-888-232-6348. Questions can be e-mailed to [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov).

## Recommendations for Planning

### 1. Plan for ill individuals to remain at home

- Develop a plan for faculty and staff absences due to personal illness. Plan for alternative staffing.
  - Identify critical job functions and plan for alternate coverage of those functions during a pandemic.
  - Review and analyze Federal and State employment laws that identify employer obligations and options for personnel.
- Establish and clearly communicate policies on sick leave and employee compensation.
- Encourage ill persons to stay home during a pandemic and establish return-to-work policies after illness.
- Establish policies for sick-leave absences

unique to a pandemic (e.g., liberal/unscheduled leave).

- Develop policies on observation for illness and what to do when a student or staff member becomes ill at the college/university.
- Advise employees to look for information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 2. Plan for all household members of a person who is ill to voluntarily remain at home

- Develop a plan for faculty and staff absences related to family member illness. Plan for alternate staffing.
  - Identify critical job functions and plan now for coverage of those functions.
  - Establish policies for alternate or flexible worksite (e.g., videoconferencing and teleworking) and flexible work hours.
  - Review Federal and State employment laws that identify your employer obligations and options for employees.
- Establish and clearly communicate policies on family leave and employee compensation.
- Establish policies for sick-leave absences unique to a pandemic (e.g., liberal/unscheduled leave).
- Establish policies for employees who have to stay home because someone in their household is ill with pandemic influenza.
- Be familiar with Federal and State laws regarding leave of workers who need to care for an ill family member or voluntarily remain at home.
- Advise employees to look for information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 3. Plan for dismissal of students and childcare closure for employees

- Identify and plan for employees and staff who may have to stay home if schools and childcare programs dismiss students/children

during a severe pandemic.

- Plan for alternate staffing based on your assessment.
  - Identify critical job functions and plan for coverage of those functions in case of prolonged absenteeism during a pandemic.
  - Establish flexible work policies for employees, such as flexible work hours and schedules (e.g., staggered shifts) to accommodate childcare needs.
- Encourage your employees who have children to make their own plans to care for children if officials recommend dismissal of students from schools and closure of childcare programs. Advise that employees plan for an extended period (up to 12 weeks) in case the pandemic is severe. Instruct employees not to bring their children to the workplace if childcare cannot be arranged.
- In a severe pandemic, parents will be advised to protect their children by reducing out-of-school social contacts and mixing with other children. Although limiting all outside contact may not be feasible, families may be able to develop support systems with co-workers, friends, families, or neighbors, if they continue to need childcare. For example, they could prepare a plan in which two to three families work together to supervise and provide care for a small group of infants and young children while their parents are at work (studies suggest that childcare group size of less than six children may be associated with fewer respiratory infections).<sup>2</sup>
- Determine if schools must, may, or cannot compensate, continue benefits to and extend leave to employees who are not working during the pandemic. Inform employees of the decision.
- Coordinate with State and local government and faith-based and community-based organizations to assist staff that are not able to work for a prolonged period.

#### 4. Plan for dismissal of students

- Inform students about plans and procedures for providing and completing course work.
- Provide guidance to students and faculty on continuing student instruction. Such guidance may include
  - Assessing the possibility of altering course-work requirements.
  - Providing ongoing assignments by regular mail, e-mail, Internet links, telephone, teleconferencing, or calling into a recorded message at the university
  - Gathering information in advance that would identify students' mailing addresses, telephone/cell numbers, and e-mail addresses
- Encouraging faculty who teach the same subject to share in the development of distance-learning instructional materials for their students.
- Providing information on accessing university healthcare staff (e.g., nurses, nurse practitioners, physicians, physician assistants, counselors, and psychologists) who could be recommended as consultation resources for students with physical and mental/emotional healthcare needs.
- Develop a plan for accommodating students, especially international students, who remain on campus during an influenza pandemic.
- Review and implement guidance from the Occupational Safety and Health Administration (OSHA) on appropriate work practices and precautions to protect employees from occupational exposure to influenza virus during a pandemic. Risks of occupational exposure to influenza virus depends in part on whether or not jobs require close proximity to people who may be infectious with the pandemic influenza virus or whether employees are required to have either repeated or extended contact with the public. OSHA will post and periodically update such guidance on [www.pandemicflu.gov](http://www.pandemicflu.gov).

#### 5. Plan for workplace and community social distancing measures

- Learn about social distancing methods that may be used during a pandemic to limit person-to-person contact during a pandemic and reduce the spread of disease (e.g., reducing hand-shaking, limiting face-to-face meetings and shared workstations, work from home policies, staggered shifts).
- Use social distancing measures to minimize close contact at your college/university. Determine how your facility could be rearranged to allow more distance between people during a pandemic.
- Develop plans for alternatives to mass gatherings. Examples could range, for example, from video messages on the Internet to e-mailed messages, mailed newsletters, pre-recorded messages on a designated call-in phone number.
- Encourage good hygiene at the workplace. Provide faculty, staff, and students with information about the importance of hand hygiene (information can be found at [www.cdc.gov/cleanhands/](http://www.cdc.gov/cleanhands/)) as well as convenient access to soap and water and alcohol-based hand gel in your facility. Educate faculty, staff, and students about covering their cough to prevent the spread of germs (see [www.cdc.gov/flu/protect/covercough.htm](http://www.cdc.gov/flu/protect/covercough.htm)).

#### 6. Communicate with faculty, staff, students, and parents/families

- Provide faculty, staff, and parents with information on the college/university's pandemic preparedness plan in advance of a pandemic. This communication should include
  - Identifying expected roles/actions for faculty, staff, students, and other stakeholders during implementation
  - Assuring that essential central office functions, including payroll, and communications with staff, students and families will continue

- Identifying how the college/university's physical facilities may be used for other purposes during a pandemic
- Develop a plan to inform parents/families that students may be dismissed during a Category 4-5 pandemic.
  - Encourage them to plan for that contingency, including plans for relocating students to home or elsewhere
  - Inform them of school procedures and policies regarding tuition, fees, and contractual obligations
- Provide systematic emergency communications to faculty, staff, and students (both on and off campus) during the pandemic by using multiple methods (e.g., a telephone calling tree, an e-mail alert, or call-in voice recording) to communicate pandemic status in the community and status of classes and other university activities.
- Be prepared to provide parents/families with information discussing
  - How dismissal of students will be announced
  - Why students will be dismissed from classes and the importance of keeping students from congregating with others in the community
  - How alternate instruction will be provided
- Be prepared to provide students who soon will be leaving for home with information discussing
  - Why students are being dismissed from classes and the importance of keeping students from congregating with other students in the community. Students should understand
    - Differences between seasonal and pandemic influenza
    - How influenza is spread
    - What individuals can do help prevent the spread of influenza
- Remind students who live in residence halls to take their books and other personal items with them on the last day of classes, if

indicated.

- Provide information to university faculty, staff, and parents/families on what they can do to prepare their families for the pandemic. Resources are available at [www.pandemicflu.gov/plan/individual/checklist.html](http://www.pandemicflu.gov/plan/individual/checklist.html) and [www.ready.gov/america/index.html](http://www.ready.gov/america/index.html).
- Recommend that faculty, staff, students and their families seek further information about the pandemic through resources, including key Federal, State, and local public health that provide regular updates on the status of the pandemic. For reliable, accurate, and timely information about pandemic flu, see [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 7. Help your community

- Coordinate your pandemic plans and actions with local health planning.
- Find volunteers in your college/university who want to help people in need, such as elderly neighbors, single parents of small children, or people without the resources to get the medical or other help they will need.
- Think of ways your institution can reach out to others in your community to help them plan for a pandemic.
- Participate in community-wide exercises to enhance pandemic preparedness.

## 8. Recovery

- Establish with State and local planning teams the criteria and procedures for resuming college/university activities.
- Develop communication for advising employees and students and families of the resumption of school programs and activities.
- Develop the procedures, activities, and services needed to restore the learning environment.

## References:

<sup>1</sup> American Academy of Pediatrics. Children in Out-of-Home Child Care: Classification of Care Service. In: Pickering LK, ed. Red Book: 2003

Report of the Committee on Infectious Diseases. 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003:124.

<sup>2</sup> Bradley RH. Child care and common communicable illnesses in children aged 37 to 54 months. Arch Pediatr Adolesc Med. 2003 Feb;157(2):196-200.

## Appendix 8 - Pandemic Influenza Community Mitigation Interim Planning Guide for Faith-Based and Community Organizations

### Purpose

This Interim Planning Guide for Faith-based and Community Organizations is provided as a supplement to the *Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—Early, Targeted, Layered Use of Nonpharmaceutical Interventions*. The guide is intended to assist in pre-pandemic planning. Individuals and families, employers, schools, and faith-based and community organizations will be asked to take certain steps (described below) to help limit the spread of a pandemic, mitigate disease and death, lessen the impact on the economy, and maintain societal functioning. This guidance is based upon the best available current data and will be updated as new information becomes available. During the planning process, Federal, State, local, tribal, and territorial officials should review the laws, regulations, and policies that relate to these recommendations, and they should include stakeholders in the planning process and resolution of issues.

Faith-based and community organizations (FBCOs) will be essential partners in protecting the public's health and safety when an influenza pandemic occurs. This *Pandemic Influenza Community Mitigation Interim Planning Guide for Faith-Based and Community Organizations* provides guidance for religious organizations (including, for example, places of worship—churches, synagogues, mosques, and temples—and faith-based social service providers), social service agencies, and community organizations in preparing for and responding to an influenza

pandemic. When an influenza pandemic starts, public health officials will determine the severity of the pandemic and recommend actions to protect the community's health. People who become severely ill may need to be cared for in a hospital. However, most people with influenza will be safely cared for at home.

Community mitigation recommendations will be based on the severity of the pandemic and may include the following:

1. Asking ill people to voluntarily remain at home and not go to work or out in the community for about 7-10 days or until they are well and can no longer spread the infection to others (ill individuals will be treated with influenza antiviral medications, as appropriate, if these medications are effective and available).
2. Asking members of households with a person who is ill to voluntarily remain at home for about 7 days (household members may be provided with antiviral medications, if these medications are effective and sufficient in quantity and feasible mechanisms for their distribution have been developed).
3. Dismissing students from schools (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs for up to 12 weeks, coupled with protecting children and teenagers through social distancing in the community to include reductions of out-of-school social contacts and community mixing. Childcare programs discussed in this guidance include

centers or facilities that provide care to any number of children in a nonresidential setting, large family childcare homes that provide care for seven or more children in the home of the provider and small family childcare homes that provide care to six or fewer children in the home of the provider.<sup>1</sup>

4. Recommending social distancing of adults in the community, which may include cancellation of large public gatherings; changing workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services; and ensuring work-leave policies to align incentives and facilitate adherence with the measures outlined above.

Planning now for a severe pandemic will help assure that your organization is prepared to implement these community recommendations. These preparedness efforts will be beneficial to your organization, volunteer and paid staff, and community, regardless of the severity of the pandemic. The *Faith-Based & Community Organizations Pandemic Influenza Preparedness Checklist* (available at [www.pandemicflu.gov/plan/community/faithcomchecklist.html](http://www.pandemicflu.gov/plan/community/faithcomchecklist.html)) provides an approach to pandemic planning by FBCOs. In addition, recommendations for implementation of pandemic mitigation strategies are available at [www.pandemicflu.gov](http://www.pandemicflu.gov). Reliable, accurate, and timely information on the status and severity of the pandemic also will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov). Additional information is available from the Centers for Disease Control and Prevention (CDC) Hotline: 1-800-CDC-INFO (1-800-232-4636). This line is available in English and Spanish, 24 hours a day, 7 days a week. TTY: 1-888-232-6348. Questions can be e-mailed to [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov).

## Recommendations for Planning

### 1. Plan for ill individuals to remain at home

- Plan for employee and volunteer staff absences during a pandemic due to personal illness.
  - Identify critical job functions and plan how to temporarily suspend non-critical activities, cross-train staff to cover critical functions, and cover the most critical functions with fewer staff.
  - Identify employees, volunteers, and members or clients that live alone or might need extra assistance if they need to stay home because they are ill.
  - Review Federal and State employment laws that identify your employer obligations and options for employees.
- Establish and clearly communicate policies on sick leave and employee compensation.
- Encourage ill persons to stay home during a pandemic and establish return to work policies after illness.
- Encourage leadership to model staying at home when ill as well as the use of proper cough and sneeze etiquette and hand hygiene.
- Where appropriate, align public health messages and recommendations with your organization's values and beliefs. For example, develop a culture that recognizes the positive behaviors of voluntarily staying home when ill to get well and avoid spreading infection to others.
- Develop policies on what to do when a person becomes ill at the workplace.
- Advise employees, volunteers, and members or clients to look for information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

### 2. Plan for all household members of a person who is ill to voluntarily remain at home

- Plan for employee and volunteer staff absences during a pandemic related to family member illness.

- Identify critical job functions and plan how to temporarily suspend non-critical activities, cross-train staff to cover critical functions, and cover the most critical functions with fewer staff.
- Establish policies for alternate or flexible worksite (e.g., work via the Internet, e-mail, mailed or phone work assignments) and flexible work hours.
- Establish and clearly communicate policies on family leave and employee compensation, especially Federal laws and laws in your State regarding leave of workers who need to care for an ill family member or voluntarily remain at home.
- Establish and clearly communicate policies for volunteers to ensure that critical functions are covered.
- Advise staff and members to look for information on taking care of ill people at home. Such information will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).

### 3. Plan for dismissal of students and childcare closure

- Find out how many employee and volunteer staff may have to stay at home to care for children if schools and childcare programs dismiss students.
  - Identify critical job functions and plan for temporarily suspending non-critical activities and cross-training staff to cover critical functions with fewer staff.
  - Establish policies for staff with children to work from home, if possible, and consider flexible work hours and schedules (e.g., staggered shifts).
- Encourage staff with children to make plans for what they will do if officials recommend dismissal of students from schools and closure of childcare programs. Instruct staff and volunteers not to bring their children to the workplace if childcare cannot be arranged.
- In a severe pandemic, parents will be advised to protect their children by reducing out-

of-school social contacts and mixing with other children. Although limiting all outside contact may not be feasible, parents may be able to develop support systems with co-workers, friends, families, or neighbors, if they continue to need childcare. For example, they could prepare a plan in which two to three families work together to supervise and provide care for a small group of infants and young children while their parents are at work (studies suggest that childcare group size of less than six children may be associated with fewer respiratory infections).<sup>2</sup>

- Help your staff explore about benefits they may be eligible for if they have to stay home to mind children for a prolonged period during a pandemic.

### 4. Prepare your organization

- Consider potential financial deficits due to emergencies when planning budgets. This is useful for pandemic planning and many other unforeseen emergencies, such as fires and natural disasters.
- Many FBCOs rely on community-giving to support their activities. Develop strategies that will allow people to continue to make donations and contributions via the postal service, the Internet, or other means if they are at home for an extended period.
- Develop a way to communicate with your employee and volunteer staff during an emergency to provide information and updates.
- Meet with other FBCOs to develop collaborative efforts to keep your organizations running, such as large organizations collaborating with small ones or several small organizations working together.

## 5. Plan for workplace and community social distancing measures

- Learn about social distancing methods that may be used during a pandemic to limit person-to-person contact during a pandemic and reduce the spread of disease (e.g., reducing hand-shaking, limiting face-to-face meetings and shared workstations, work from home policies, staggered shifts).
- Use social distancing measures to minimize close contact at your facility. Determine how your facility could be rearranged to allow more distance between people during a pandemic.
- Develop plans for alternatives to mass gatherings. Examples could range from video messages on the Internet to e-mailed messages, mailed newsletters, pre-recorded messages from trusted leaders on a designated call-in phone number, and daily teaching guides from trusted leaders.
- Encourage good hygiene at the workplace. Provide staff, volunteers, and members with information about the importance of hand hygiene (information can be found at [www.cdc.gov/cleanhands/](http://www.cdc.gov/cleanhands/)) as well as convenient access to soap and water and alcohol-based hand gel in your facility. Educate employees about covering their cough to prevent the spread of germs (see [www.cdc.gov/flu/protect/covercough.htm](http://www.cdc.gov/flu/protect/covercough.htm)).
- Identify activities, rituals, and traditions, such as hand shaking, hugging, and other close-proximity forms of greeting that may need to be temporarily suspended or modified during a pandemic.
- Review and implement guidance from the Occupational Safety and Health Administration (OSHA) to adopt appropriate work practices and precautions to protect employees from occupational exposure to influenza virus during a pandemic. Risks of occupational exposure to influenza virus depends in part on whether or not jobs require close proximity to people potentially

infected with the pandemic influenza virus or whether they are required to have either repeated or extended contact with the general public. OSHA will post and periodically update such guidance on [www.pandemicflu.gov](http://www.pandemicflu.gov).

## 6. Communicate with your employee and volunteer staff and members

- Share your organization's pandemic plan, including expected roles/actions for employee and volunteer staff and members during implementation.
- Suggest that all employee, volunteers, and members or clients prepare for a pandemic. Resources are available at [www.pandemicflu.gov/plan/individual/checklist.html](http://www.pandemicflu.gov/plan/individual/checklist.html) and [www.ready.gov/america/index.html](http://www.ready.gov/america/index.html). For example, individuals and families should have a reserve supply of food and water. People with more resources might consider obtaining enough supplies to support 1-2 other families in an emergency.
- Ensure that your organization has up-to-date contact information for employees, volunteers, and members or clients, including names of family members, addresses, home, work, and cell phone numbers, e-mail addresses, and emergency contacts.

## 7. Help your Community

- Identify people who are vulnerable and may need assistance in your community (i.e., elderly people who live alone, persons with disabilities, people with limited skill in speaking English, low-income families, children, or teens who may lack supervision). Designate people from your organization to be responsible to check on specific vulnerable people or families.
- Determine ways your facility might be used during a pandemic, such as a temporary care facility or a central distribution site for providing meals, supplies, or medicine to those who cannot obtain them.

- Identify and meet with local emergency responders, health departments, and healthcare organizations to learn about their planning and educate them about your organization's planning.
- Suggest that each household maintain a current list of emergency contacts in your community.
- Meet with other FBCOs to develop collaborative efforts to care for those in need, such as large organizations partnering with small ones or several small organizations working together.
- Identify employee and volunteer staff in advance who would be willing to help others in need during a pandemic and help them to receive training through the local health department, emergency services, or other resources.
- Designate an experienced person who can take calls and organize individuals who call spontaneously to volunteer during an emergency to facilitate the best use of their particular skills and experience.
- Develop or identify an existing mental health or counseling hotline that people in the community can call during a pandemic or other emergency.
- Participate in community-wide exercises to enhance pandemic preparedness.

<sup>2</sup>Bradley RH. Child care and common communicable illnesses in children aged 37 to 54 months. *Arch Pediatr Adolesc Med.* 2003 Feb;157(2):196-200.

## 8. Recovery

- Assess which criteria would need to be met to resume normal operations.
- Plan for the continued need for medical, mental health, and social services after a pandemic.

## References:

<sup>1</sup> American Academy of Pediatrics. Children in Out-of-Home Child Care: Classification of Care Service. In: Pickering LK, ed. *Red Book: 2003 Report of the Committee on Infectious Diseases.* 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003:124.

## Appendix 9 - Pandemic Influenza Community Mitigation Interim Planning Guide for Individuals and Families

### Purpose

This Interim Planning Guide for Individuals and Families is provided as a supplement to the *Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—Early, Targeted, Layered Use of Nonpharmaceutical Interventions*. The guide is intended to assist in pre-pandemic planning. Individuals and families, employers, schools, and other organizations will be asked to take certain steps (described below) to help limit the spread of a pandemic, mitigate disease and death, lessen the impact on the economy, and maintain societal functioning. This guidance is based upon the best available current data and will be updated as new information becomes available. During the planning process, Federal, State, local, tribal, and territorial officials should review the laws, regulations, and policies that relate to these recommendations, and they should include stakeholders in the planning process and resolution of issues.

Individuals and families will have an essential role in protecting themselves and the public's health and safety when an influenza pandemic occurs. This *Pandemic Influenza Community Mitigation Interim Planning Guide for Individuals and Families* provides guidance describing how individuals and families might prepare for and respond to an influenza pandemic. At the onset of an influenza pandemic, public health officials will determine the severity of the pandemic and recommend actions to protect the community's health. People who become severely ill may need to be cared for in a hospital. However, most people

with influenza will be safely cared for at home.

Community mitigation recommendations will be based on the severity of the pandemic and may include the following:

1. Asking ill people to voluntarily remain at home and not go to work or out in the community for about 7-10 days or until they are well and can no longer spread the infection to others (ill individuals will be treated with influenza antiviral medications, as appropriate, if these medications are effective and available).
2. Asking members of households with a person who is ill to voluntarily remain at home for about 7 days (household members may be provided with antiviral medications, if these medications are effective and sufficient in quantity and feasible mechanisms for their distribution have been developed).
3. Dismissing students from schools (including public and private schools as well as colleges and universities) and school-based activities and closure of childcare programs for up to 12 weeks, coupled with protecting children and teenagers through social distancing in the community to include reductions of out-of-school social contacts and community mixing. Childcare programs discussed in this guidance include centers or facilities that provide care to any number of children in a nonresidential setting, large family childcare homes that provide care for seven or more children in the home of the provider and small family childcare homes that provide care to six or fewer children in the home of the provider.<sup>1</sup>

4. Recommending social distancing of adults in the community, which may include cancellation of large public gatherings; changing workplace environments and schedules to decrease social density and preserve a healthy workplace to the greatest extent possible without disrupting essential services; and ensuring work-leave policies to align incentives and facilitate adherence with the measures outlined above.

Planning now for a severe pandemic will assist you and your family as you prepare for interventions that might be recommended. Resources are available at [www.pandemicflu.gov/plan/individual/checklist.html](http://www.pandemicflu.gov/plan/individual/checklist.html) and [www.ready.gov/america/index.html](http://www.ready.gov/america/index.html). In addition, reliable, accurate, and timely information on the status and severity of a pandemic and recommendations for implementation of pandemic mitigation strategies is available at [www.pandemicflu.gov](http://www.pandemicflu.gov). Additional information is available from the Centers for Disease Control and Prevention (CDC) Hotline: 1-800-CDC-INFO (1-800-232-4636). This line is available in English and Spanish, 24 hours a day, 7 days a week. TTY: 1-888-232-6348. Questions can be e-mailed to [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov).

## Recommendations for Planning

### 1. Plan for ill individuals to remain at home

- Be prepared to stay at home if you are ill with pandemic influenza. Information on taking care of ill people at home will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).
  - It will be important to have extra supplies on hand during a pandemic, as you may not be able to get to a store or stores may be out of supplies. You should have a reserve of at least a two-week supply of water and food; however, if the pandemic is severe, community disruption may last for a longer period. If community water supplies are not suitable for consumption during a pandemic, your local water utility or public health authorities will notify the community.
  - Periodically check your regular prescription drugs to ensure a continuous supply in your home.
  - Have any nonprescription drugs and other health supplies on hand, including a thermometer, pain relievers, stomach remedies, cough and cold medicines, and other over-the-counter medicines that you and your family use on a regular basis.
  - Designate one person in the household who could be the caregiver if anyone in the household becomes ill with pandemic influenza. Develop an alternate plan for someone to be the caregiver if that person becomes sick.
  - Talk with neighbors, friends, and family about your plans for staying at home if you or someone in your household is ill. Share ideas.
  - Ensure that each household has a current list of emergency contacts in your community, including mental health and counseling resources.

### 2. Plan for all household members of a person who is ill to voluntarily remain at home

- Be prepared to stay at home if someone in your household is ill. Information on taking care of ill people at home will be posted on [www.pandemicflu.gov](http://www.pandemicflu.gov).
  - Have any nonprescription drugs and other health supplies on hand, including a thermometer, pain relievers, stomach remedies, cough and cold medicines, and other over-the-counter medicines that you and your family use on a regular basis.
  - Talk with family members and members of your household about how they would be cared for if they become ill and about what will be needed to care for them in your or their home.
  - Designate one person in the household who could be the caregiver if anyone in the household becomes ill with pandemic flu. Make plans for a backup if that person gets ill.

- Consider how to care for people in your household with special needs in case the services they rely on are not available.
- Talk with neighbors, friends, and family about your plans for staying at home if someone in your household is ill. Share ideas.
- Ensure that each household has a current list of emergency contacts in your community, including mental health and counseling resources.

### 3. Plan for dismissal of students and childcare closure

- If you have children in your household, make plans for their care if officials recommend dismissal of students from schools and closure of childcare programs.
  - Plan and arrange now for who will care for children if schools and childcare programs dismiss students and children during a pandemic. Plan for an extended period (up to 12 weeks) in case the pandemic is severe.
  - Do not plan to bring children to the workplace if childcare cannot be arranged.
  - If you have children in a college or university, have a plan for the student to relocate or return home, if desired, or if the college/university dismisses students, at the onset of a Category 4-5 pandemic.
  - Plan home-learning activities and exercises. Have materials, such as books, on hand.
  - Public health officials will likely recommend that children and teenagers do not gather in groups in the community during a pandemic. Plan recreational activities that your children can do at home.
  - Find out now about the plans at your child's school or childcare facility during a pandemic.
- In a severe pandemic, parents will be advised to protect their children by reducing out-of-school social contacts and mixing with

other children. Although limiting all outside contact may not be feasible, parents may be able to develop support systems with co-workers, friends, families, or neighbors, if they continue to need childcare. For example, they could prepare a plan in which two to three families work together to supervise and provide care for a small group of infants and young children while their parents are at work (studies suggest that childcare group size of less than six children may be associated with fewer respiratory infections).<sup>2</sup>

### 4. Plan for workplace and community social distancing measures

- Become familiar with social distancing actions that may be used during a pandemic to modify frequency and type of person-to-person contact (e.g., reducing hand-shaking, limiting face-to-face meetings, promoting teleworking, liberal/unscheduled leave policies, and staggered shifts).
- Talk to your employer
  - Talk to your employer about the pandemic influenza plan for your workplace to include issues about benefits, leave, telework, and other possible policies to go into effect during a pandemic.
  - Ask your employer about how your employer will continue during a pandemic if key staff cannot come to work.
  - Plan for the possible reduction or loss of income if you are unable to work or your place of employment is closed. Consider maintaining a cash reserve.
  - Check with your employer or union about leave policies for workers who are ill, live in a household with someone ill with pandemic influenza, or have to take off work to take care of children.
  - Find out if you can work from home.
  - Discuss alternative ways of holding meetings at work, including, for example, teleconferences, during a pandemic.
  - Find out how you will receive information from your employer during a pandemic.

- Prepare backup plans in case public gatherings, such as community events and meetings and worship services, are cancelled.
  - Talk with others in your community about other ways of communicating during a pandemic if public gatherings are cancelled
  - Plan for recreational activities that you and your household members can do at home if community gatherings are cancelled during a pandemic.
  - Discuss with your faith-based organization or place of worship their plans for communicating with members during a pandemic.

## 5. Help others

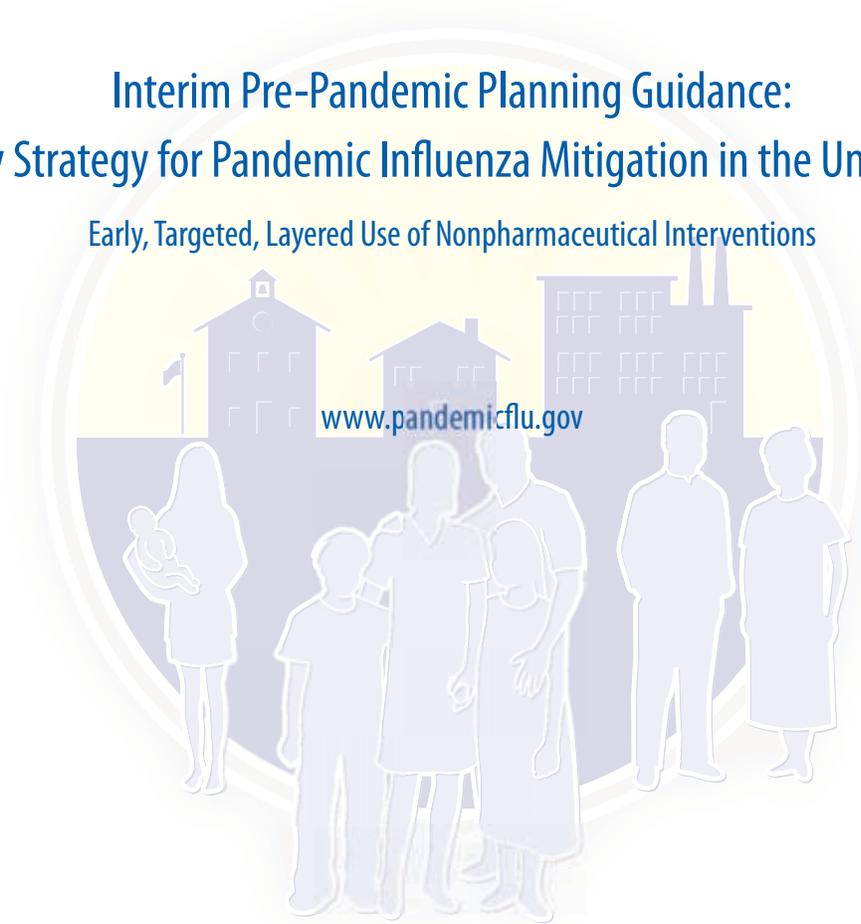
- Prepare backup plans for taking care of loved ones who are far away.
- Find volunteers who want to help people in need, such as elderly neighbors, single parents of small children, or people without the resources to get the medical help they will need.
- Think of ways you can reach out to others in your neighborhood or community to help them plan for and respond to a pandemic.

## References:

<sup>1</sup>American Academy of Pediatrics. Children in Out-of-Home Child Care: Classification of Care Service. In: Pickering LK, ed. Red Book: 2003 Report of the Committee on Infectious Diseases. 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2003:124.

<sup>2</sup>Bradley RH. Child care and common communicable illnesses in children aged 37 to 54 months. Arch Pediatr Adolesc Med. 2003 Feb;157(2):196-200.

# Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States— Early, Targeted, Layered Use of Nonpharmaceutical Interventions



**February 2007**



## Appendix 7

### Triggers for Community Containment Interventions

#### WHO Pandemic Sub-Phases and Key Events Requiring Intervention in KY

WHO Phase	Sub-Phase	Key Events
1	1	
2	2	
3	3a	Disease in wild birds in KY.
3	3b	Disease in poultry flocks in KY.
3	3c	Human cases in KY, resulting from exposure outside KY, with very little or no risk of human-to-human spread.
3	3d	Human cases in KY, resulting from exposure in KY, with very little or no risk of human-to-human spread.
4	4a	Disease in wild birds in KY.
4	4b	Disease in poultry flocks in KY.
4	4c	Human cases in KY, resulting from exposure outside KY, with small risk of human-to-human spread.
4	4d	Human cases in KY, resulting from exposure in KY, with small risk of human-to-human spread.
5	5a	Disease in wild birds in KY.
5	5b	Disease in poultry flocks in KY.
5	5c	Human cases in KY, resulting from exposure outside KY, with moderate degree of human-to-human spread.
5	5d	Human cases in KY, resulting from exposure in KY, with moderate degree of human-to-human spread.
6	6a	Human cases with potential for sustained person-to-person spread, scattered cases allowing case-based control measures.
6	6b	Human cases with sustained person-to-person spread, no vaccine available, use of community-based control measures.
6	6c	Human cases with sustained person-to-person spread, no vaccine available, use of community-based control measures plus selective vaccination, then widespread vaccination.
6	6d	First wave of pandemic receding, recovery and alertness for next wave.

Several of these stages have the same description but occur at different periods of the pandemic's development. The events are listed separately because their impact and appropriate responses will need to be different as the pandemic progresses. For example, if influenza is found in wild birds during WHO phase 3 when there is little or no risk of human-to-human spread, the level of concern and response will be much different than in WHO phase 5 when there are large clusters of human-to-human spread.

## Strategy for Conceptual Framework

The strategies utilized at the different stages of the epidemic can be grouped together conceptually:

### 1. Primarily Response to Avian Influenza in Birds

- In Stages 3A, 3B, 4A, 4B, 5A and 5B, the *focus is on control of novel influenza in wild and domestic birds, and prevention of spillover infection from birds to closely exposed people.*

The approach to these situations is primarily presented in the appendix on zoonotic disease, with supporting material in the appendices on laboratory services, occupational health, surveillance and rapid response/containment.

### 2. Case-Based Response to Infection in Humans

- In Stages 3C, 3D, 4C, 4D, 5C, 5D and 6A, the *focus is on case-based control measures* to be led by public health agencies.

### 3. Community-Based Response to Infection in Humans

- In Stage 6B, the *focus is on community-based measures to control or mitigate a pandemic.* This strategy will be *initiated when case-based control measures are no longer feasible* or effective, and/or when an effective vaccine is not yet available.

### 4. Community-Based Response to Infection in Humans, Plus Vaccine

- In Stage 6C, the *focus is on selective and then universal vaccination.* While vaccination efforts are being implemented, the **community-based control measures** from Stage 6B **will have to be continued.**

### 5. Recovery

- In Stage 6D the focus is on recovery, *restoring medical care and public health functions*, and *maintaining surveillance* for a second or subsequent wave of influenza.

### Pandemic Influenza Interventions and Stages

<p>◆ = <b>Alert</b>: Notification of critical systems and personnel of their impending activation</p> <p>◆◆ = <b>Standby</b>: Initiate decision-making processes for imminent activation including mobilization of resources and personnel.</p> <p>◆◆◆ = <b>Activate</b>: Implementation of the activity/intervention</p>	1	2	3a	3b	3c	3d	4a	4b	4c	4d	5a	5b	5c	5d	6a	6b	6c	6d
			Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Scattered human cases	Widespread human cases, no vaccine	Widespread human cases, vaccine	Recovery
Planning	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
Wild bird surveillance		◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆◆	◆			
Domestic poultry surveillance	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆			
Surveillance for human impact	◆◆	◆◆		◆◆	◆◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
Surveillance for human cases			◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆
Laboratory strain surveillance	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
Public health laboratory support for interventions			◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆			◆◆
Surveillance for disease in poultry workers			◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆			
PPE for poultry responders			◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆			
Antiviral prophylaxis for poultry responders			◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆	◆◆◆	◆◆			
Antiviral treatment of hospitalized human cases			◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
Antiviral treatment of all human cases within 24 hours of onset			◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
Prophylactic antiviral treatment of all household ands other close contacts within 24 hours					◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
PPE for healthcare workers (HCW)					◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
Antiviral prophylaxis for all HCW					◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	

### Pandemic Influenza Interventions and Stages

<p>◆ = <b>Alert</b>: Notification of critical systems and personnel of their impending activation</p> <p>◆◆ = <b>Standby</b>: Initiate decision-making processes for imminent activation including mobilization of resources and personnel.</p> <p>◆◆◆ = <b>Activate</b>: Implementation of the activity/intervention</p>	1	2	3a	3b	3c	3d	4a	4b	4c	4d	5a	5b	5c	5d	6a	6b	6c	6d
			Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Scattered human cases	Widespread human cases, no vaccine	Widespread human cases, vaccine	Recovery
Infection control in HCF			◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆
Directed voluntary isolation of cases at home					◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆
Self-isolation of cases						◆◆	◆◆	◆◆	◆◆	◆◆	◆◆◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	
Compulsory isolation of cases by LHD					◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆			
Monitoring of contacts by LHD					◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆				
Directed voluntary quarantine of contacts							◆	◆	◆◆◆	◆◆◆	◆	◆	◆◆◆	◆◆◆	◆◆◆			
Compulsory quarantine of contacts by LHD					◆◆	◆◆	◆	◆	◆◆	◆◆	◆	◆	◆◆	◆◆	◆◆◆			
Self-quarantine of contacts													◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	
Support home management of ill persons out of HCFs and medical offices				◆◆◆	◆◆◆			◆◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
Support the social expectation that persons who become ill with respiratory symptoms will strictly self-isolate at home									◆◆	◆◆	◆	◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆
Support the social expectation that persons who become ill while away from home will take prescribed control measures and proceed directly home or to a healthcare facility								◆	◆	◆◆	◆	◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆

### Pandemic Influenza Interventions and Stages

<p>◆ = <b>Alert</b>: Notification of critical systems and personnel of their impending activation</p> <p>◆◆ = <b>Standby</b>: Initiate decision-making processes for imminent activation including mobilization of resources and personnel.</p> <p>◆◆◆ = <b>Activate</b>: Implementation of the activity/intervention</p>	1	2	3a	3b	3c	3d	4a	4b	4c	4d	5a	5b	5c	5d	6a	6b	6c	6d
			Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Scattered human cases	Widespread human cases, no vaccine	Widespread human cases, vaccine	Recovery
Provide directions for complete self-isolation at home of ill and convalescent cases to reduce transmission to care-givers					◆◆	◆◆	◆	◆	◆◆	◆◆	◆	◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆
Provide community support for persons who are confined to home to reduce breaches of isolation and quarantine					◆◆	◆◆	◆	◆	◆◆	◆◆	◆	◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆
Support organizational policies that support workers and students for staying home while ill, or with an ill family member					◆◆	◆◆	◆	◆	◆◆	◆◆	◆	◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆
Develop practical measures in day-cares, schools, workplaces, colleges, etc. to immediately detect and exclude persons ill with influenza-like illness					◆	◆	◆	◆	◆	◆	◆	◆	◆◆	◆◆	◆◆	◆◆	◆◆	◆◆
Provide ongoing prophylactic antiviral medications for healthcare workers, EMS workers, public health workers, agricultural and veterinary workers and other first responders who are exposed repeatedly					◆	◆	◆	◆	◆	◆	◆	◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆
Assure that appropriate PPE is provided for all whose essential occupations put them at increased risk for exposure and infection (e.g., healthcare workers, public safety workers, teachers, transit drivers, food store workers)					◆◆	◆◆	◆	◆	◆◆	◆◆	◆	◆	◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆



### Pandemic Influenza Interventions and Stages

<p>◆ = <b>Alert</b>: Notification of critical systems and personnel of their impending activation</p> <p>◆◆ = <b>Standby</b>: Initiate decision-making processes for imminent activation including mobilization of resources and personnel.</p> <p>◆◆◆ = <b>Activate</b>: Implementation of the activity/intervention</p>	1	2	3a	3b	3c	3d	4a	4b	4c	4d	5a	5b	5c	5d	6a	6b	6c	6d
			Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Disease in wild birds	Disease in poultry	Imported human cases	Local human cases	Scattered human cases	Widespread human cases, no vaccine	Widespread human cases, vaccine	Recovery
Identify and use volunteers to extend community ability to carry out many essential functions	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆
Identify government services, including DOH services, that can be put on hold so unneeded workers can stay at, or work from home and available workers can focus on essential tasks													◆◆	◆◆	◆◆	◆◆◆	◆◆◆	
Assure enough antiviral medications are available and used only for priority indications					◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆	◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	◆◆◆	

**KENTUCKY INFLUENZA PANDEMIC RESPONSE PLAN  
COMMUNICATIONS SUPPLEMENT VIII**

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## COMMUNICATIONS SUPPLEMENT

### I. RATIONALE/OVERVIEW

Effective and timely communication is critical before, during and after an influenza pandemic. This section provides information about the role of communications and outlines state and local responsibilities that would be used to provide timely, accurate and credible information to staff, the public, the news media, healthcare providers and other groups in responding appropriately to outbreak situations and complying with public health measures.

The pandemic communication strategy is broken down into three periods (interpandemic, pandemic, and postpandemic), corresponding to the phases of pandemic influenza outbreak as outlined by the World Health Organization (WHO). The communication plan will evolve concurrently with the pandemic periods and in conjunction with the Cabinet for Health and Family Services (CHFS) Emergency Communications Plan for public information.

### II. GUIDELINES FOR INTERPANDEMIC PERIOD

#### A. State Responsibilities:

##### 1. Internal Communication:

The Department for Public Health shall communicate with other key agencies and state employees about pandemic influenza activity. The agencies to be notified include, but are not limited to:

- Members of the Pandemic Influenza Planning Committee
- Healthcare agencies (hospitals, long term care facilities, assisted living, etc)
- Other State Agencies (KYEM, KOHS, CJPS, KDA, etc.)
- Local public health jurisdictions
- Other appropriate organizations (*e.g.*, Red Cross, CDC, FDA, KMA, KNA)
- Infection Control Professionals
- Media
- Public health agencies of border states
- State workforce

The Department for Public Health shall utilize any of the following means, by protocol, to conduct such communications:

- Health Alert Network
- Satellite Radio Communications
- E-mail
- Fax
- Land Line Phone
- Mobile Phone Communications
- Web Based Communications
- Interactive Television (ITV)
- Tele Health Network (Proact) and Public Health Network

The Department for Public Health shall test all means of communications on a periodic basis to assure redundant communication capabilities in the event of a public health emergency.

## **2. Public Information:**

- Assess readiness to meet communications needs in preparation for an influenza pandemic, including regular review, exercise and update of the CHFS Emergency Communications Plan.
- Plan and coordinate emergency communication activities with private industry, education and non-profit partners.
- Provide public health communications staff and key spokespersons training on risk communications for use during an influenza pandemic.
- Identify and train lead subject-specific spokespersons.
- Ensure existence of a demographic profile of the community to include special needs populations and language minorities and ensure that the needs of these populations are addressed in the operation plan.
- Test the communication operational plan that addresses the needs of targeted public, private sector, governmental, public health, medical and emergency response audiences to include the CHFS Kentucky Outreach and Information Network (KOIN), designed to send public information to Kentucky's special populations; identify priority channels of communication; delineate the network of communication personnel, including identifying lead subject-specific spokespersons and persons trained in risk communication; and links to other communication networks.
- Develop and maintain up-to-date communications contacts of key stakeholders and exercise the plan to provide regular updates as the influenza pandemic unfolds.
- Address rumors and false reports regarding pandemic influenza threats.
- Confirm any contingency contracts needed for communications resources during a pandemic.
- Implement and maintain, as appropriate, community resources, such as hotlines and Web site, to respond to local questions from the public and professional groups.
- Prepare basic communications resources in advance, and plan to update them during a pandemic, ensuring they
- Ensure the provision of redundant communication systems/channels that allow for the expedited transmission and receipt of information.
- Messages will be crafted to help educate the public about personal preparedness methods and include the expertise of behavior health experts.
- Address the needs of special populations (vulnerable and hard-to-reach) in the operational plan.
- Work with healthcare partners and other stakeholders to develop state-based plans for vaccine effectiveness, safety, distribution and use.
- Develop and maintain a strong working relationship with other agencies, healthcare partners and stakeholders.
- Develop a communications plan for managers, employees and contractors that includes a website (<http://panflu.chfs.ky.gov>) with pandemic related information, instructions for determining status of agency operations and distribution of critical agency information.

## **B. County Responsibilities:**

### **1. Internal Communication:**

The local public health jurisdictions shall communicate with local agencies and KDPH about pandemic influenza activity. The agencies to be notified include, but are not limited to:

- Members of the local Pandemic Influenza Planning Committee
- Healthcare agencies (hospitals, long term care facilities, assisted living, etc.)
- Other local governmental agencies
- Bordering public health jurisdictions
- Other appropriate organizations (*e.g.*, Red Cross, CDC, FDA)
- Infection control professionals
- Media

The Local public health jurisdictions shall utilize any of the following means to conduct such communications:

- Health Alert Network
- Satellite Radio Communications
- E-mail
- Fax
- Land Line Phone
- Mobile Phone Communications
- Web Based Communications
- Interactive Television (ITV)
- Tele Health Network (Proact) and Public Health Network

The local public health jurisdictions shall test all means of communications on a periodic basis to assure redundant communication capabilities in the event of a public health emergency.

### **2. Public Information:**

- Assess readiness to meet communications needs in preparation for an influenza pandemic, including regular review, exercise and update of communications plans.
- Plan and coordinate emergency communication activities with private industry, education and non-profit partners.
- Ensure existence of a demographic profile of the community to include special needs populations and language minorities and ensure that the needs of these populations are addressed in the operation plan.
- Test the communication operational plan that addresses the needs of targeted public, private sector, governmental, public health, medical and emergency response audiences; identify priority channels of communication; delineate the network of communication personnel, including identifying lead subject-specific spokespersons and persons trained in risk communication; and links to other communication networks.
- Develop and maintain up-to-date communications contacts of key stakeholders and exercise the plan to provide regular updates as the influenza pandemic unfolds.

- Address rumors and false reports regarding pandemic influenza threats.
- Confirm any contingency contracts needed for communications resources during a pandemic.
- Implement and maintain, as appropriate, community resources, such as hotlines and Web site, to respond to local questions from the public and professional groups.
- Prepare basic communications resources in advance (fact sheets, news release templates, message maps, public service announcements (PSAs)), and plan to update them during a pandemic.
- Ensure the provision of redundant communication systems/channels that allow for the expedited transmission and receipt of information.
- Messages will be crafted to help educate the public about personal preparedness methods and include the expertise of behavior health experts.
- Work with healthcare partners and other stakeholders to develop county-based plans for vaccine effectiveness, safety, distribution and use.

### **III. GUIDELINES FOR PANDEMIC PERIOD**

#### **A. State Responsibilities**

##### **1. Internal Communication:**

Upon pandemic virus notification, the Department for Public Health shall implement contingency plans to assure hardware, software, and personnel capabilities are sufficient to manage the increased volume of communications and to assure the ability of disseminating vital information on a timely basis.

The Department for Public Health shall communicate with state employees and other key agencies about the pandemic virus notification and pandemic influenza activity utilizing tested communication systems. The agencies to be notified include, but are not limited to:

- Members of the Pandemic Influenza Planning Committee
- Healthcare agencies (hospitals, long term care facilities, assisted living, etc.)
- Other state agencies (KYEM, KOHS, CJPS, KDA, etc.)
- Local public health jurisdictions
- State employee workforce
- Other appropriate organizations (*e.g.*, Red Cross, CDC, FDA, KMA, KNA)
- Infection control professionals
- Media
- Public health agencies of border states

The Department for Public Health shall be the primary agency responsible for distributing Pandemic Event sensitive material to identified stakeholders, including but not limited to, any federal guidance from the CDC.

##### **2. Public Information:**

- Activate emergency communications plans including information hotlines and the formation of the Joint Information Center (JIC). Provide accurate, honest and timely

information on the pandemic to the public and media through news releases and press conferences that is consistent with national, state and local public health messages. Information should describe what is known and unknown, as well as interim guidance to formulate decisions to help protect public health.

- Accurate, useful and consistent messages will be developed, coordinated and released among federal, state, and local health officials to help avoid confusion that can undermine public trust, raise fear and anxiety, and impede response measures. Communications services and key messages will be tailored to specific local audiences, including at-risk populations using material that is culturally appropriate. News media reports will be monitored and public inquiries to identify emerging issues, rumors and misperceptions will be promptly addressed. Translate public health messages for non-English speaking persons. Send out messages for special population members through the KOIN.
- Health departments should provide information to healthcare providers, state and local government officials, and the news media concerning:
  - Rationale for prioritization and list of priority groups (see Part 1, Appendix D).
  - Phasing of vaccination, if any, after priority groups have been vaccinated.
  - When and where vaccination is available.
  - The 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.
- In coordination with epidemiologic and medical personnel, obtain and track information daily on the numbers and location of newly hospitalized cases, newly quarantined persons, and hospitals with pandemic influenza cases. These reports will be used to determine priorities among community outreach and education efforts, and to prepare for updates to media organizations in coordination with federal partners.
- Contact key community partners and implement frequent update briefings.
- Provide reliable pandemic information to state employees from community public health, emergency management and other sources via the pandemic influenza website (<http://panflu.chfs.ky.gov>) and via an emergency hotline (1-888-398-0013).
- Disseminate materials covering pandemic fundamentals (i.e., signs and symptoms, modes of transmission), personal and family protection, and response strategies (i.e., hand washing, cough etiquette).
- Provide information assuring state employees that their workplaces are safe and encourage employees to develop an emergency preparation plan.
- As appropriate, implement and maintain community resources, such as hotlines and emergency communications Web site to respond to local questions from the public and professional groups. Include a link to the [www.pandemicflu.gov](http://www.pandemicflu.gov) Web site. Issue PSAs, informational campaigns and advisories regarding how to reduce or limit spread of the virus, including those utilizing public transportation.

- Issue travel advisories in conjunction with guidance from the CDC’s Travel Advisory staff.
- 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. All vaccine providers will require vaccine information sheets that describe the risks and benefits of, and contraindications to, vaccination.
- Update and disseminate public information on the production, distribution, and use of pandemic influenza vaccine before it becomes available.
- Coordinate with state and local governments to develop guidelines to assure the public of the safety of the food supply and mitigate the risk of exposure from wildlife.

## **B. County Responsibilities:**

### **1. Internal Communication:**

The Local public health jurisdictions shall communicate with local agencies and KDPH about the pandemic virus notification and pandemic influenza activity. The agencies to be notified include, but are not limited to:

- Members of the local Pandemic Influenza Planning Committee
- Healthcare agencies (hospitals, long term care facilities, assisted living, etc.)
- Other Local governmental agencies
- Bordering public health jurisdictions
- Other appropriate organizations (*e.g.*, Red Cross, CDC, FDA)
- Infection control professionals
- Media

The Local public health jurisdictions shall be the primary agency responsible for distributing pandemic event sensitive material to identified community stakeholders, including but not limited to, any state or federal guidance from KDPH or the CDC.

### **2. Public Information:**

- Activate emergency communications plans including the formation of the local JIC. Provide accurate, honest and timely information on the pandemic to the public and media. Information should describe what is known and unknown, as well as interim guidance to formulate decisions to help protect public health.
- Messages will be developed, coordinated and released among federal, state, and local health officials to help avoid confusion that can undermine public trust, raise fear and anxiety, and impede response measures. Communications services and key messages will be tailored to specific local audiences. Rumors and misperceptions will be promptly addressed. Translate public health messages for non-English speaking persons.
- 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 (see Part 1, Appendix D).
  - Phasing of vaccination, if any, after priority groups have been vaccinated.
  - When and where vaccination is available.
  - The importance of vaccination given likelihood of subsequent pandemic waves, particularly if public interest in vaccination has decreased.
  - As noted above, 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.
- In coordination with epidemiologic and medical personnel, obtain and track information daily on the numbers and location of newly hospitalized cases, newly quarantined persons, and hospitals with pandemic influenza cases. These reports will be used to determine priorities among community outreach and education efforts, and to prepare for updates to media organizations in coordination with state and federal partners.
  - Contact key community partners and implement frequent update briefings.
  - As appropriate, implement and maintain community resources, such as hotlines and emergency communications website to respond to local questions from the public and professional groups (<http://panflu.chfs.ky.gov>). This site will also include a link to the [www.pandemicflu.gov](http://www.pandemicflu.gov) website.
  - Local health departments should be prepared to disseminate information on vaccine use to healthcare providers who purchase private stocks of pandemic influenza vaccine. All vaccine providers will need vaccine information sheets that describe the risks and benefits of, and contraindications to, vaccination.
  - Update and disseminate public information on the production, distribution, and use of pandemic influenza vaccine before it becomes available.
  - Coordinate with state government to develop guidelines to assure the public of the safety of the food supply and mitigate the risk of exposure from wildlife.

## **IV. GUIDELINES FOR POSTPANDEMIC PERIOD**

### **A. State Responsibilities**

#### **1. Internal Communications:**

The Department for Public Health shall communicate with state employees and other key agencies about pandemic influenza activity and continued pandemic surveillance. The entities to be notified include, but are not limited to:

- Members of the Pandemic Influenza Planning Committee
- Healthcare agencies (hospitals, long term care facilities, assisted living, etc.)
- Other State Agencies (KYEM, KOHS, CJPS, KDA, etc.)
- Local public health jurisdictions
- Other appropriate organizations (*e.g.*, Red Cross, CDC, FDA, KMA, KNA)
- Infection control professionals
- State employee workforce

- Media
- Public health agencies of border states

The Department for Public Health shall be the primary agency responsible for distributing post-pandemic event materials to identified stakeholders, including but not limited to, any federal guidance from the CDC.

## **2. Public Information:**

- Staff will participate in an after action review both internally and in conjunction with other response partners to identify areas for improvement and provide recognition to individuals and plans that worked well.
- Continue to maintain regular contact with response partners in order to continue successful communications network for future events.
- Follow-up feedback will be solicited from the KOIN and a post-event communication evaluation worksheet will be completed.
- All necessary improvements will be added to the CHFS Emergency Communications Plan for use in future events.

## **B. County Responsibilities:**

### **1. Internal Communication:**

The Local public health jurisdictions shall communicate with local agencies and KDPH about the pandemic influenza activity and continued pandemic surveillance. The agencies to be notified include, but are not limited to:

- Members of the local Pandemic Influenza Planning Committee
- Healthcare agencies (hospitals, long term care facilities, assisted living, etc.)
- Other local governmental agencies
- Bordering public health jurisdictions
- Other appropriate organizations (*e.g.*, Red Cross, CDC, FDA)
- Infection control professionals
- Media

The Local public health jurisdictions shall be the primary agency responsible for distributing post-pandemic event material to identified community stakeholders, including, but not limited to, any state or federal guidance from KDPH or the CDC.

## **2. Public Information:**

- Staff will participate in an after action review assessment both internally and in conjunction with other response partners to identify areas for improvement and provide recognition to individuals and plans that worked well.
- Continue to maintain regular contact with partners involved in response effort in order to continue successful communications network for future events.

- All necessary improvements will be added to the county emergency communications plan for use in future events.

## Appendix 1

### **PRINT MEDIA**

#### **Associated Press**

Joe Biesk, Roger Alford  
227-2410  
FAX: 875-1403  
FAX: (859) 255-1137 (Lexington bureau)  
<http://www.ap.org/>

#### **Frankfort State Journal**

Paul Glasser  
227-4556, ext 252  
<http://www.state-journal.com/>

#### **Kentucky Enquirer**

Pat Crowley  
(859) 578-5581  
FAX: (859) 292-7171  
<http://www.nky.com/>

#### **Kentucky Gazette/Gazette E-News**

Laura Cullen Glasscock, Kate McCann  
875-8325  
FAX: 875-8330

#### **Kentucky Post**

875-3339  
[news.kypost.com](http://news.kypost.com)

#### **Lexington Herald Leader**

Jack Brammer, Ryan Alessi, John Stamper  
227-4390  
FAX: 223-2744  
<http://www.lexington.com/>

#### **Louisville Courier-Journal**

Tom Loftus, Mark Pitsch, Joe Gerth, Stephenie Steitzer  
875-5136  
FAX: 227-7554  
(502) 582-4657 (Louisville bureau)  
(859) 254-7888 (Lexington bureau)  
FAX: 859-254-7028 (Lexington bureau)  
<http://www.courier-journal.com/>

#### **Paducah Sun**

Bill Bartleman

(270) 575-8600  
FAX: (270) 442-7859  
<http://www.paducahsun.com/>

## **TELEVISION**

**WAVE, Channel 3**, Louisville  
(502) 561-4150  
FAX: (502) 561-4105  
<http://www.wave3.com/>

**WDRB, Channel 41**, Louisville  
(502) 584-6441  
FAX: (502) 568-6751  
<http://www.wdrb.com/>

**WHAS, Channel 11**, Louisville  
Mark Hebert  
Cell: (502) 553-1977  
Office: (502) 582-7276  
FAX: (502) 585-5992  
<http://www.whas11.com/>

**WKYT, Channel 27**, Lexington  
Phil Pendleton  
Cell: (606) 344-3929  
Office: (859) 299-2727  
FAX: (859) 299-2494  
<http://www.wkyt.com/>

**WLEX, Channel 18**, Lexington  
(859) 259-1818  
FAX: (859) 255-2418  
<http://www.wlex18.com/>

**WLKY, Channel 32**, Louisville  
(502) 893-3671  
FAX: (502) 896-0725  
<http://www.thelouisvillechannel.com/>

**WTVQ, Channel 36**, Lexington  
Greg Stotelmyer  
(859) 294-6010  
FAX: (859) 293-5002  
<http://www.wtvq.com/>

## Appendix 2

### List of Designated Spokespersons for Kentucky Cabinet for Health and Family Services in Support of Kentucky Department for Public Health

CHFS Secretary Janie Miller

Dr. William Hacker

Dr. Steve Davis

Dr. Kraig Humbaugh

Dr. Michael Auslander

Dr. Doug Thoroughman

Dr. Robert Brawley

Tricia Okeson

Guy Delius

Kathy Fowler

CHFS Division of Communications Staff:

Vikki Franklin, Director

Gwenda Bond, Assistant Director

Lisa Wallace, Public Information Officer

Beth Crace-Fisher, Public Information Officer

Anya Armes-Weber, Public Information Officer

Barbara Fox, Public Information Officer

Emily Moses, Public Information Officer

Janis Stewart, Public Information Officer

### **Appendix 3**

#### **Contact List of Additional Personnel outside the State Health Department Available as Subject Matter Experts on Pandemic Health Issues**

##### **Kentucky Department of Agriculture**

Sue Billings, DVM, MSPH  
Deputy State Veterinarian  
(502) 564-4696  
[Sue.Billings@ky.gov](mailto:Sue.Billings@ky.gov)

Robert Stout, DVM  
State Veterinarian  
(502) 564-3956  
[Robert.Stout@ky.gov](mailto:Robert.Stout@ky.gov)

Ed Hall, DVM  
Division of Animal Health  
(502) 564-3956  
[Ed.Hall@ky.gov](mailto:Ed.Hall@ky.gov)

##### **Kentucky Department of Fish and Wildlife Resources**

Rocky Pritchert  
Waterfowl Program Coordinator  
(502) 564-7109 Ext. 4548  
[Rocky.Pritchert@ky.gov](mailto:Rocky.Pritchert@ky.gov)

##### **University of Kentucky**

James R. McCormick, MD, FCCP  
Pulmonologist  
(859) 323-5045  
[jmccorm@email.uky.edu](mailto:jmccorm@email.uky.edu)

Malkanthie J. McCormick, MD, MBBS  
Infectious Disease Specialist  
(859) 323-6337  
[mmccorm@email.uky.edu](mailto:mmccorm@email.uky.edu)

Judith Lesnaw, PhD  
Virologist, Biological Sciences Department  
(859) 257-3904  
[Judith.lesnaw@email.uky.edu](mailto:Judith.lesnaw@email.uky.edu)

Thomas M. Chambers, PhD  
Virologist, Veterinary Sciences Department  
(859) 257-4757, Ext. 81126  
[Tmcham1@uky.edu](mailto:Tmcham1@uky.edu)

##### **University of Louisville**

Barry Wainscott, MD

(502) 852-3286

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(502) 574-8058

[Matt.Zahn@loukymetro.org](mailto:Matt.Zahn@loukymetro.org)

**Louisville Federal Bureau of Investigation (FBI)**

David Beyer

Chief Division Counsel – Media Coordinator

(502) 569-7150

**American Red Cross – Bluegrass Chapter**

Eric Staton

Director of Health & Safety

(859) 233-3433

[hsdirect@redcrosslexky.org](mailto:hsdirect@redcrosslexky.org)

**American Red Cross – Franklin County Chapter**

Paula Rutledge

318 Washington Street

(502) 223-1795

[arcfranklin@redcrossfrankfort.org](mailto:arcfranklin@redcrossfrankfort.org)

**American Red Cross – Louisville Chapter**

Kevin Alvey

(502) 561-3641

[Kevin.Alvey@louisville-redcross.org](mailto:Kevin.Alvey@louisville-redcross.org)

**Appendix 4**

**Governor's Executive Cabinet**

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**Brigadier General Edward Tonini**

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**Commerce**

**Marcheta Sparrow, Secretary**

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**Economic Development**

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**Education**

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**Environmental & Public Protection**

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[Mark.york@ky.gov](mailto:Mark.york@ky.gov)

**Finance & Administration**

**Jonathan Miller, Secretary**  
[Jonathan.miller@ky.gov](mailto:Jonathan.miller@ky.gov)  
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**Health & Family Services**

**Janie Miller, Secretary**  
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**State Budget Director**

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**Governor's Office of Agricultural Policy**

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**Governor's Office of Energy Policy**

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**Governor's Office of Local Development**

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**Kentucky Office of Homeland Security**

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**Kentucky Division of Emergency Management**

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**New West**

Joe Lilly [jlilly@newwestagency.com](mailto:jlilly@newwestagency.com) Phone: 502-891-2546

Appendix 5

District Health Departments

Barren River District

**Barren River District Health Department**

1109 State Street  
P.O. Box 1157  
Bowling Green, KY 42102-1157

**Phone:** 270-781-8039  
**Email:** [RubyM.Baker@ky.gov](mailto:RubyM.Baker@ky.gov)  
**Fax:** 270-796-8946

**Director:** Dennis Chaney  
**Physician:** Dr. Douglas Thompson  
**Outreach Worker:** Beth Greene  
**TB Coordinator:** Ruby Baker, Nursing Spvr, acting TB Cd.

**Barren County Health Center**

318 West Washington  
P.O. Box 1464  
Washington, KY 42142-1464

**Phone:** 270-651-8321  
**Fax:** 270-659-0062

**Butler County Health Center**

104 North Warren Street  
P.O. Box 99  
Morgantown, KY 42261-0099

**Phone:** 270-526-3221  
**Fax:** 270-526-6828

**Edmonson County Health Center**

221 Mammoth Cave Road  
Brownsville, KY 42210

**Phone:** 270-597-2194  
**Fax:** 270-597-3326

**Hart County Health Center**

505 Fairground Road  
P.O. Box 65  
Munfordsville, KY 42765

**Phone:** 270-432-3214  
**Fax:** 270-524-5642

**Logan County Health Center**

151 South Franklin Street  
Russellville, KY 42276

**Phone:** 270-726-8399  
**Fax:** 270-726-8345

**Metcalf County Health Center**

615 West Stockton Street  
P.O. Box 30  
Edmonton, KY 42129

**Phone:** 270-432-3214  
**Fax:** 270-432-4000

**Simpson County Health Center**

1131 South College Street  
Franklin, KY 42134

**Warren County Health Center**

P.O. Box 1157  
Bowling Green, KY 42102-1157

**Phone: 270-586-8261**  
Fax: 270-586-8264

**Phone: 270-781-2490**  
Fax: 270-782-2375

**Buffalo Trace District**

**Buffalo Trace District Health Department**

120 West Third Street  
P.O. Box 70  
Maysville, KY 41056

**Phone: 606-564-9447**  
Email: [JeniE.Appelman@ky.gov](mailto:JeniE.Appelman@ky.gov)  
Fax: 606-564-4483 Administrative: 606-564-7696

Director: Tim Stump  
Physician: Dr. Mark Wallingford  
Outreach Worker:  
**TB Coordinator: Jeni Appelman**

**Mason County Health Center**

P.O. Box 70  
Maysville, KY 41056  
**Phone: 606-564-9447**  
Fax: 606-564-4483

**Robertson County Health Center**

107 McDowell Street  
P.O. Box 72  
Mt. Olivet, KY 41064  
**Phone: 606-724-5222**  
Fax: 606-724-5527

**Cumberland Valley District**

**Cumberland Valley District Health Department**

103 Cheralyn Lane  
P.O. Box 1269  
London, KY 40743-1269

**Phone:** 606-864-4764 ext. 115  
**Email:** [SallieJ.Thayer@ky.gov](mailto:SallieJ.Thayer@ky.gov)  
**Fax:** 606-864-3732

**Director:** Herman Johnson  
**Physician:** Dr. Linda Fagan  
**Outreach Worker:** Beth Howard, Harlan; Amanda McGerge,  
Bell; Diana Hunt, Clay; Brenda Isaacs, Jackson; Stephanie Hines,  
Rockcastle  
**TB Coordinator:** Sallie Jackson-Thayer, RN, MA

**Bell County Health Center**

310 Cherry Street  
Pineville, KY 40977  
**Phone:** 606-337-7046  
**Fax:** 606-337-8321

**Clay County Health Center**

100 South Court Street  
Manchester, KY 40962  
**Phone:** 606-598-2425  
**Fax:** 606-598-4448

**Cumberland Valley Branch Office**

408 North Main St. Suite 5  
London, KY 40741  
**Phone:** 606-864-4764  
**Fax:** 606-864-3732

**Harlan County Health Center**

402 East Clover Street  
Harlan, KY 40831  
**Phone:** 606-573-4820  
**Fax:** 606-573-6128

**Jackson County Health Center**

Highway 421 South  
P.O. Box 250  
McKee, KY 40447  
**Phone:** 606-287-8421  
**Fax:** 606-287-2199

**Rockcastle County Health Center**

120 Richmond Street  
P.O. Box 840  
Mt. Vernon, KY 40456  
**Phone:** 606-256-2242  
**Fax:** 606-256-5482

**Gateway District**

**Gateway District Health Department**

42 Gudgell Avenue  
P.O. Box 555  
Owingsville, KY 40360

**Phone:** 606-674-6396  
**Email:** [JacquelynP.Campbell@ky.gov](mailto:JacquelynP.Campbell@ky.gov)  
[JahnaL.Lane@ky.gov](mailto:JahnaL.Lane@ky.gov)  
**Fax:** 606-674-3071  
**Johnna Cell:** 606-336-1098

**Director:** James Ratcliff  
**Physician:** Takako Schaninger, MD  
**Outreach Worker:**  
**TB Coordinator:** Jackie Campbell 606-356-5339-cell  
Jahna Lane, Nursing Supervisor

**Bath County Health Center**

56 Treadway Drive  
P.O. Box 537  
Owingsville, KY 40360

**Phone:** 606-674-2731  
**Fax:** 606-674-9646

**Menifee County Health Center**

49 Main Street  
P.O. Box 106  
Frenchburg, KY 40322

**Phone:** 606-768-2151  
**Fax:** 606-768-2153

**Morgan County Health Center**

493 Riverside Drive  
West Liberty, KY 41472

**Phone:** 606-743-3744  
**Fax:** 606-743-3750

**Rowan County Health Center**

555 West Sun Street  
Morehead, KY 40351

**Phone:** 606-784-8954  
**Fax:** 606-783-1443

**Green River District**

**Green River District Health Department**

1501 Breckinridge Street  
P.O. Box 309  
Owensboro, KY 42302-0309

**Phone:** 270-686-7747 ext. 3061  
**Email:** [Maureen.Kohl@ky.gov](mailto:Maureen.Kohl@ky.gov)  
**Fax:** 270-926-9862

**Director:** Lee Denham/ Gail Wigginton  
**Physician:** N. Gupta, MD  
**Outreach Worker:**  
**TB Coordinator:** Maureen Kohl

**Daviess County Health Center**

1600 Breckinridge Street  
P.O. Box 309  
Owensboro, KY 42302

**Phone:** 270-686-7744  
**Fax:** 270-926-9862

**Hancock County Health Center**

175 Harrison Street  
P.O. Box 275  
Hawesville, KY 42348

**Phone:** 270-927-8803  
**Fax:** 270-927-9467

**Henderson County Health Center**

472 Kluty Park Plaza  
Henderson, KY 42420

**Phone:** 270-826-3951  
**Fax:** 270-827-5527

**McLean County Health Center**

200 Hwy 81 North Suite 101  
Calhoun, KY 42327

**Phone:** 270-273-3062  
**Fax:** 270-273-9983

**Ohio County Health Center**

1336 Clay Street  
Hartford, KY 42347

**Phone:** 270-298-3663  
**Fax:** 270-298-4777

**Union County Health Center**

218 West McElroy Street  
Morganfield, KY 42437

**Phone:** 270-389-1230  
**Fax:** 270-389-9031

**Webster County Health Center**

80 Clayton Avenue  
P.O. Box 109  
Dixon, KY 42409

**Phone:** 270-639-9315  
**Fax:** 270-639-7866

**Kentucky River District**

**Kentucky River District Health Department**

441 Gorman Hollow Road  
Hazard, KY 41701

**Phone:** 606-439-2361  
**Email:** [SharonC.Dunaway@ky.gov](mailto:SharonC.Dunaway@ky.gov)  
**Fax:** 606-439-0870

**Director:** Karen Cooper  
**Physician:** Jeff Prater, MD  
**Outreach Worker:** Darlene Cornett  
**TB Coordinator:** Sharon Dunaway

**Knott County Health Center**

880 West Main Street  
P.O. Box 530  
Hindman, KY 41822

**Phone:** 606-785-3144  
**Fax:** 606-785-5512

**Lee County Health Center**

45 Center Street  
P.O. Box 587  
Beattyville, KY 41311

**Phone:** 606-464-2492  
**Fax:** 606-464-5050

**Leslie County Health Center**

78 Maple Street  
P.O. Box 787  
Hyden, KY 41749

**Phone:** 606-672-2393  
**Fax:** 606-672-5006

**Letcher County Health Center**

6 Broadway Street  
  
Whitesburg, KY 41858

**Phone:** 606-633-2945  
**Fax:** 606-633-2945

**Owsley County Health Center**

Highway 28  
P.O. Box 220  
Booneville, KY 41314

**Phone:** 606-593-5181  
**Fax:** 606-593-7438

**Perry County Health Center**

239 Lovern Street  
  
Hazard, KY 41701

**Phone:** 606-436-2196  
**Fax:** 606-439-1813

**Wolfe County Health Center**

145 Old Hwy 15  
P.O. Box 98  
Campton, KY 41301

**Phone:** 606-668-3185  
**Fax:** 606-668-6076

**Lake Cumberland District**

**Lake Cumberland District Health Department**

500 Bourne Avenue

P.O. Box 800

Somerset, KY 42502

**Phone: 606-678-4761**

Email:

Fax: 606-678-2708

Director: Shawn Crabtree

Physician: Christine Weyman, MD -606-305-3551 cell

Outreach Worker: Judy Goforth- 606-305-1249 cell

**TB Coordinator:**

**Adair County Health Center**

801 Westlake Drive

Columbia, KY 42728

**Phone: 270-384-2286**

Fax: 270-384-4800

**Casey County Health Center**

199 Adams Street

P.O. Box 778

Liberty, KY 42539

**Phone: 606-787-6911**

Fax: 606-787-2507

**Clinton County Health Center**

201 Twin Lakes Medical Cntr

Albany, KY 42602

**Phone: 606-387-5711**

Fax: 606-387-7212

**Cumberland County Health Cntr**

133 Lower River Street

P.O. Box 412

Burkesville, KY 42717

**Phone: 270-864-2206**

Fax: 270-864-1232

**Green County Health Center**

220 Industrial Park

P.O. Box 177

Greensburg, KY 42743

**Phone: 270-932-4341**

Fax: 270-932-6016

**McCreary County Health Center**

119 Medical Loop

P.O. Box 208

Whitley City, KY 42653

**Phone: 606-376-2412**

Fax: 606-376-3815

**Pulaski County Health Center**

45 Roberts Street

Somerset, KY 42501

**Phone: 606-679-4416**

Fax: 606-679-4419

**Russell County Health Center**

69 Herriford Curve Road

P.O. Box 378

Jamestown, KY 42629

**Phone: 270-343-2181**

Fax: 270-343-2183

**Taylor County Health Center**

1880 N By-Pass Rd

Campbellsville, KY 42718

**Phone: 270-465-4191**

Fax: 270-789-3873

**Wayne County Health Center**

531 East Hwy 90 Bypass

Monticello, KY 42633

**Phone: 606-348-9349**

Fax: 606-348-7464

**Lincoln Trail District**

**Lincoln Trail District Health Department**

108 New Glendale Road  
P.O. Box 2609  
Elizabethtown, KY 42702

**Phone:** 270-769-1601 ext. 1013  
**Email:** [WendyM.Keown@ky.gov](mailto:WendyM.Keown@ky.gov)  
**Fax:** 270-765-7274

**Director:** Linda Sims  
**Physician:** Dr. Mark Abram  
**Outreach Worker:**  
**TB Coordinator:** Wendy Keown

**Grayson County Health Center**

124 East White Oak Street  
Leitchfield, KY 42754  
**Phone:** 270-529-3141  
**Fax:** 270-259-5388

**Hardin County Health Center**

580 Westport Road  
Elizabethtown, KY 42701  
**Phone:** 270-765-6196  
**Fax:** 270-763-0397

**Larue County Health Center**

215 East Main Street  
Hodgenville, KY 42748  
**Phone:** 270-358-3844  
**Fax:** 270-358-9529

**Nelson County Health Center**

325 South Third Street  
Bardstown, KY 40004  
**Phone:** 502-348-3222  
**Fax:** 502-349-1557

**Marion County Health Center**

516 North Spalding  
Lebanon, KY 40033  
**Phone:** 270-692-3393  
**Fax:** 270-692-0045

**Meade County Health Center**

520 Fairway Drive  
Brandenburg, KY 40108  
**Phone:** 270-422-3988  
**Fax:** 270-422-5699

**Radcliff County Health Center**

1463 North Wilson Road  
Radcliff, KY 40160  
**Phone:** 270-352-2526  
**Fax:** 270-352-5048

**Washington County Health Center**

302 East Main Street  
Springfield, KY 40069  
**Phone:** 859-336-3980  
**Fax:** 859-336-9162

**Little Sandy District**

**Little Sandy District Health Department**

Courthouse, Main Street  
P.O. Box 909  
Grayson, KY 41143

**Phone:** 606-474-4115  
**Email:** [EllenS.Blevins@ky.gov](mailto:EllenS.Blevins@ky.gov)  
**Fax:** 606-474-0256

**Director:** Lloyd Miller  
**Physician:**  
**Outreach Worker:**  
**TB Coordinator:** Ellen Blevins

**Carter County Health Center**

1710 East US Hwy 60  
P.O. Box 919  
Grayson, KY 41143

**Phone:** 606-474-5100  
**Fax:** 606-474-4217

**West Carter County Health Cntr**

P.O. Box 728  
Olive Hill, KY 41164

**Phone:** 606-286-6000  
**Fax:** 606-286-0182

**Elliot County Health Center**

Main Street  
P.O. Box 762  
Sandy Hook, KY 41171

**Phone:** 606-738-5205  
**Fax:** 606-738-6530

**North Central District**

**North Central District Health Department**

1020 Henry Clay Street  
Shelbyville, KY 40065

**Phone:** 502-633-1243  
**Email:** [Beverly.Aldridge@ky.gov](mailto:Beverly.Aldridge@ky.gov)  
**Fax:** 502-633-1243

**Director:** Renee Blair  
**Physician:**  
**Outreach Worker:**  
**TB Coordinator:** Beverly Aldridge

**Henry County Health Center**

TB Contact: Debbie Long  
125 North Property Road  
P.O. Box 449  
New Castle, KY 40050

**Phone:** 502-845-2882  
**Fax:** 502-845-7997

**Shelby County Health Center**

TB Contact: Pam Montgomery  
615 11<sup>th</sup> Street

Shelbyville, KY 40065

**Phone:** 502-633-1231  
**Fax:** 502-633-7814

**Spencer County Health Center**

TB Contact: Theresa Catlett  
88 Spears Drive  
P.O. Box 175  
Taylorsville, KY 40071

**Phone:** 502-477-8146  
**Fax:** 502-477-5624

**Trimble County Health Center**

TB Contact: Sandy Evans  
138 Miller Lane  
P.O. Box 250  
Bedford, KY 40006

**Phone:** 502-255-7701  
**Fax:** 502-255-3760

**Northern Kentucky Independent**

**Northern Kentucky Independent District Health Department**

7505 Burlington Pike  
Florence, KY 41042

**Phone:** 859-363-2071  
**Email:** [Evie.Vanherpe@ky.gov](mailto:Evie.Vanherpe@ky.gov)  
**Fax:** 859-578-3689

**Director:** Gary Crum  
**Physician:** Dr. Howard Gelbart  
**Outreach Worker:**  
**TB Coordinator:** Evie Vanherpe

**Boone County Health Center**

7505 Burlington Pike  
Florence, KY 41042

**Phone:** 859-363-2060 x. 2308  
**Email:** [Elizabeth.Gonzalez@ky.gov](mailto:Elizabeth.Gonzalez@ky.gov)  
**Fax:** 859-647-3594

**Campbell County Health Center**

12 East Fifth Street  
Newport, KY 41071

**Phone:** 859-431-1704 x. 2505  
**Email:** [Michele.Mozea@ky.gov](mailto:Michele.Mozea@ky.gov)  
**Fax:** 859-655-6386

**Grant County Health Center**

234 Barnes Road  
Williamstown, KY 41097

**Phone:** 859-824-5074 x. 2707  
**Email:** [Lucie.Clemons@ky.gov](mailto:Lucie.Clemons@ky.gov)  
**Fax:** 859-824-3220

**Kenton County Health Center**

2002 Madison Avenue  
Covington, KY 41011

**Phone:** 859-431-3345 x. 2604  
**Email:** [Sara.Ellis@ky.gov](mailto:Sara.Ellis@ky.gov)  
**Fax:** 859-655-6374

**Pennyrile District**

**Pennyrile District Health Department**

211 West Fairview Avenue  
P.O. Box 770  
Eddyville, KY 42038

**Phone:** 270-388-9747  
**Email:** [Sherry.Rhodes@ky.gov](mailto:Sherry.Rhodes@ky.gov)  
**Fax:** 270-388-5941

**Director:** Jim Tolley  
**Physician:** Dr. Michael Gavin  
**Outreach Worker:** Dawn Fowler  
**TB Coordinator:** Sherry Rhodes, RN

**Caldwell County Health Center**

310 Hawthorne Street  
P.O. Box 327  
Princeton, KY 42445

**Phone:** 270-365-6571  
**Fax:** 270-365-3145

**Crittenden County Health Center**

402 North Walker Street  
P.O. Box 392  
Marion, KY 42064

**Phone:** 270-965-5215  
**Fax:** 270-965-9078

**Livingston County Health Center**

124 State Street  
P.O. Box 128  
Smithland, KY 42081

**Phone:** 270-928-2193  
**Fax:** 270-928-2098

**Lyon County Health Center**

211 Fairview Street  
P.O. Box 96  
Eddyville, KY 42038

**Phone:** 270-388-9763  
**Fax:** 270-388-5941

**Trigg County Health Center**

196 Main Street  
P.O. Box 191  
Cadiz, KY 42211

**Phone:** 270-522-8121  
**Fax:** 270-522-5384

## Purchase District

### **Purchase District Health Department**

320 North 7<sup>th</sup> Street  
Mayfield, KY 42066

**Phone:** 270-247-1490  
**Email:** [Elizabetha.reed@ky.gov](mailto:Elizabetha.reed@ky.gov)  
**Fax:** 270-251-3358

**Director:** Charles Ross  
**Physician:** Dr. Randel Gibson  
**Outreach Worker:** Rhonda Crass, LPN  
**TB Coordinator:** Ann Reed, RN

### **Ballard County Health Center**

111 West Kentucky Drive  
P.O. Box 357  
LaCenter, KY 42056

**Phone:** 270-665-5432  
**Fax:** 270-665-9166

### **Calloway County Health Center**

701 Olive Street

Murray, KY 42071

**Phone:** 270-753-3381  
**Fax:** 270-753-8455

### **Carlisle County Health Center**

East Court Street  
P.O. Box 96

Bardwell, KY 42023

**Phone:** 270-628-5431  
**Fax:** 270-628-3811

### **Fulton County Health Center**

402 Troy Street

Hickman, KY 42050

**Phone:** 270-236-2825  
**Fax:** 270-236-9434

### **Graves County Health Center**

416 Central Avenue  
Mayfield, KY 42066

**Phone:** 270-247-3553  
**Fax:** 270-247-0391

### **Hickman County Health Center**

370 South Washington Street  
Clinton, KY 42031

**Phone:** 270-653-6110  
**Fax:** 270-653-6523

### **McCracken County Health Center**

916 Kentucky Avenue  
P.O. Box 2597  
Paducah, KY 42002

**Phone:** 270-444-9631  
**Fax:** 270-442-8769

**Three Rivers District**

**Three Rivers District Health Department**

510 South Main Street  
Owenton, KY 40359

**Phone:** 502-484-3412  
**Email:** [AnnaK.Mefford@ky.gov](mailto:AnnaK.Mefford@ky.gov)  
**Fax:** 502-484-0864

**Director:** Georgia Heise  
**Physician:** Patricia Miles  
**Outreach Worker:**  
**TB Coordinator:** **Anna Katherine Mefford**

**Carroll County Health Center**

401 Eleventh Street

Carrollton, KY 41008

**Phone:** 502-732-6641  
**Fax:** 502-732-8681

**Gallatin County Health Center**

204 Franklin Street

P.O. Box 315

Warsaw, KY 41095

**Phone:** 859-567-2844  
**Fax:** 859-567-2845

**Owen County Health Center**

1005 Hwy 22 East

Owenton, KY 40359

**Phone:** 502-484-5736  
**Fax:** 502-484-5737

**Pendleton County Health Center**

329 Hwy 330 West

Falmouth, KY 41040

**Phone:** 859-654-6985  
**Fax:** 859-654-6986

**WEDCO District**

**WEDCO District Health Department**

U.S. 27 South, Harrison Square Shopping Center  
P.O. Box 218  
Cynthiana, KY 41031

**Phone:** 859-234-8750 x. 134  
**Email:** [RebeccaA.Marshall@ky.gov](mailto:RebeccaA.Marshall@ky.gov)  
**Fax:** 859-234-0054

**Director:** Julie Watts-McKee  
**Physician:** Dr. Frank McKemie  
**Outreach Worker:**  
**TB Coordinator:** **Becky Marshall**

**Harrison County Health Center**

364 Oddville Avenue  
Cynthiana, KY 41031

**Phone:** 859-234-2842  
**Fax:** 859-234-0393

**Nicholas County Health Center**

2320 Concrete Road  
Carlisle, KY 40311

**Phone:** 859-289-2188  
**Fax:** 859-289-2203

**Scott County Health Center**

300 East Washington Street  
Georgetown, KY 40324

**Phone:** 502-863-3971  
**Fax:** 502-863-3986

## Appendix 6

### KENTUCKY HOSPITAL ASSOCIATION INSTITUTIONAL MEMBER HOSPITALS

Revised – 6/23/08

<u>HOSPITAL</u> (Time Zone)	<u>MAILING ADDRESS</u>	<u>CITY/STATE/ZIP</u>	<u>ADMINISTRATOR</u>	<u>PHONE/*FAX</u>	<u>Beds</u>	<u>Dst</u>
Appalachian Regional Hospital – Hazard (ET)	100 Medical Center Drive	Hazard, KY 41701	Donald R. Fields, CEO	606/439-1331 *606/439-6682	308	CU
Baptist Hospital East (ET)	4000 Kresge Way	Louisville, KY 40207	Sue Stout Tamme, FACHE, President	502/897-8100 *502/897-8500	407	OV
Baptist Hospital Northeast(ET)	1025 New Moody Lane	LaGrange, KY 40031	Dennis B. Johnson, Administrator	502/222-5388 *502/222-3411	90	OV
Baptist Regional Medical Center (ET)	1 Trillium Way	Corbin, KY 40701	John Henson, CHE, President	606/528-1212 *606/523-8726	240	CU
Bluegrass Community Hospital	360 Amsden Avenue	Versailles, KY 40383	Katherine G. Love, CEO	859/873-3111 *859/873-1016	25	BG
Bourbon Community Hospital (ET)	#9 Linville Drive	Paris, KY 40361	Joseph G. Koch, CEO	859/987-3600 *859/987-1003	58	BG
Breckinridge Memorial Hospital (CT)	1011 Old Highway 60	Hardinsburg, KY 40143-2597	John E. Monnahan, CEO	270/756-7000 *270/756-6510	27	OV
Caldwell County Hospital (CT)	P.O. Box 410 101 Hospital Drive	Princeton, KY 42445	Charles Lovell, Administrator	270/365-0300 *270/365-0413	48	TL
Cardinal Hill Rehabilitation Hospital (ET)	2050 Versailles Road	Lexington, KY 40504-1499	Kerry Gillihan, FACHE, President/CEO	859/254-5701 *859/281-1365	108	BG
Carroll County Memorial Hospital (ET)	309 11th Street	Carrollton, KY 41008	Kanute Rarey, CEO	502/732-4321 *502/732-3287	49	OV
Casey County Hospital	187 Wolford Avenue	Liberty, KY 42539	Rex A. "Rusty" Tungate, CEO	606/787-6275 *606/787-9717	25	CU
Caverna Memorial Hospital, Inc. (CT)	1501 S. Dixie Street	Horse Cave, KY 42749	Alan Alexander, CEO	270/786-2191 *270/786-1557	25	TL
Central Baptist Hospital (ET)	1740 Nicholasville Road	Lexington, KY 40503	William Sisson, MBA, CHE, President	859/260-6100 *859/260-6117	371	BG
Central State Hospital (ET)	10510 LaGrange Road	Louisville, KY 40223-1228	Gregory Taylor, Interim Hospital Director	502/253-7060 *502/253-7435	192	OV

Clark Regional Medical Center (ET)	1107 West Lexington Avenue	Winchester, KY 40391-1169	Robert Fraraccio, Administrator	859/745-3500 *859/745-1961	100	BG
Clinton County Hospital (CT)	P.O. Box 387 723 Burkesville Road	Albany, KY 42602	Randel Flowers, Ph.D., Administrator	606/387-6421 *606/387-8550	42	CU
Commonwealth Regional Specialty Hospital	250 Park Street	Bowling Green, KY 42102	Shirley Kendall, Administrator	270/796-6200 *270/796-6275	28	TL
Crittenden Health System (CT)	Highway 60 West P.O. Box 386	Marion, KY 42064	Jim Christensen, CEO	270/965-5281 *270/965-1061	50	TL
Cumberland County Hospital (CT)	P.O. Box 280 299 Glasgow Road	Burkesville, KY 42717	Rick Neikirk, CEO	270/864-2511 270/864-1307	25	CU
Cumberland Hall Behavioral Health Services (CT)	210 West 17th Street	Hopkinsville, KY 42240	Catherine Willner, Administrator/CEO	270/886-1919 *270/886-1335	52	TL
Eastern State Hospital (ET)	627 West Fourth Street	Lexington, KY 40508	Michael Daniluk, Hospital Director	859/246-7000 *859/246-7585	323	BG
Ephraim McDowell Regional Medical Center (ET)	217 South Third Street	Danville, KY 40422	Clark Taylor, President	859/239-1000 *859/239-6709	177	CU
Flaget Memorial Hospital (ET)	4305 New Shepherdsville Road	Bardstown, KY 40004	Bruce Klockars, President	502/350-5000 *502/349-4643	40	OV
Fleming County Hospital (ET)	920 Elizaville Road P.O. Box 388	Flemingsburg, KY 41041	David Sirk, CEO	606/849-5000 *606/849-5005	52	BG
Fort Logan Hospital (ET)	110 Metker Trail	Stanford, KY 40484	Mike Jackson, Administrator	606/365-4600 *606/365-4938	43	CU
Frankfort Regional Medical Center (ET)	299 King's Daughters' Drive	Frankfort, KY 40601	Chip Peal, FACHE, CEO	502/875-5240 *502/226-7936	173	BG
Frazier Rehabilitation and Neuroscience Center (ET)	220 Abraham Flexner Way	Louisville, KY 40202	Cheryl Fugatte, COO	502/582-7400 *502/582-7477	95	OV
Gateway Rehabilitation Hospital (ET)	5940 Merchants Street	Florence, KY 41042	James Burcham, CEO	859/426-2400 *859/426-2419	40	BG
Georgetown Community Hospital (ET)	1140 Lexington Road	Georgetown, KY 40324	Barry Papania, CEO	502/868-1100 *502/868-5607	75	BG
Greenview Regional Hospital (CT)	1801 Ashley Circle	Bowling Green, KY 42104-3362	Mark Marsh, CEO	270/781-4330 *270/793-5205	211	TL
Hardin Memorial Hospital (ET)	913 N. Dixie Avenue	Elizabethtown, KY 42701	David L. Gray, CHE, President/CEO	270/737-1212 *270/706-1141	285	OV

Harlan Appalachian Regional Hospital (ET)	81 Ball Park Road	Harlan, KY 40831	Dan Stone, CEO	606/573-8100 *606/573-7939	150	CU
Harrison Memorial Hospital (ET)	1210 KY Highway 36 E	Cynthiana, KY 41031-6055	Darwin Root, Administrator	859/234-2300 *859/235-3699	61	BG
HEALTHSOUTH Rehabilitation Hospital of Central Kentucky (ET)	134 Heartland Drive	Elizabethtown, KY 42701	Eileen Nelson, CEO/Administrator	270/769-3100 *270/769-6870	40	OV
HEALTHSOUTH Rehabilitation Hospital of Northern Kentucky (ET)	201 Medical Village Drive	Edgewood, KY 41017	Brenda Gosney, CEO/Administrator	859/341-2044 *859/341-2813	40	BG
Highlands Regional Medical Center (ET)	5000 KY Rt. 321 P.O. Box 668	Prestonsburg, KY 41653	Harold "Bud" Warman, FACHE, CEO	606/886-8511 *606/886-1316	184	CU
Jackson Purchase Medical Center (CT)	1099 Medical Center Circle P.O. Box 1099	Mayfield, KY 42066	Mary Jo Lewis, Administrator	270/251-4100 *270/251-4507	107	TL
(The) James B. Haggin Memorial Hospital (ET)	464 Linden Avenue	Harrodsburg, KY 40330	Earl Motzer, Ph.D., FACHE, CEO	859/734-5441 *859/734-5563	50	CU
Jane Todd Crawford Hospital (CT)	P.O. Box 220 202 Milby Street	Greensburg, KY 42743	Rusty Tungate, CEO	270/932-4211 *270/932-3504	55	OV
Jenkins Community Hospital (ET)	P.O. Box 472, Main Street	Jenkins, KY 41537	Sherrie Newcomb, Administrator	606/832-2171 *606/832-2943	25	CU
Jennie Stuart Medical Center (CT)	320 West 18th Street	Hopkinsville, KY 42240	Terry Peeples, CEO	270/887-0100 *270/887-0223	194	TL
Jewish Hospital (ET)	200 Abraham Flexner Way	Louisville, KY 40202	Martin Bonick, President/CEO	502/587-4011 *502/587-4537	442	OV
Jewish Hospital – Shelbyville (ET)	727 Hospital Drive	Shelbyville, KY 40066	Michael L. Collins, CEO	502/647-4000 *502/647-4039	70	OV
Kentucky River Medical Center (ET)	540 Jett Drive	Jackson, KY 41339	Donny Rentfro, CEO	606/666-4971 *606/666-6107	55	CU
Kindred Hospital – Louisville (ET)	1313 St. Anthony Place	Louisville, KY 40204	Lourene Money, Interim CEO	502/587-7001 *502/587-0060	337	OV
King's Daughters Medical Center (ET)	2201 Lexington Avenue P.O. Box 151	Ashland, KY 41101-0151	Fred L. Jackson, FACHE, President/CEO	606/408-4000 *606/408-4622	385	BG
Knox County Hospital (ET)	80 Hospital Drive	Barbourville, KY 40906	Rebecca Lewis, CEO	606/546-4175 *606/545-5511	42	CU
Kosair Children's Hospital (ET)	231 East Chestnut Street	Louisville, KY 40232	Douglas Eighmey, Jr., CHE, Administrator	502/629-6000 *502/629-	255	OV

	P.O. Box 35070			8047		
Lake Cumberland Regional Hospital (ET)	305 Langdon Street P.O. Box 620	Somerset, KY 42501	Jeff Seraphine, CHE, Administrator	606/679- 7441 *606/678- 9919	222	CU
Lincoln Trail Hospital (ET)	3909 S. Wilson Road P.O. Box 369	Radcliff, KY 40160	Chuck Webb, Administrator/CEO	270/351- 9444 *270/351- 0400	77	OV
Livingston Hospital & Healthcare Services, Inc. (CT)	131 Hospital Drive	Salem, KY 42078	Mike Budnick, CEO	270/988- 2299 *270/988- 3900	25	TL
Logan Memorial Hospital (CT)	1625 Nashville Street P.O. Box10	Russellville, KY 42276-0010	Greg Moore, CEO	270/726- 4011 *270/726- 7465	92	TL
Lourdes (CT)	1530 Lone Oak Road P.O. Box 7100	Paducah, KY 42003	Steven Grinnell, President/Chief Executive Officer	270/444- 2444 *270/444- 2980	389	TL
Marcum & Wallace Memorial Hospital (ET)	60 Mercy Court	Irvine, KY 40336	Susan Starling, Administrator	606/723- 2115 *606/723- 2951	25	CU
Marshall County Hospital (CT)	P.O. Box 630 503 George C. McClain Drive	Benton, KY 42035	Kathy Long, CEO	270/527- 4800 *270/527- 4853	25	TL
Mary Breckinridge Healthcare, Inc. (ET)	P.O. Box 447- A	Hyden, KY 41749	Mallie Noble, Administrator	606/672- 2901 *606/672- 3626	40	CU
McDowell Appalachian Regional Hospital (ET)	P.O. Box 247, Route 122	McDowell, KY 41647	Russ Barker, Administrator	606/377- 3400 *606/377- 3449	25	CU
Meadowview Regional Medical Center (ET)	989 Medical Park Drive	Maysville, KY 41056	Chad Patrick, CEO	606/759- 5311 *606/759- 5616	111	BG
Memorial Hospital, Inc. (ET)	210 Marie Langdon Drive	Manchester, KY 40962	Dennis Meyers, President	606/598- 5104 *606/598- 7008	63	CU
Methodist Hospital (CT)	P.O. Box 48 1305 North Elm Street	Henderson, KY 42420	Bruce D. Begley, Executive Director	270/827- 7700 *270/827- 7402	209	TL
Methodist Hospital Union County (CT)	4604 U.S. Highway 60W	Morganfield, KY 42437	Patrick Donahue, Administrator	270/389- 5000 *270/389- 5059	41	TL
Middlesboro Appalachian Regional Hospital (ET)	P.O. Box 340 3600 West Cumberland Avenue	Middlesboro, KY 40965	Susan Roman, Community CEO	606/242- 1100 *606/248- 3903	96	CU
Monroe County Medical Center (CT)	529 Capp Harlan Road	Tompkinsville, KY 42167	Vicky McFall, CEO	270/487- 9231 *270/487- 5784	49	TL
Morgan County Appalachian Regional Hospital (ET)	P.O. Box 579 476 Liberty Road	West Liberty, KY 41472	Steve Gavalchik, FACHE, CEO	606/743- 3186 *606/743- 9760	30	BG
Muhlenberg Community Hospital (CT)	440 Hopkinsville	Greenville, KY 42345	George E. Walz, Interim CEO	270/338- 8000	90	TL

	Street			*270/338-8278		
Murray-Calloway County Hospital (CT)	803 Poplar Street	Murray, KY 42071-2432	Keith Bailey, President/CEO	270/762-1100 *270/767-3600	176	TL
New Horizons Health Systems, Inc.	330 Roland Avenue	Owenton, KY 40359	Bernard Poe, Administrator	502/484-2771 *502/484-2702	25	BG
Nicholas County Hospital (ET)	P.O. Box 232 2323 Concrete Road	Carlisle, KY 40311	Doris Ecton, Administrator/CEO	859/289-7181 *859/289-7510	18	BG
NorthKey Community Care (formerly Children's Psychiatric Hospital) (ET)	P.O. Box 2680 502 Farrell Drive	Covington, KY 41012-2680	Edward G. Muntel, Ph.D., CEO/President	859/578-3200 *859/578-3256	57	BG
Norton Audubon Hospital (ET)	One Audubon Plaza Drive	Louisville, KY 40217	Thomas D. Kmetz, CHE, CEO	502/636-7111 *502/636-7269	432	OV
Norton Brownsboro Hospital (ET)	4950 Norton Healthcare Blvd.	Louisville, KY 40241	Douglas A. Winkelhake, CEO	502/394-6465 *502/394-6460		OV
Norton Hospital (ET)	200 E. Chestnut Street P.O. Box 35070	Louisville, KY 40232	Kevin Wardell, Chief Administrative Officer	502/629-8000 *502/629-6060	719	OV
Norton Suburban Hospital (ET)	4001 Dutchmans Lane	Louisville, KY 40207	John D. Harryman, Administrator	502/893-1000 *502/893-1289	343	OV
Oak Tree Hospital @Baptist Regional Medical Center	One Trillium Way	Corbin, KY 40701	R. Alan Coppock, Administrator/CEO	606/523-5150 *606/523-5160	32	CU
Ohio County Hospital (CT)	1211 Main Street	Hartford, KY 42347	Blaine Pieper, Administrator	270/298-7411 *270/298-3758	68	TL
Our Lady of Bellefonte Hospital (ET)	St. Christopher Drive	Ashland, KY 41101	Mark Gordon, CEO	606/833-3333 *606/833-3593	214	BG
Our Lady of Peace Hospital (ET)	2020 Newburg Road	Louisville, KY 40205	JoAnne D. Maamry, RNC, MSN, Administrator	502/451-3330 *502/479-4140	416	OV
Owensboro Medical Health System, Inc. (CT)	P.O. Box 20007 811 East Parrish Avenue	Owensboro, KY 42304-0007	Jeffrey B. Barber, Dr.PH, President/CEO	270/688-2000 *270/688-2124	447	TL
Parkway Regional Hospital (CT)	2000 Holiday Lane P.O. Box 866	Fulton, KY 42041	Stephen Lunn, CEO	270/472-2522 *270/472-2438	70	TL
Pattie A. Clay Regional Medical Center (ET)	Eastern Bypass P.O. Box 1600	Richmond, KY 40476-2603	Robert J. Hudson, CEO	859/623-3131 *859/625-3535	105	CU
Paul B. Hall Regional Medical Center (ET)	P.O. Box 1848 625 James S. Trimble Blvd.	Paintsville, KY 41240	Deborah L. Trimble, Administrator	606/789-3511 *606/789-6486	72	CU

Pikeville Medical Center (ET)	911 Bypass Road	Pikeville, KY 41501	Walter E. May, President/CEO	606/437-3500 *606/432-9479	261	CU
Pineville Community Hospital (ET)	850 Riverview Avenue	Pineville, KY 40977	J. Milton Brooks, III, Administrator	606/337-3051 *606/337-1128	120	CU
Regional Medical Center of Hopkins County (CT)	900 Hospital Drive	Madisonville, KY 42431-1694	E. Berton Whitaker, President/CEO	270/825-5100 *270/825-5204	390	TL
Ridge Behavioral Health System (ET)	3050 Rio Dosa Drive	Lexington, KY 40509	Nina Eisner, CEO	859/269-2325 *859/268-6451	110	BG
Rivendell Behavioral Health Services (CT)	1035 Porter Pike Road	Bowling Green, KY 42103-9581	Janice Richardson, Administrator	270/843-1199 *270/782-9996	72	TL
River Valley Behavioral Health Hospital (CT)	1100 Walnut Street P.O. Box 1637	Owensboro, KY 42302	Gayle DiCesare, President/CEO	270/689-6500 *270/689-6701	80	TL
Rockcastle Hospital, Inc. (ET)	145 Newcomb Avenue P.O. Box 1310	Mt. Vernon, KY 40456	Steve Estes, Administrator	606/256-2195 *606/256-3232	26	CU
Russell County Hospital (CT)	P.O. Box 1610 Dowell Road	Russell Springs, KY 42642	Gary DelForge, CEO	270/866-4141 *270/866-2136	25	OV
Saint Joseph Berea (ET)	305 Estill Street	Berea, KY 40403	Greg D. Gerard, Administrator	859/986-3151 *859/986-6768	48	CU
Saint Joseph Hospital (ET)	One St. Joseph Drive	Lexington, KY 40504	Ken Haynes, CEO	859/313-1000 *859/313-3000	468	BG
Saint Joseph East	150 N. Eagle Creek Drive	Lexington, KY 40509				
Saint Joseph London (ET) (formerly Marymount Medical Center)	310 East Ninth Street	London, KY 40741	Virginia "Ginna" Dempsey, President/CEO	606/878-6520 *606/877-3707	76	CU
Saint Joseph Martin (ET) (formerly Our Lady of the Way Hospital)	11203 Main Street, Box 910	Martin, KY 41649	Kathy Stumbo, CEO	606/285-6400 *606/285-6409	25	CU
Saint Joseph Mount Sterling (ET)	P.O. Box 7 50 Sterling Avenue	Mt. Sterling, KY 40353	Jim Heitzenrater, CEO	859/498-1220 *859/498-5155	64	BG
Shriners Hospital for Children – Lexington (ET)	1900 Richmond Road	Lexington, KY 40502	Tony Lewgood, Administrator	859/268-5630 *859/268-5636	50	BG
Southern Kentucky Rehabilitation Hospital (SKY), formerly Mediplex Rehab - Bowling Green (CT)	1300 Campbell Lane	Bowling Green, KY 42104	Joanna Thomas, CEO	270/782-6900 *270/782-7228	60	TL
Spring View Hospital (ET)	320 Loretto Road	Lebanon, KY 40033	Michael Sherrod, CEO	270/692-3161	65	OV

				*270/692-5155		
St. Claire Regional Medical Center (ET)	222 Medical Circle	Morehead, KY 40351-1570	Mark J. Neff, FACHE, President/CEO	606/783-6500 *606/783-6503	159	BG
St. Elizabeth Medical Center (ET)	1 Medical Village Drive 401 E. 20th Street (N)	Edgewood, KY 41017 Covington, KY 41014 (N)	Joseph W. Gross, FACHE, President/CEO	859/301-2000 *859/301-5412 (S) 859/344-2000 *859/344-5412 (N)	393	BG
St. Elizabeth Medical Center of Grant County (ET)	238 Barnes Road	Williamstown, KY 41097	Chris Carle, MSHPA, Administrator	859/824-8240 *859/824-8136	30	BG
St. Luke Hospital East (ET)	85 N. Grand Avenue	Fort Thomas, KY 41075	Nancy Kremer, Senior Vice President	859/572-3100 *859/572-2349	284	BG
St. Luke Hospital West (ET)	7380 Turfway Road P.O. Box 6905	Florence, KY 41042	Nancy Kremer, Senior Vice President	859/212-5200 *859/212-5221	153	BG
Sts. Mary & Elizabeth Hospital (ET)	1850 Bluegrass Avenue	Louisville, KY 40215	Tom Gessel, CEO	502/361-6000 *502/361-6799	331	OV
T.J. Samson Community Hospital (CT)	1301 North Race Street	Glasgow, KY 42141-3454	Bill Kindred, CEO	270/651-4444 *270/651-4848	180	TL
Taylor Regional Hospital (ET)	1700 Old Lebanon Road	Campbellsville, KY 42718	Jane Wheatley, CEO	270/465-3561 *270/465-5386	90	OV
Ten Broeck Hospital - DuPont (ET)	1405 Browns Lane	Louisville, KY 40207	John Hollinsworth, CEO/Administrator	502/896-0495 *502/893-8792	66	OV
Ten Broeck Hospital - KMI(ET)	8521 LaGrange Road	Louisville, KY 40242	John Hollinsworth, Executive Director	502/426-6380 *502/429-5787	82	OV
The Medical Center at Franklin (CT)	1100 Brookhaven Road	Franklin, KY 42134	Clara Sumner, CEO/Sr. Vice President	270/598-4800 *270/598-4898	25	TL
The Medical Center/Bowling Green (CT)	P.O. Box 90010 250 Park Street	Bowling Green, KY 42102-9010	Connie Smith, CEO	270/745-1000 *270/842-0765	330	TL
The Medical Center/Scottsville (CT)	456 Burnley Road	Scottsville, KY 42164-9600	Eric Hagan, Administrator/CEO	270/622-2800 *270/622-2208	47	TL
Three Rivers Medical Center (ET)	P.O. Box 769 Highway 644	Louisa, KY 41230	Gregory A. Kiser, MSHA, Executive Director	606/638-9451 *606/638-9494	90	BG
Trigg County Hospital, Inc. (CT)	Box 312 254 Main Street	Cadiz, KY 42211	Alisa D. Coleman, CEO	270/522-3215 *270/522-6974	25	TL
Twin Lakes Regional	910 Wallace	Leitchfield, KY	Stephen L. Meredith,	270/259-	75	OV

Medical Center (CT)	Avenue	42754	MHA, CEO	9400 *270/259-9524		
UK HealthCare Good Samaritan Hospital (ET)	310 S. Limestone Street	Lexington, KY 40508	Frank Beirne, Chief Executive Officer	859/226-7000 *859/226-7154	302	BG
University of Kentucky Hospital (ET)	800 Rose Street	Lexington, KY 40536-0293	Murray Clark, Director	859/323-5000 *859/323-2044	473	BG
University of Louisville Hospital (ET)	530 South Jackson Street	Louisville, KY 40202	James Taylor, Chief Executive Officer	502/562-3000 *502/562-3333	404	OV
Veterans Administration Medical Center (ET)	1101 Veterans Drive	Lexington, KY 40502	Sandy J. Nielsen, Hospital Director	859/233-4511 *859/281-4911	190	BG
Veterans Administration Medical Center (ET)	800 Zorn Avenue	Louisville, KY 40206-1499	Wayne Pfeffer, Medical Center Director	502/287-4000 *502/287-6225	114	OV
Wayne County Hospital, Inc. (ET)	166 Hospital Street	Monticello, KY 42633-2416	John Osborne, Administrator	606/348-9343 *606/340-3291	25	CU
Western Baptist Hospital (CT)	2501 Kentucky Avenue	Paducah, KY 42003	Larry O. Barton, FACHE, President	270/575-2100 *270/575-2217	367	TL
Western State Hospital (CT)	P.O. Box 2200 2400 Russellville Road	Hopkinsville, KY 42241-2200	Stephen Wiggins, Director	270/889-6025 *270/886-4487	222	TL
Westlake Regional Hospital (CT)	901 Westlake Drive P.O. Box 1269	Columbia, KY 42728-6269	Rex A. "Rusty" Tungate, Administrator	270/384-4753 *270/384-6228	25	OV
Whitesburg Appalachian Regional Hospital (ET)	240 Hospital Road	Whitesburg, KY 41858	Ellen Wright, Community CEO	606/633-3500 *606/633-3652	90	CU
Williamson Appalachian Regional Hospital (ET)	260 Hospital Drive	South Williamson, KY 41503	Tim Hatfield, Community CEO	606/237-1700 *606/237-1701	163	CU

**TYPE VI MEMBERS**

Appalachian Regional Healthcare	2285 Executive Drive, Suite 400 P.O. Box 8086 (40533)	Lexington, KY 40504	Jerry Haynes, President/CEO	859/226-2440 *859/226-2657		
Baptist Healthcare System, Inc.	4007 Kresge Way	Louisville, KY 40207	Tommy J. Smith, President/CEO	502/896-5000 *502/896-5097		
Catholic Health Initiatives	3900 Olympic Blvd., Suite 400	Erlanger, KY 41018	Gary S. Campbell, Senior Vice President/Operations	859/594-3112 *859/594-3007		
Catholic Healthcare Partners	2335 Grandview	Cincinnati, OH 45206	Michael D. Connelly, President/CEO	513/639-2800		

	Avenue			or 800/582-7068 *513/639-2804		
Commonwealth Health Corporation	P.O. Box 9876 800 Park Street	Bowling Green, KY 42102-9876	John C. Desmarais, President/CEO	270/745-1510 *270)745-1525		
Jewish Hospital and St. Mary's HealthCare	200 Abraham Flexner Way	Louisville, KY 40202	Robert L. Shircliff, President/CEO	502/587-4310 *502/560-8488		
LifePoint Hospitals	103 Powell Court, Suite 200	Brentwood, TN 37027	Thomas M. Weiss, President	615/372-8510 *615/372-8581		
Norton Healthcare	234 East Gray Street, Suite 225	Louisville, KY 40202	Stephen A. Williams, President/CEO	502/629-8791 *502/629-8055		
Quorum Health Resources, Inc.	105 Continental Place	Brentwood, TN 37027	Ronny Humes, Group Assoc. V.P.	615/371-4777 *615/371-4670		
Saint Joseph Healthcare	One St. Joseph Drive	Lexington, KY 40504	Eugene A. Woods, President/CEO	859/313-1000 *859/313-3000		
Trover Foundation	900 Hospital Drive	Madisonville, KY 42431-1694	E. Berton Whitaker, President/CEO	270/825-5857 *270/825-5204		

Appendix 7

Independent Health Departments

Allen County

**Allen County Health Department**

207 East Locust Street  
P.O. Box 129  
Scottsville, KY 42164

**Phone:** 270-237-4423  
**Email:** LisaG.Carter@ky.gov  
**Fax:** 270-237-4777

**Director:** Donnie Fitzpatrick  
**Physician:** Dr. John Hall  
**Outreach Worker:**  
**TB Coordinator:** Lisa Carter, RN

Anderson County

**Anderson County Health Department**

208 South Main Street  
Lawrenceburg, KY 40342

**Phone:** 502-839-4551 ext. 117  
**Email:** [jacqueline.durr@ky.gov](mailto:jacqueline.durr@ky.gov)  
**Fax:** 502-839-8099

**Director:** John Williams  
**Physician:** Dr. Shirley Barron/ Dr. William Carter  
**Outreach Worker:** Mamie Lear  
**TB Coordinator:** Renee Durr, RN

**Ashland/ Boyd County**

**Ashland/ Boyd County Health Department**

2916 Holt Street  
P.O. Box 4180  
Ashland, KY 41105

**Phone:**           **606-324-7181**  
**Email:**           [ValerieS.Barney@ky.gov](mailto:ValerieS.Barney@ky.gov)  
**Fax:**               606-329-2434

**Director:**           Maria Hardy, MSN  
**Physician:**        Dr. Vaughn Eskew  
**Outreach Worker:** Ruth Slone, LPN  
**TB Coordinator:**   **Valerie Barney, RN**

**Bourbon County**

**Bourbon County Health Department**

341 East Main Street  
Paris, KY 40361

**Phone:**           **859-987-1915**  
**Email:**           [joanb.boardman@ky.gov](mailto:joanb.boardman@ky.gov)  
**Fax:**               859-987-3230

**Director:**           Thomas Skeen II  
**Physician:**        Dr. Patricia Swiney, MD  
**Outreach Worker:** Joan Boardman, RN  
**TB Coordinator:**   **Joan Boardman, RN**

**Boyle County**

**Boyle County Health Department**

448 South Third Street  
Danville, KY 40422

**Phone:** 859-236-2053  
**Email:** DebraA.Simmonds@ky.gov  
**Fax:** 859-236-2863

**Director:** Roger Trent  
**Physician:** Dr. William Carter  
**Outreach Worker:** Mamie Lear, LPN  
**TB Coordinator:** Debra Simmonds, RN

**Bracken County**

**Bracken County Health Department**

429 Frankfort Street  
P.O. Box 117  
Brooksville, KY 41004

**Phone:** 606-735-2157  
**Email:** AmyA.Mains@ky.gov  
**Fax:** 606-735-2159

**Director:** Tony Cox  
**Physician:** Dr. Mark Wallingford  
**Outreach Worker:**  
**TB Coordinator:** Amy Mains

**Breathitt County**

**Breathitt County Health Department**

359 Broadway Street  
P.O. Box 730  
Jackson, KY 41339

**Phone:** 606-666-5274  
**Email:** PennyG.Mauk@ky.gov  
**Fax:** 606-666-4601

**Director:** Sheila Sharpe  
**Physician:** Penny Mauk  
**Outreach Worker:**  
**TB Coordinator:** Penny Mauk

**Breckinridge County**

**Breckenridge County Health Department**

105 West Second Street  
P.O. Box 456  
Hardinsburg, KY 40143

**Phone:** 270-756-5121  
**Email:** Mary.Basham@ky.gov  
**Fax:** 270-756-9090

**Director:** Cindy Bandy  
**Physician:**  
**Outreach Worker:**  
**TB Coordinator:** Mary A. Basham (acting)  
Jeannie King (May 2008)  
[Hilda.King@ky.gov](mailto:Hilda.King@ky.gov)

**Bullitt County**

**Bullitt County Health Department**

181 Lees Valley Road  
P.O. Box 278  
Shepardsville, KY 40165

**Phone:** 502-955-7837  
**Email:** [AnneM.Stottman@ky.gov](mailto:AnneM.Stottman@ky.gov)  
**Fax:** 502-543-2998

**Director:** Ned Fitgibbons  
**Physician:** Dr. Linda Fagan  
**Outreach Worker:** Stacey Koch  
**TB Coordinator:** Anne Stottman, RN

**Christian County**

**Christian County Health Department**

1700 Canton Street  
P.O. Box 647  
Hopkinsville, KY 42241

**Phone:** 270-887-4160  
**Email:** [Dianne.Cato@ky.gov](mailto:Dianne.Cato@ky.gov)  
**Fax:** 270-887-4165

**Director:** Anita Simmons  
**Physician:** Dr. John Cotthoff  
**Outreach Worker:**  
**TB Coordinator:** Diane Cato

**Clark County**

**Clark County Health Department**

400 Professional Avenue  
Winchester, KY 40391

**Phone:** 859-744-4482  
**Email:** [Margaret.Copenhaver@ky.gov](mailto:Margaret.Copenhaver@ky.gov)  
**Fax:** 859-737-2426

**Director:** Scott Lockard  
**Physician:** Dr. Martin Evans/ Resident Dr. P. Baveja  
**Outreach Worker:** Linda Lawson-King  
**TB Coordinator:** **Margaret Copenhaver**

**Estill County**

**Estill County Health Department**

365 River Drive, Hwy. 52  
P.O. Box 115  
Irvine, KY 40336

**Phone:** 606-723-5181 (ext. 229)  
**Email:** [Rebecca.Wolfinbarger@ky.gov](mailto:Rebecca.Wolfinbarger@ky.gov)  
**Fax:** 606-723-5254

**Director:** Tim Gould  
**Physician:** Dr. Linda Fagan  
**Outreach Worker:** Judy Profitt  
**TB Coordinator:** **Becky Wolfinbarger**

**Fleming County**

**Fleming County Health Department**

194 Windsor Drive  
Flemingsburg, KY 41041

**Phone:** 606-845-6511  
**Email:** [MarcyM.Faris@ky.gov](mailto:MarcyM.Faris@ky.gov)  
**Fax:** 606-845-0879

**Director:** Stephanie Fryman  
**Physician:** Dr. Glen Womack  
**Outreach Worker:**  
**TB Coordinator:** Marcy Faris

**Floyd County**

**Floyd County Health Department**

283 Goble Street  
Prestonsburg, KY 41653

**Phone:** 606-886-2788  
**Email:** [JeannieD.Lafferty@ky.gov](mailto:JeannieD.Lafferty@ky.gov)  
**Fax:** 606-886-7989

**Director:** Thursa Sloan  
**Physician:** Dr. Charles Arnett  
**Outreach Worker:** Debbie Flannery  
**TB Coordinator:** Jeannie Lafferty, RN

**Franklin County**

**Franklin County Health Department**

100 Glens Creek Road  
Frankfort, KY 40601

**Phone:** 502-564-7647  
**Email:** [AnitaG.Johnson@ky.gov](mailto:AnitaG.Johnson@ky.gov)  
**Fax:** 502-564-9640

**Director:** Rosie Miklovic  
**Physician:** Dr. Benjamin Huneycutt  
**Outreach Worker:** Mayme Lear  
**TB Coordinator:** Anita Johnson, RN

**Garrard County**

**Garrard County Health Department**

89 Farra Drive  
Lancaster, KY 40444

**Phone:** 859-792-2153  
**Email:** [JimmieD.Roper@ky.gov](mailto:JimmieD.Roper@ky.gov)  
**Fax:** 859-792-4719

**Director:** Marsha Hodge  
**Physician:** Dr. William Carter  
**Outreach Worker:** Jimmie Roper  
**TB Coordinator:** Jimmie Roper

**Greenup County**

**Greenup County Health Department**

806 Seaton Avenue Suite 1  
P.O. Box 377  
Greenup, KY 41144

**Phone:** 606-473-9839  
**Email:** [CarolineE.Brown@ky.gov](mailto:CarolineE.Brown@ky.gov)  
**Fax:** 606-473-6405

Director: Curtis Heineman  
Physician: Dr. Cecelia Gaynor  
Outreach Worker:  
**TB Coordinator: Caroline Brown 606-473-9838**  
Nursing Supervisor: Nanette Stevens  
TB Nurse: Sherri Barney, RN

**Hopkins County**

**Hopkins County Health Department**

412 North Kentucky Avenue  
P.O. Box 1266  
Madisonville, KY 42431

**Phone: 270-821-5242**  
Email: [PhyllisY.Kennedy@ky.gov](mailto:PhyllisY.Kennedy@ky.gov)  
Fax: 270-825-0138

Director: Jack N. Morris  
Physician: Dr. Dan A. Martin  
Outreach Worker: Judith W. Pauley, LPN  
**TB Coordinator: Phyllis Y. Kennedy, PC**

**Jessamine County**

**Jessamine County Health Department**

215 East Maple Street  
Nicholasville, KY 40356

**Phone: 859-885-4149**  
Email: [KeriL.Noel@ky.gov](mailto:KeriL.Noel@ky.gov)  
Fax: 859-885-1863

Director: Nancy Crewe  
Physician: Dr. William Carter  
Outreach Worker: Mayme Lear  
**TB Coordinator: Keri Noe, RN**

## Johnson County

### **Johnson County Health Department**

630 James Tremble Blvd.  
Paintsville, KY 41240

**Phone:** 606-789-2590  
**Email:** [RussellW.Briggs@ky.gov](mailto:RussellW.Briggs@ky.gov)  
**Fax:** 606-789-8237

**Director:** Russell Briggs  
**Physician:**  
**Outreach Worker:** Debbie Flannery  
**TB Coordinator:** **Jennifer Hatton**

## Knox County

### **Knox County Health Department**

221 South Liberty Street  
Barbourville, KY 40906

**Phone:** 606-546-3486  
**Email:** [JerriL.Campbell@ky.gov](mailto:JerriL.Campbell@ky.gov)  
**Fax:** 606-546-2867

**Director:** Ray Canady  
**Physician:** Dr. Larry Taylor/ Dr. Linda Fagan  
**Outreach Worker:** Susan Liford  
**TB Coordinator:** **Jerri Campbell**

## Laurel County

### **Laurel County Health Department**

525 Whitley Street  
London, KY 40741

**Phone:** 606-864-5187  
**Email:** [CaroleeB.Epperson@ky.gov](mailto:CaroleeB.Epperson@ky.gov)  
**Fax:** 606-864-8295

Director: Mark Hensley  
Physician:  
Outreach Worker:  
**TB Coordinator: Carolee Epperson**

**Lawrence County**

**Lawrence County Health Department**  
1080 Meadowbrook Lane  
Louisa, KY 41230

**Phone: 606-638-4389**  
**Email: [Delong.Shirley@ky.gov](mailto:Delong.Shirley@ky.gov)**  
**Fax: 606-638-3008**

Director: Faith Frazier  
Physician:  
Outreach Worker:  
**TB Coordinator: Shirley Delong**

**Lewis County**

**Lewis County Health Department**  
P.O. Box 219  
Vanceburg, KY 41179

**Phone: 606-796-2632 ext 227**  
**Email: [ShellyK.Mason@ky.gov](mailto:ShellyK.Mason@ky.gov)**  
**Fax: 606-796-9285**

Director: Bob Bentley  
Physician: Dr. Tommy Vonluhrte  
Outreach Worker:  
**TB Coordinator: Shelley K. Mason**

**Lexington-Fayette County**

**Lexington-Fayette County Health Department**

333 Waller Avenue 4<sup>th</sup> Floor  
Lexington, KY 40504

**Phone:** 859-231-9791  
**Email:** [AnaMfisher@ky.gov](mailto:AnaMfisher@ky.gov)

**Fax:** 859-231-9459

<b>Director:</b>	Dr. Melinda Rowe	
<b>Physician:</b>	Surrinder K. Kad/ Dr. William Carter	
<b>Outreach Worker:</b>	Delores J. Ford	859-227-7981
<b>TB Coordinator:</b>	<b>Ana Fisher</b>	<b>859-229-9368 (cell)</b> 859-889-4254 (office)
<b>Epi/Team Lead</b>	Jessica Dumaurier	859-230-0212 (cell) 859-899-4230 (office)
<b>Office Support</b>	Maggie Menbez	859-519-0526

Primary Care Center  
Lexington Fayette County Health Department  
650 Newtown Pike  
Lexington, KY 40508  
Phone: 859-252-2371

TB Program  
Lexington Fayette County Health Department  
2433 Regency Rd  
Lexington, KY 40508  
Phone: 859-899-5201  
Fax: 859-899-5235

**Lincoln County**

**Lincoln County Health Department**

44 Health Way  
P.O. Box 165  
Stanford, KY 40484

**Phone:** 606-365-3106  
**Email:** [AlissaA.Miracle@ky.gov](mailto:AlissaA.Miracle@ky.gov)  
**Fax:** 606-365-1640

<b>Director:</b>	Diane Miller
<b>Physician:</b>	Dr. William Carter
<b>Outreach Worker:</b>	
<b>TB Coordinator:</b>	<b>Alissa Miracle, RN</b>

## Louisville-Metro

### **Louisville-Metro Health Department**

400 East Gray Street  
P.O. Box 1704 (zip code-40201)  
Louisville, KY 40202

**Phone:** 502-574-6617  
**Email:** [Madonna.White@louisvilleky.gov](mailto:Madonna.White@louisvilleky.gov)  
**Fax:** 502-574-8666

Director:	Dr. Adewale Troutman	
Physician:	Dr. Zahn	
Outreach Worker:	Faye Davis/ Susan Petty	502-574-8053
B1/ B2 Contact:	Lisa Ha	502-574-6617
TB Clerk (Labs):	Lisa Webster	502-574-6716
Computer Analyst:	Carl Hall	502-574-6571
<b>TB Coordinator:</b>	<b>Madonna White</b>	<b>502-574-6565</b>

## Madison County

### **Madison County Health Department**

P.O. Box 1208  
214 Boggs Lane  
Richmond, KY 40476-1208

**Phone:** 859-623-7312 ext 231  
**Email:** [MelissaA.Hemsley@ky.gov](mailto:MelissaA.Hemsley@ky.gov) (859-626-4231)  
**Fax:** 859-626-4298

Director:	James Rousey
Physician:	Dr. Linda Fagan
Outreach Worker:	
<b>TB Coordinator:</b>	<b>Melissa (Lisa) Hemsley, RN</b>

**Magoffin County**

**Magoffin County Health Department**

723 Parkway Drive  
Salyersville, KY 41465

**Phone:** 606-349-6212  
**Email:** [KathyM.Hembree@ky.gov](mailto:KathyM.Hembree@ky.gov)  
**Fax:** 606-349-6216

**Director:** Bertie Kay Salyer  
**Physician:** Hope Family Medical Center  
**Outreach Worker:** Debbie Flannery  
**TB Coordinator:** Kathy Hembree

**Marshall County**

**Marshall County Health Department**

307 East 12<sup>th</sup> Street  
P.O. Box 607  
Benton, KY 42025

**Phone:** 270-527-1496  
**Email:** [BillieJ.Weathers@ky.gov](mailto:BillieJ.Weathers@ky.gov)  
**Fax:** 270-527-5321

**Director:** Larry Davis  
**Physician:** Dr. H.W. Ford  
**Outreach Worker:**  
**TB Coordinator:** B.J. Weathers, RN

**Martin County**

**Martin County Health Department**

Main Street, Highway 3  
P.O. Box 346  
Inez, KY 41224

**Phone:** 606-298-7752

Email: [PhyllisA.Campbell@ky.gov](mailto:PhyllisA.Campbell@ky.gov)  
Fax: 606-298-0413

Director: Jean Ward  
Physician:  
Outreach Worker: Debbie Flannery  
**TB Coordinator: Phyllis Campbell**

### Mercer County

**Mercer County Health Department**  
900 North College Street  
Harrodsburg, KY 40330

**Phone: 859-734-4522 ext. 126**  
Email: [RitaA.Ballard@ky.gov](mailto:RitaA.Ballard@ky.gov)  
Fax: 859-734-0568

Director: John Williams  
Physician: Dr. William Carter  
Outreach Worker: Mayme Lear, LPN  
**TB Coordinator: Rita Ballard, RN**

### Monroe County

**Monroe County Health Department**  
452 East Forth Street  
P.O Box 247  
Tompkinsville, KY 42167

**Phone: 270-487-6782**  
Email: [BettyC.Ford@ky.gov](mailto:BettyC.Ford@ky.gov)  
Fax: 270-487-5457

Director: Rebecca Tandy  
Physician:  
Outreach Worker:  
**TB Coordinator: Betty Ford**

## Montgomery County

### **Montgomery County Health Department**

117 Civic Center  
Mt. Sterling, KY 40353

**Phone:** 859-498-3808 ext. 235  
**Email:** [BernettaL.Copher@ky.gov](mailto:BernettaL.Copher@ky.gov)  
**Fax:** 859-498-9082

**Director:** Jan Chamness  
**Physician:** Taka Ko Sugama  
**Outreach Worker:** Tammy Perry  
**TB Coordinator:** **Bernetta Copher**

## Muhlenburg County

### **Muhlenburg County Health Department**

105 Legion Drive  
P.O. Box 148  
Central City, KY 42330

**Phone:** 270-754-3200  
**Email:** [SandraJ.Grider@ky.gov](mailto:SandraJ.Grider@ky.gov)  
**Fax:** 270-757-9855

**Director:** Joseph Bean  
**Physician:** Dr. Valentino Simpao  
**Outreach Worker:** Betty Hendricks  
**TB Coordinator:** **Joyce Grider**

## Oldham County

### **Oldham County Health Department**

1786 Commerce Parkway  
LaGrange, KY 40031

**Phone:** 502-222-3516  
**Email:** [JoyceA.Cornett@ky.gov](mailto:JoyceA.Cornett@ky.gov)

Fax: 502-222-0816

Director: Leanne Kommer  
Physician: Dr. Madonna Ringwald  
Outreach Worker:  
**TB Coordinator: Joyce Cornett**

### Pike County

#### **Pike County Health Department**

119 River Drive  
Pikeville, KY 41501

**Phone: 606-437-5500**  
Email: [CrystalL.Abshire@ky.gov](mailto:CrystalL.Abshire@ky.gov)  
Fax: 606-433-9690

Director: Paul Hopkins  
Physician: Rafel J. Rangel  
Outreach Worker: Dewanna Rogers  
**TB Coordinator: Crystal Abshire**

### Powell County

#### **Powell County Health Department**

376 North Main Street  
Stanton, KY 40380

**Phone: 606-663-4360**  
Email: [JoanneH.Campbell@ky.gov](mailto:JoanneH.Campbell@ky.gov)  
Fax: 606-663-9790

Director: Darlene Richardson  
Physician: Dr. Linda Fagan  
Outreach Worker:  
**TB Coordinator: Joanne Campbell**

**Todd County Health Department**

**Todd County Health Department**

205 McReynolds  
P.O. Box 305  
Elkton, KY 42220

**Phone:** 270-265-2362  
**Email:** [NormaG.Chapman@ky.gov](mailto:NormaG.Chapman@ky.gov)  
**Fax:** 270-265-0602

**Director:** Leslie Daniels  
**Physician:** Dr. Frank Manthey  
**Outreach Worker:**  
**TB Coordinator:** Norma Chapman

**Whitley County**

**Whitley County Health Department**

114 North Second Street  
Williamsburg, KY 40769

P.O. Box 1221  
Corbin, KY 40702

**Phone:** 606-549-3380  
**Email:** [JudithA.Cornelius@ky.gov](mailto:JudithA.Cornelius@ky.gov)  
[TamaraA.Johnson@ky.gov](mailto:TamaraA.Johnson@ky.gov)  
**Fax:** 606-549-8940

**Phone:** 606-528-5613  
**Email:**  
**Fax:** 606-528-8758

**Director:** Ray Canady  
**Physician:** Dr. Linda Fagan  
**Outreach Worker:**  
**TB Coordinator:** Judith Cornelius, RN (FLMA until August)  
Tamara Johnson, RN PH Nursing Supervisor- Acting TB  
**Coordinator**

**Woodford County**

**Woodford County Health Department**

229 North Main Street  
Versailles, KY 40383

**Phone:** 859-873-4541  
**Email:** [Edie.Flora@ky.gov](mailto:Edie.Flora@ky.gov)  
**Fax:** 859-873-7238

**Director:** Deborah Acker  
**Physician:** Dr. William Carter  
**Outreach Worker:**  
**TB Coordinator:** **Edie Flora**

## Appendix 8

### Pandemic Influenza Stakeholders and Planning Partners

#### Healthcare

Kentucky Department for Public Health/Kentucky Cabinet for Health and Family Services

Regional District and Local Health Departments\*

Kentucky Medical Association

Kentucky Nursing Association

Kentucky Hospital Association/Listing of Institutional Member Hospitals\*

Funeral Director's Association of Kentucky

Kentucky Coroners Association

Kentucky Office of the State Medical Examiner

Kentucky Pharmacists Association (Brad Hall)

Kentucky Home Health Association

Kentucky Department for Public Health/Kentucky Cabinet for Health and Family Services

Centers for Disease Control and Prevention/U.S. Department of Health and Human Services

World Health Organization

National Institutes of Health

#### Public Safety, Law Enforcement, Emergency Services, Infrastructure

Kentucky Emergency Management

Kentucky Office of Homeland Security

Kentucky Department of State Police

Kentucky Federal Bureau of Investigation

E.ON US/Kentucky Association of Electric Cooperatives

Kentucky Chapter - American Public Works Association

Kentucky Department of Transportation

Kentucky Office of the 911 Coordinator

Kentucky Sheriff's Association

Kentucky Fire Commission

Justice and Public Safety Cabinet

Kentucky Department of Criminal Justice Training

Kentucky Chamber of Commerce

Kentucky Labor Cabinet

Kentucky Personnel Cabinet

Kentucky Department of Corrections

Kentucky Department of Military Affairs

Kentucky Airport Authority

Metropolitan Medical Response System (MMRS)

Kentucky Department of Agriculture

U.S. Department of Agriculture

Kentucky Department of Fish and Wildlife Resources

U.S. Department of the Interior  
Kentucky Poultry Federation  
Kentucky Department of Education  
Kentucky Community Crisis Response Board

Additional Planning Partners

University of Kentucky  
University of Louisville  
American Red Cross  
Salvation Army  
Kentucky Grocers Association  
Kentucky League of Cities  
Kentucky Harvest Food Banks  
Kentucky Council on Churches  
Kentucky Telephone Association  
Kentucky Cabinet for Economic Development  
Kentucky Board of Respiratory Care  
Kentucky Department of Revenue  
Kentucky Finance and Administration Cabinet  
Kentucky Environmental and Public Protection Cabinet  
Kentucky Tourism, Arts and Heritage Cabinet  
Kentucky Press Association  
Kentucky Broadcasters Association  
Kentucky Educational Television  
Kentucky Health Emergency Listing of Professionals for Surge (K HELPS)  
Statewide Medical Reserve Corps Units

Vulnerable Populations

The Kentucky Outreach and Information Network (KOIN) is comprised of the following members:

Blind and Visually Impaired

American Printing House for the Blind  
Bluegrass Council for the Blind  
Kentucky Office for the Blind  
Kentucky School for the Blind

Deaf/Hard of Hearing

Kentucky Commission on the Deaf and Hard of Hearing  
Kentucky School for the Deaf

Disabled

Independence Place  
Kentucky Council on Developmental Disabilities  
Kentucky Department of Mental Health/Mental Retardation  
Kentucky Protection and Advocacy

Office of Vocational Rehabilitation  
VA Medical Center, Dept. of Military Affairs

Elderly

Kentucky Adult Day Care Facilities  
Kentucky Area Agencies on Aging  
Kentucky Long-Term Care Centers  
Regional Geriatric Education Centers  
Local Division of Community-Based Services (DCBS) Offices

Low Literacy Levels/Illiterate

Bluegrass Literacy  
Kentucky Department of Education  
Christian Appalachian Project

Remote Rural

Area Development Districts (ADDs)  
Christian Appalachian Project  
HAM Radio Emergency Service Group  
Kentucky Fire Commission  
Kentucky State Police  
Rural Electric Cooperatives  
State Fire Rescue Coordinators  
Statewide Local and Regional Health Departments  
Kentucky Council of Churches

Non-Native or Limited English Proficiency Speaking

Ethnic Media Outlets  
Americana Community Center  
Arab American Association  
Bluegrass Farms Chaplaincy  
Bluegrass Farm Worker Health Center  
Boat People S.O.S. (Vietnamese)  
Bosnian Community, Inc.  
Bowling Green International Center  
Local Division of Community-Based Services (DCBS) Offices  
English as a Second Language (ESL) state board members  
German American Association  
Hispanic/Latino Coalition of Louisville  
India Community Association  
Irish Society of Louisville  
Islamic Center  
Jamaican Association of Louisville  
Japanese American Society of Kentucky  
Kentucky Department of Education  
Kentucky Refugee Ministries

Muslim Association of Louisville  
Office of International Affairs  
Organization of Chinese Americans  
Spanish Services Coordinator, Lexington Public Library Outreach  
Kentucky Council of Churches  
State Universities (English as Second Language)  
Thoroughbred Horse Training Center  
Vietnamese Buddhist Association

\* denotes listing attached

**KENTUCKY COMMUNITY CRISIS RESPONSE BOARD  
 PANDEMIC INFLUENZA PREPAREDNESS PLAN  
 PSYCHOSOCIAL CONSIDERATIONS SUPPLEMENT IX**

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**PSYCHOSOCIAL CONSIDERATIONS  
KENTUCKY COMMUNITY CRISIS RESPONSE BOARD  
INFLUENZA PANDEMIC RESPONSE**

**I. RATIONALE / OVERVIEW**

This supplement to the Kentucky Pandemic Influenza Response Plan addresses the all-hazards approach the Kentucky Community Crisis Response Board (KCCRB) will take in response to situations as they relate to the psychological and behavioral effects of pandemic influenza.

From the past, we know that psychosocial considerations are an important part of a public health emergency. According to the September 2003 report, *SARS: Lessons from the first epidemic of the 21<sup>st</sup> century* prepared by the Directorate of Intelligence of the Central Intelligence Agency, (unclassified) "...understanding and managing the public's psychological and behavioral reactions to an unexpected outbreak of infectious disease are integral to successful response and containment."

KCCRB is responsible for periodically reviewing and updating this plan to ensure that information contained within the document is consistent with current knowledge and changing infrastructure. While this supplement serves as a guide specifically for influenza intervention activities during a pandemic, the judgment of public health leadership based on knowledge of the specific virus may alter the strategies that have been outlined. Priorities of KCCRB during pandemic influenza will be to assess, coordinate and deliver essential disaster behavioral health services as needed.

**II. SCOPE OF OPERATIONS**

All persons affected by disaster, whether impacted civilian populations or personnel assigned to emergency oriented missions within Kentucky, will have available to them the services of the KCCRB and the Kentucky Community Crisis Response Team (KCCRT).

KCCRB will operate within the established incident command structure.

**III. SITUATION AND ASSUMPTIONS**

- An influenza pandemic in Kentucky will present a massive test of the emergency preparedness system. Advance planning for Kentucky's emergency response could save lives and prevent substantial economic loss.
- A pandemic will pose significant threats to human infrastructure responsible for critical community services due to widespread absenteeism.
- Many geographic areas within Kentucky and its neighboring jurisdictions may be affected simultaneously. Localities should be prepared to rely on their own resources to respond. The effect of pandemic influenza on individual communities will be relatively prolonged (weeks to months) in comparison to other types of disasters.
- Kentucky's healthcare and behavioral health delivery systems will be significantly taxed by the increased demand for services precipitated by a

prolonged event. Healthcare workers and other first responders may be at higher risk of exposure and illness than the general population, further straining the healthcare system.

- Widespread illness in the community could increase the likelihood of sudden and potentially significant shortages of personnel in other sectors who provide critical public safety services.
- An effective response to an influenza pandemic will require the coordinated efforts of a wide variety of organizations, private as well as public.
- Disasters, by their inherent conditions, produce the need for behavioral health response. Responding to the psychological and emotional impact of disasters for everyone involved is an integral part of a comprehensive and effective disaster response and recovery strategy. Therefore, a behavioral health response should be made available to individuals at various venues such as home, school, shelter, hospital, and isolation/quarantine areas.
- Individuals psychologically impacted often include those involved in treating the physical casualties. In fact, disaster responders, including medical personnel, are a high-risk group for developing stress and trauma-related disorders. Certain members of the workforce (e.g. healthcare workers) may be at increased risk of infection. Those workers at increased risk of infection are an especially vulnerable group due to a real or perceived increased risk of becoming infected themselves, and/or transmitting infection to their friends and families. In addition to assuring access to personal protective equipment, vaccination and prophylactic treatments for first responders and frontline healthcare workers, healthcare organizations need to direct attention to mitigating the stress-related psychological effects of disaster response on these individuals. Hence, there is a particular need for sensitivity to personal concerns and obligations when workers, for instance, may be separated from their families and loved ones for long hours and even days.
- An influenza pandemic may pose substantial short-term and long-term physical, personal, social, and emotional challenges to individuals and/or the community at large.
- In an influenza pandemic, there may be short and/or long term effects on the behavioral health of individuals due to direct experience with sick and dying loved ones, and on the population as a whole. The particular behavioral health needs of marginalized populations such as homeless people also need to be considered. Along with additional pandemic-related behavioral health needs of the community, providing care for those with pre-existing mental illness will need to continue.

#### **IV. CONCEPT OF OPERATIONS**

KCCRB will organize mental health response into a comprehensive network to conduct Emergency Support Function #8 - mitigation of the psychosocial impact of any mass casualty incident in coordination with Local Management Entities (LMEs), Red Cross, faith-based entities, KCCRT cadre of trained volunteers, KCCRB recognized teams, and private behavioral health partners. Provision of local behavioral response will be administered as available resources permit.

Because some or all of the state-level resources may quickly be exhausted, KCCRB may need to request assistance from Federal Emergency Management Agency (FEMA), the National Disaster Medical System (NDMS) and other states through the Emergency Management Assistance Compact. NDMS consists of the Disaster Medical Assistance Team, the Disaster Mortuary Operation Response Team, Medical Support Unit, Mental Health and Stress Management teams, and the Veterinary Medical Assistance Team. To this end, KCCRB will:

- Conduct assessments relating to space and site resource inventories to determine the availability of staff at shelters, schools, gymnasiums, nursing homes, day care centers, and other potential sites for aggregate care.
- Assess related behavioral health needs of community, victims, families, behavioral health consumers, and emergency workers and their families, in cooperation with local/regional behavioral health centers.
- Provide oversight and coordination of a state response by promoting psychological first aid and resilience for victims and their families as well as first responders and healthcare workers.
- Provide outreach workers with literature and educational materials, for community-wide distribution, on the human response to disaster and stress reduction and self-help information. Support public health community education efforts.
- Be mindful of the “contagion” factor, thus warranting coordination with a Public Information Officer to assist in providing accurate information to the public. It may be necessary to do “virtual” behavioral health response via media (TV, radio, newspaper). This will include press releases that address fear and other psychological reactions to an influenza pandemic.
- Educate healthcare providers, behavioral health responders and the public about the side effects of antivirals.
- Provide assistance to the Kentucky Cabinet for Health and Family Services that will:
  - Provide information and education via phone line for the community
  - Assure consumers’ behavior health concerns are addressed
  - Provide multilingual information as needed
- In the event of a Presidential Declaration of disaster, initiate the application process for federal funding by applying for all FEMA funded disaster crisis counseling assistance grants. Prepare mandated reports for the federal government.
- Institutionalize psychosocial support services in order to help workers manage emotional stress during the response to an influenza pandemic and to resolve related personal, professional and family issues.
- Train behavioral healthcare staff and first responders on how to:
  - Help victims of a disaster emergency deal with the trauma directly associated with an emergency or disaster
- Provide immediate support
- Make appropriate referrals for continuing services.

- Create a plan for continuity of KCCRB operations in case of increased workload or staff losses during a pandemic

(For more information on psychosocial considerations and information needs for healthcare workers, refer to US DHHS Pandemic Influenza Plan, *Supplement 11: Workforce Support*)

## **V. GUIDELINES FOR RESPONSE PHASES**

It is expected that an influenza pandemic will occur in the phases listed below. In actual practice, the distinction between the various phases of pandemic influenza may be blurred or occur in a matter of hours, underscoring the need for flexibility. The response for KCCRB is detailed in each phase.

### **A. Interpandemic Phases 1 and 2**

- Identify private and public sector disaster behavioral health responding partners in the planning process. Foster coordination and participation among private and public sector partners in the planning process.
- Work with agencies to develop contingency plans for large-scale public health disasters like an influenza pandemic.
- Coordinate planning with federal agencies and other neighboring states.
- Provide education and planning guidance to responding disaster behavioral health partners and the community on preparing for and responding to an influenza pandemic.
- Identify major gaps in current ability to effectively respond to an influenza pandemic. Explore possible avenues for addressing and resolving gaps.

### **B. Pandemic Alert Phase 3**

- Notify Local Management Entities (LME) and community partners of the pandemic alert phase 3 (human infections with a new influenza subtype).
- Designate an official contact person to receive updates.

### **C. Pandemic Alert Phase 4**

- Update LME and community disaster behavioral health partners of Pandemic Alert Phase 4 (small clusters of human-to-human transmission of new influenza subtype).
- Monitor bulletins from CDC, WHO, and HAN regarding clinical updates, as appropriate
- Review and update pandemic influenza response and contingency plans.

### **D. Pandemic Alert Phase 5**

- Notify LME and community disaster behavioral health partners of the potential for an influenza pandemic in Kentucky to ensure adequacy of behavioral health response.
- Continue to review pandemic influenza response and contingency plans for large scale public health disasters

- Monitor bulletins from CDC, WHO, and HAN regarding clinical updates as appropriate

#### **E. Pandemic Phase 6**

- Implement contingency plans for large-scale public health disasters.
- Ensure a designated agency contact available to receive updates from KCCRB
- Provide regular updates to LMEs and community disaster behavioral health partners about gaps in agency services.
- Coordinate use of available disaster behavioral health resources during pandemic, including private, public and volunteer resources.
- Coordinate disaster behavioral health activities with other stated and federal health agencies.
- Assess effectiveness of local response and available local capacity.
- Monitor response of KCCRB during pandemic, re-allocate resources as needed
- Apply for FEMA grants as needed.
- Monitor bulletins from CDC, WHO, and HAN regarding clinical updates as appropriate

#### **F. Second or Subsequent Waves**

- Continue all activities listed under Pandemic Phase 6.
- Review, evaluate and modify as needs, the local pandemic response
- Monitor resources and staffing needs.

#### **G. Postpandemic Period**

- Assess state and local capacity to resume normal behavioral health functions.
- Assess fiscal impact of pandemic response.
- Modify the pandemic influenza response and contingency plans based on lessons learned.

#### **REFERENCES**

Appendix M-1, North Carolina Division of Mental Health/Developmental Disabilities/Substance Abuse Services Influenza Pandemic Response Plan  
 Center for Mental Health Services. (2004). *Mental Health Response to Mass Violence and Terrorism: A Training Manual*. HHS Pub. No. SMA 3959. Rockville, MD.

National Institute of Mental Health (2002). *Mental Health and Mass Violence: Evidence-Based Early Psychological Intervention for Victims/Survivors of Mass Violence. A Workshop to Reach Consensus on Best Practice*. NIH Publication No. 02-5138, Washington, C.C.: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (2005). *Pandemic Influenza Preparedness and Response Plan*. Washington, D.C.

World Health Organization. (2005). *Responding to the Avian Influenza Pandemic Threat. Recommended strategic actions*. Communicable Disease Surveillance and Response Global Influenza Programme. Geneva, Switzerland

**WEBLINKS**

KCCRB <http://kccrb.ky.gov/>

American Psychiatric Association. [www.psych.org/disasterpsych](http://www.psych.org/disasterpsych)

American Psychological Association Help Center [www.apahelpcenter.org](http://www.apahelpcenter.org)

National Center for PTSD, Department of Veterans' Affairs [www.ncptsd.va.gov/](http://www.ncptsd.va.gov/)

National Child Traumatic Stress Network [www.nctsnet.org](http://www.nctsnet.org)

**KENTUCKY INFLUENZA PANDEMIC RESPONSE PLAN  
OTHER GOVERNMENTAL ENTITIES SUPPLEMENT X**

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	<b>APPENDIX 2. DEPARTMENT FOR EDUCATION</b>	
	<b>APPENDIX 3. EMERGENCY MANAGEMENT SERVICES</b>	
	<b>APPENDIX 4. HOMELAND SECURITY</b>	
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## Appendix 1

### **KY Pandemic Influenza Operations Plan Agriculture and Food Safety**

**FSIS lead individual:**

Mr. Steve Lalicker, District Manager  
USDA Food Safety Inspection Service  
6020 Six Forks Road  
Raleigh, NC 27609  
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or 1-800-662-7608  
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**Kentucky Department of Agriculture  
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State Veterinarian/Executive Director  
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Fax: (502) 564-7852  
Robert.Stout@ky.gov

The Kentucky Department of Agriculture (KDA) is not responsible for the inspection of meat and poultry processing establishments in Kentucky. Inspection of food processing facilities is a function of the Food Safety Inspection Service (FSIS) of the USDA and the district manager of the Kentucky FSIS is located in Raleigh, NC. The Kentucky USDA has plans for minimizing risk to their employees when dealing with highly pathogenic avian influenza (HPAI) and will follow the direction of the Federal USDA in maintaining critical essential functions. The USDA, KDA, Kentucky Fish and Wildlife, and the Kentucky Department for Public Health (KDPH) have established contact lists for subject matter experts among agencies that will be utilized in the event of a disaster or disease outbreak or merely a routine consultation. Risk communication regarding avian and/or pandemic influenza will be conducted through a Joint Information Center (JIC) coordinated through the state EOC.

The KDA works closely with the USDA and Kentucky Poultry Federation as well as the Food Safety Branch and Division of Epidemiology and Health Planning of the KDPH. The KDA has recently developed a State Agriculture Response Team (SART) as a resource for an emergency response to a disaster or disease outbreak. This is an organization of state agencies, industry, universities, volunteers, and members of the private sector. The USDA and the KDPH have contributed to the planning and development of this team and are active members. In addition, the members of the SART have established contacts and partnerships among themselves. In addition, the KDPH has participated in several local, state, and interstate agricultural exercises with the KDA and USDA in Kentucky.

The KDA is responsible for matters pertaining to live animals throughout the state of Kentucky. KDA has a response plan for low pathogenic avian influenza (LPAI) and is developing an operations plan for avian and pandemic influenza. The KDA conducts routine surveillance of bird purchased from backyard flocks, menageries, and flea markets. KDA has developed call-down lists for all KDA employees and a contact list for outside agencies as well. KDA is developing risk communications documents and press releases pertaining to highly pathogenic avian influenza (HPAI). The KDA is also in the process of developing a Continuity of Operations Plan to identify critical essential functions and develop strategies to maintain them during an emergency.

## Appendix 3

### Emergency Medical Services

During the 2008 Kentucky Pandemic Influenza Plan revision, the Executive Director of the Kentucky Board of Emergency Medical Services was brought into the Kentucky Pandemic Influenza Planning efforts. The Executive Director was asked to help provide some clarifications on guidance. A planning partnership has been established for several years with KBEMS for Kentucky ESF-8 planning efforts.

Below is the contact information for the Executive Director as a summary of the current status of EMS pandemic influenza planning in Kentucky.

<b>Integrate EMS and 9-1-1 into Pandemic Preparedness</b>	
<b>Lead Individual name: Charles O'Neal, Executive Director - Kentucky Board of EMS</b>	
<b>Lead Individual phone number: 859-256-3565</b>	
<b>Lead Individual email: charles.oneal@kctcs.edu</b>	
<b>Supporting Activity</b>	<b>Citation to Supporting Document</b>
<b>Sub-objective 1: EMS Planning</b>	
<i>Respond</i>	
Has the State adopted EMS pandemic influenza plans and operational procedures that define the role of EMS in preparing for, mitigating and responding to pandemic influenza?	For this activity and each one below, please include Title, Page(s), First 5 words of first sentence - No
Has the State established a Statewide program of pre-pandemic training and exercising to prepare EMS personnel for their role in preparing for, mitigating and responding to pandemic influenza?	Yes - Pandemic training has been conducted by local health departments. EMS personnel were invited to participate and continuing education credits were awarded to those that attended. EMS is also invited to participate in tabletop drills and other exercises.
Has the State established a method for developing and distributing pandemic influenza information, including clinical standards, treatment protocols and just-in-time training to local EMS medical directors and EMS agencies?	No
<i>Recover</i>	
Has the State established methods to integrate best practices or lessons learned during the previous pandemic wave into EMS system operations and to issue an after action report?	EMS by and large did not exist during the last pandemic. Most EMS was provided by local funeral homes via hearse. There are no known lessons learned that are applicable to current day EMS operations.
<b>Sub-objective 2: The Role of EMS in Influenza Surveillance and Mitigation</b>	

<i>Respond and Recover</i>	
Has the State established procedures for involving EMS agencies in ongoing disease surveillance?	Not at this time. The Kentucky Board of EMS is in the process of attempting to deploy a data collection system that would assist with syndromic surveillance.
Has the State identified procedures for involving EMS providers in pandemic influenza community mitigation strategies, including Targeted Layered Containment?	State EMS is looking at modifying existing regulations that would allow EMS providers to operate outside of their scope of practice in declared disasters or public health emergencies.
<b>Sub-objective 3: Maintaining Continuity of EMS Operations During a Pandemic</b>	
<i>Respond and Recover</i>	
Does the State have backup plans to augment the local EMS workforce if needed?	Not formally.
Does the State have backup plans to address disruptions in the availability of EMS equipment, supplies and services throughout the State?	Not formally.
Does the State have an effective, reliable interoperable communications system among EMS, 9-1-1, emergency management, public safety, public health and health care agencies?	Kentucky's healthcare system has a limited number of satellite phones available in each and every region of the state. The majority of the fixed and portable satellite radios are located at local health departments and hospitals although some are in emergency management and EMS agencies.
Is there a Statewide communications plan, including communications equipment and radio frequency plan to support common hospital diversion and bed capacity situational awareness at the local, State and regional level?	Not that universally involves EMS. Some EMS agencies have access to the satellite radio system that was deployed with public health and hospitals. Most do not. The statewide data system nor voice communications systems is currently accessible to EMS agencies.
<b>Sub-objective 4: Legal Authority</b>	
<i>Respond and Recover</i>	

Has the state established procedures for EMS providers to deviate legally from their established treatment procedures to support mitigation of and response to pandemic influenza and other public health emergencies while still assuring appropriate education, medical oversight and quality assurance?	State EMS is looking at modifying existing regulations that would allow EMS providers to operate outside of their scope of practice in declared disasters or public health emergencies.
Has the state identified mechanisms to ensure freedom of movement of EMS assets (vehicles, personnel, etc.)?	Not formally.
<b>Sub-objective 5: <i>Clinical Standards and Treatment Protocols</i></b>	
<i>Respond and Recover</i>	
Is there coordinated Statewide medical oversight of EMS pandemic influenza planning, mitigation and response?	Yes. Each EMS agency is required to have their own Medical Director and KBEMS contracts for the services of an EMS Medical Advisor for state functions
Has the State developed mechanisms for rapid development, adoption or modification of prehospital clinical standards and triage/ treatment protocols before or during an influenza pandemic that are based upon the most recent scientific information?	Not on a statewide basis. Each local EMS agency, under the direction of their local Medical Director develops protocols pertaining to triage and treatment of patients.
Has the State defined consistent, system-wide procedures for the rapid distribution of new or modified prehospital EMS treatment and triage protocols before or during an influenza pandemic?	Yes
Has the State defined a process for providing just-in-time training for EMS agencies, EMS providers, EMS medical directors and PSAPs?	No
Has the State defined the role of EMS providers in “treating and releasing” patients without transporting them to a healthcare facility?	Again, this is an issue that is addressed in local protocols developed by the EMS agency in conjunction with the local Medical Director.
<b>Sub-objective 6: <i>EMS Workforce Protection</i></b>	
<i>Respond and Recover</i>	
Has the State identified strategies to assist local EMS agencies with the protection of the EMS and 9-1-1 workforce and their families during an influenza pandemic?	Yes.

Does the State have requirements or recommendations for EMS agencies for basic infection control procedures?	Again, this is an issue that is addressed in local protocols developed by the EMS agency in conjunction with the local Medical Director.
Does the State have system-wide processes for providing vaccines and antiviral medication to personnel?	No
Have State EMS agencies and public health agencies identified mechanisms to address issues associated with isolation and quarantine of EMS personnel?	No
Has the State defined processes to supplement local EMS agencies in offering support services, including mental health services, to EMS personnel and their families during an influenza pandemic?	Not formally.

## Appendix 5

### Law Enforcement

During the 2008 Kentucky Pandemic Influenza Plan revision, the Cabinet Secretary of the Kentucky Justice Cabinet was brought into the Kentucky Pandemic Influenza Planning efforts. The Secretary appointed the Chief of Staff to help provide some clarifications on guidance. A planning partnership has been established for law enforcement at the state level for several years as a representative from the Justice Cabinet was an original member of the Kentucky Pandemic Influenza Planning Committee since 2005.

Below is the contact information from the Justice Cabinet and as a summary of the current status pandemic influenza planning in Kentucky for law enforcement.

<b>Appendix B.15: Public Safety and Law Enforcement</b>		
<b>Lead Individual name: Carol Beth Martin</b>		
<b>Lead Individual phone number: 502-695-6339</b>		
<b>Lead Individual email: CarolBeth.Martin@ky.gov</b>		
Supporting Activity	Citation to Supporting Document	If not applicable, please explain
<i>Prepare</i>	For this activity and each one below, please include Title, Page(s), First 5 words of first sentence	
Has the State, in collaboration with local and tribal governments, reviewed their respective legal authorities relative to what may be needed during an influenza pandemic, assessed whether changes are needed in laws or regulations, and, if so, pursued legislative remedies?		The comprehensive and flexible nature of Kentucky's Emergency Operations Plan (EOP) accommodates any category of natural or man-made disaster to include pandemic disease infection. Existing laws and regulations are deemed sufficient for Kentucky's preparedness

		response.
Has the State provided guidance for local and tribal law enforcement agencies regarding how to meet the potential security needs of medical facilities and countermeasure distribution centers during an influenza pandemic?	KY EOP Annex J - Law Enforcement, Concept of Operation, (K) Facility Protection, p J-8 "(1) There may be a need to protect critical public and private facilities..." <a href="http://kyem.ky.gov/NR/rdonlyres/F3DD633B-3BEA-416D-8A21-E4FDBA71F236/0/ANNEXJALL.pdf">http://kyem.ky.gov/NR/rdonlyres/F3DD633B-3BEA-416D-8A21-E4FDBA71F236/0/ANNEXJALL.pdf</a>	
Has the State provided local and tribal law enforcement agencies with training materials and guidance on protective measures for workforce sustainability as well as the meeting the needs of officers' household members?	The Kentucky Department of Public Health Pandemic Influenza Preparedness Plan, Vaccine Supplement V, B. Definitions and rationales for priority groups, pp 13 through 15 "Groups included in critical infrastructure..." <a href="http://chfs.ky.gov/NR/rdonlyres/4530C96E-72C0-4FB1-8E19-9DD8D3E5422E/0/VaccineSupplement.doc">http://chfs.ky.gov/NR/rdonlyres/4530C96E-72C0-4FB1-8E19-9DD8D3E5422E/0/VaccineSupplement.doc</a>	Kentucky State Police does not have a workforce sustainability plan in place at this time. However, development of such a policy and response plan will be included in KSP's Strategic Plan to be finalized in Fall 2008.
Activity Added by State		
<i>Respond and Recover</i>		

<p>How will State officials coordinate the actions of the interdependent components of the criminal justice system (to include courts, corrections, law enforcement agencies, prosecutors, and probation/parole officials) to avoid or limit interruption of essential services and functions during an influenza pandemic?</p>	<p>KY EOP Annex A - Direction &amp; Control, Appendix A-1, Continuity of Government, pp A-1-1 through A-1-7 "II. Mission: Provide continuity of government and maintain essential services..."  <a href="http://kyem.ky.gov/NR/rdonlyres/779C4473-7425-474F-871B-A6461854BAFD/0/ANNEXAALL.pdf">http://kyem.ky.gov/NR/rdonlyres/779C4473-7425-474F-871B-A6461854BAFD/0/ANNEXAALL.pdf</a></p>	
<p>Are triggers and procedures in place use the National Guard to supplement State, local, or tribal law enforcement agencies?</p>	<p>KY EOP Annex G - Military Support, pp 1 through 5 "I. Situation and Assumptions: A. National Guard State Active Duty"  <a href="http://kyem.ky.gov/NR/rdonlyres/E38576A6-2A92-4052-A715-466F1781A4D8/0/ANNEXG.pdf">http://kyem.ky.gov/NR/rdonlyres/E38576A6-2A92-4052-A715-466F1781A4D8/0/ANNEXG.pdf</a></p>	
<p>Are appropriate State officials aware of the procedures to request emergency federal law enforcement assistance?</p>	<p>KY EOP Annex G - Military Support, pp 1 through 5 "I. Situation and Assumptions: A. National Guard State Active Duty"  <a href="http://kyem.ky.gov/NR/rdonlyres/E38576A6-2A92-4052-A715-466F1781A4D8/0/ANNEXG.pdf">http://kyem.ky.gov/NR/rdonlyres/E38576A6-2A92-4052-A715-466F1781A4D8/0/ANNEXG.pdf</a></p>	
<p>For jurisdictions which have international ports, airports or borders, has coordination been made with appropriate federal officials in the event security must be provided for facilities where individuals may be temporarily quarantined?</p>	<p>KY EOP Annex J - Law Enforcement, Concept of Operation, (K) Facility Protection, p J-8 "(1) There may be a need to protect critical public and private facilities..."  <a href="http://kyem.ky.gov/NR/rdonlyres/F3DD633B-3BEA-416D-8A21-E4FDBA71F236/0/ANNEXJALL.pdf">http://kyem.ky.gov/NR/rdonlyres/F3DD633B-3BEA-416D-8A21-E4FDBA71F236/0/ANNEXJALL.pdf</a></p>	
<p>Are appropriate State officials aware of the procedures to request federal military assistance to provide law enforcement functions, or military equipment and facilities, training, and maintenance support?</p>	<p>KY EOP Annex G - Military Support, pp 1 through 5 "I. Situation and Assumptions: A. National Guard State Active Duty"  <a href="http://kyem.ky.gov/NR/rdonlyres/E38576A6-2A92-4052-A715-466F1781A4D8/0/ANNEXG.pdf">http://kyem.ky.gov/NR/rdonlyres/E38576A6-2A92-4052-A715-466F1781A4D8/0/ANNEXG.pdf</a></p>	
<p>Activity Added by State</p>		



## Appendix 7

### **Military Services - National Guard**

The National Guard has been a partner and stakeholder in planning for a pandemic for a number of years. A representative from the Kentucky National Guard (KYNG) was on the original Planning Committee that began in 2005. The KYNG is also an active planning partner in Strategic National Stockpile preparedness and has participated twice in statewide full-scale exercises.

In preparation for the National Governor's Association Conference and Tabletop Exercise in December 2007, the following document was created to provide a summary of the KYNG Pandemic Influenza Plan and clarify the role of the National Guard in a pandemic.

#### **What role will the National Guard play in Kentucky during a pandemic?**

The Governor will request the Kentucky National Guard (KYNG) to support other state agencies during a pandemic response.

KYNG will respond to an outbreak of Pandemic Influenza (PI) within the Commonwealth of Kentucky to mitigate human suffering, protect critical infrastructure and conduct other PI related tasks as needed to support civilian authorities.

KYNG Soldiers and Airmen will be initially mobilized on State Active Duty or Title 32 Status under control of the Governor. National Guard forces may be federalized under Title 10 of the United States Code should a pandemic become catastrophic.

Because the pandemic is expected to last up to 36 months, unit rotations will be established in order to minimize the impact upon civilian employers and to provide a realistic operational tempo for extended operations.

KYNG Soldiers and Airman mobilized for security missions will be armed with individual weapons and ammunition.

**KYNG members who are professional healthcare providers will be unavailable for mobilization. This group includes physicians, physician assistant, nurses, paramedics, EMS personnel, nursing home workers, nursing assistants, hospital administrators, commercial ambulance employees as well as those individuals working in the area of mortuary affairs. This will allow them to remain at critical civilian sector positions. Other KYNG personnel unavailable for mobilization to allow them to remain at critical civilian sector positions include: important, federal, state and local government positions and those employed to support critical infrastructure within the state. Unit commanders and full-time staff must be aware of the individuals falling into these groups. Examples are employees of Federal Express that may be needed for their civilian job in order to ensure deliver of the Strategic National Stockpile or a railroad employee needed at his/her civilian job in order to ensure the delivery of chlorine to water treatment plants within the state.**

**There may be limited availability of KYNG forces due to mobilization in support of the Global War on Terrorism.**

**KYNG may be requested to assist with quarantine, isolation r cordon sanitary operations.**

**KYNG will be requested to provide transportation, storage, distribution and security of SNS or other medications.**

**KYNG may be requested to provide mortuary affairs assistance.**

**KYNG may be requested to ensure availability of food, water and other supplies due to complications of infected workers and storage facilities.**

**Personnel who are sick and recover from the influenza will be immune or less susceptible to repeat infection and therefore more able to work wit sick personnel.**

**Specifically, the KYNG must provide security and logistical support to public health efforts in order to limit the spread of the virus, reduce the number of**

deaths of those infected, and hasten the state’s economic recovery from a pandemic.

**PPE for National Guard**

Personal Protective Equipment (PPE) will depend the role of a national guard soldier. General guidelines for healthcare, community and workplace can be found in Supplement III Infection Control of the Kentucky Pandemic Influenza Operating Plan.

The National Guard is included in the general state population for vaccine and antiviral medications and healthcare services.

<b>Appendix A.5: Ensure Integration of Uniform Military Services Needs &amp; Assets</b>		
Lead Individual name: Lance Grebe		
Lead Individual phone number: 502-607-1578		
Lead Individual email: david.lance.grebe@us.army.mil		
<b>Supporting Activity</b>	<b>Citation to Supporting Document</b>	<b>If not applicable, please explain</b>
	For this activity and each one below, please include Title, Page(s), First 5 words of first sentence.	
Ensure key State Emergency Planners and Public Health Officials have met with the Adjutant General and his/her key leaders to coordinate PI planning efforts to include identifying critical issues, shortfalls, and planning gaps during the Prepare Phase of PI planning.	Kentucky Pandemic Influenza Base Plan, Page 8, "Members of the Pandemic Influenza Planning and Management Team include"	
If requested by the Governor, or his designee, the National Guard shall provide technical assistance to the Lead State Agency in developing and writing an actionable response plan.	Supplement 10, National Guard Appendix, "The National Guard has been"	
Ensure key State Public Health and Emergency planning officials have been briefed on the full spectrum of State National Guard domestic support capabilities and have incorporated these capabilities into all phases of the State response plan.	Supplement 10, National Guard Appendix, "The National Guard has been"	

Ensure State PI planning and Public Health officials have been briefed on the capabilities of the National Guard of the surrounding states.	Supplement 10, National Guard Appendix, "The National Guard has been"	
Consideration has been given to a regional response plan to share low density or unusual response assets.	Supplement 10, National Guard Appendix, "The National Guard has been"	
Ensure the State National Guard leadership has been briefed by the Lead Pandemic Influenza planning agency to facilitate joint understanding of roles, missions and responsibilities during a pandemic.	Supplement 10, National Guard Appendix, "The National Guard has been"	
Ensure the State Plan recommends continuous and close coordination between the State National Guard, State Emergency Planners and Public Health Officials during a PI event.	Supplement 10, National Guard Appendix, "The National Guard has been"	
Ensure the State National Guard has developed and published an actionable PI plan that been synchronized to, and supports, the overarching State response plan.	Supplement 10, National Guard Appendix, "The National Guard has been"	
Ensure the essential domestic response capabilities of the State National Guard have been identified by the Lead State PI Planning Agency. State planners have cross walked National Guard capabilities to the appropriate NRF ESF's. Shortfalls and critical resource gaps have been identified and specific tasking and requests for support have been issued to the office of the Adjutant General.	Supplement 10, National Guard Appendix, "The National Guard has been"	
Ensure the National Guard requirements for PPE during a pandemic are included in the State Plan.	Supplement 10, National Guard Appendix, "The National Guard has been"	
The State is responsible to provide for the antiviral medications and vaccine requirements of the National Guard, unless Federalized.	Supplement 10, National Guard Appendix, "The National Guard has been"	
Ensure the State PI planners have included the National Guard in State antiviral and vaccine distribution plan.	Supplement 10, National Guard Appendix, "The National Guard has been"	

<p>Ensure state plans include DoD beneficiaries who receive their medical care from the civilian sector are accounted for in determining medical countermeasure requirements, e.g. PPE, anti-viral drugs, and vaccine (when available).</p>	<p>Supplement 10, National Guard Appendix, "The National Guard has been"</p>	
<p>Ensure plans recommend the State Health Department advise local health departments in jurisdictions adjacent to Active Federal Military Installations to contact and coordinate their activities with the installation Public Health Emergency Officer (PHEO).</p>		
<p>Ensure plans recommend continuous coordination and communication between State Emergency planners and the PI coordinators assigned to the five PI Principal Federal Official regions (A thru E) from U.S. Northern Command (NORTHCOM).</p>		
<p>Ensure plans recommend the State Emergency Management Agency advise local emergency managers in jurisdictions adjacent to Active Federal military installations to contact and coordinate their activities with base/post installation managers or the installation commander to identify areas for mutual support.</p>		

## Appendix 9

### **Kentucky Ports of Entry**

Kentucky has 2 ports of entry (POE): the Louisville International Airport and the Cincinnati/Northern Kentucky International Airport. Both of these POEs have emergency operations plans to address human biological vectors entering KY from other states and/or countries. The purpose of the plans are to provide the POEs with standard operating guidelines covering the arrival, processing, and clearance of domestic and international travelers who are exhibiting symptoms indicative of a contagious, infectious disease. The plans also (1) provide comprehensive approaches for management of any incident involving infectious diseases and biological vectors, (2) prevent and/or minimize the potential for exposure of employees and the public to a biological agent, and (3) mitigate the impact of a biological event and ensure continuity of essential airport services. Diseases listed under Section 361 (b) of Public Health Service Act (42 U.S.C. 264(b) for which quarantine and isolation can be ordered include: cholera, diphtheria, infectious tuberculosis, plague, smallpox, yellow fever, viral hemorrhagic fevers, SARS, and highly pathogenic influenza.

The Kentucky Department for Public Health (KDPH) possesses current versions of these plans and has observed operational exercises at the Louisville International Airport. In addition, the local health departments (LHDs) in each of these communities possess a current version of the local POE emergency operations plan and are involved in planning and response activities with each airport. **The plans are not available for public distribution.**

## Appendix 10

### **KY Pandemic Influenza Operations Plan Sustaining Transportation Systems**

#### **Kentucky Transportation Cabinet Lead Individual:**

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The mission of the Kentucky Transportation is to provide a safe, secure, and reliable highway system that ensures the efficient mobility of people and goods, thereby enhancing both the quality of life and economic vitality of the Commonwealth. The Transportation Cabinet is in the development phase of a Pandemic Influenza Operations Plan that will ensure the continuity of operations for maintaining highways and other transportation systems throughout Kentucky. They are currently working with the Kentucky Office of Homeland Security (KOHS), Kentucky Emergency Management (KYEM), and the Kentucky Department for Public Health (KDPH) to develop a comprehensive response and recovery plan to ensure the movement of goods and people and to protect transportation workers in the event of pandemic influenza. The plan currently under development will address essential services, continuity of operations, necessary MOAs/MOUs, chain of command, organizational structure, and ensuring the safety of transportation workers and public. This will be an ongoing process throughout the upcoming year.