



**State of Tennessee**  
**Department of Health**  
**Pandemic Influenza Response Plan**

**July 2006**

**Tennessee Department of Health Pandemic Influenza Response Plan  
Core Plan**

Pandemic Influenza Response Plan  
Tennessee Department of Health  
July 2006

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**I. Lead State Agency:**

The Tennessee Department of Health (TDH) - Bureau of Health Services Communicable and Environmental Disease Services (CEDS) is the agency responsible for providing public health planning for pandemic influenza. Under the direction of the State Epidemiologist, the Medical Director of the Immunization Program will coordinate the department's preparedness activities with regional and local health departments and other stakeholders.

**II. Support Agencies:**

Support agencies that would work with the Tennessee Department of Health in the detection and management of pandemic influenza within the State of Tennessee are listed below:

1. Department of Agriculture
2. Department of Environment and Conservation
3. Department of Military
4. Department of Human Services
5. Department of Commerce and Insurance – State Fire Marshall
6. American Red Cross
7. Department of Mental Health and Developmental Disability
8. Department of Safety
9. Tennessee Emergency Management Agency
10. Tennessee Bureau of Investigation

The federal agency that would provide public health laboratory, epidemiologic and medical support during pandemic influenza is the Department of Health and Human Services (HHS), primarily the Centers for Disease Control and Prevention (CDC). Federal planning resources and information to support local preparation and response for all sectors are publicly available at [www.pandemicflu.gov](http://www.pandemicflu.gov).

**III. Purpose:**

- A. The purpose of this plan is to provide an ethical and evidence-based framework for the public health response to pandemic influenza or an influenza strain with pandemic potential. It also provides guidance for planning by individuals and other sectors of society. During a pandemic or outbreak of a novel influenza virus with pandemic potential, this

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document will serve as an operational annex for Emergency Support Function 8, which is part of the Tennessee Emergency Management Plan (TEMP). The TEMP will be implemented during a pandemic.

- B. This plan provides standard pandemic response policies so local pandemic planners can create and exercise local pandemic plans focused on the implementation of statewide response policies.

**IV. Situation:**

Novel influenza viruses periodically emerge to cause global epidemics, known as pandemics, either directly from a mutated animal influenza virus or out of combination of an animal virus with a circulating human influenza virus. Such viruses circumvent normal immune defenses and cause morbidity and mortality at higher rates than seasonal influenza strains; compared to seasonal influenza, a larger proportion of deaths occur in persons aged <65 years.

Novel influenza viruses that cause pandemics are transmitted from person to person in the same manner as seasonal influenza: typically, by mucosal inoculation with large respiratory droplets caused by coughing or sneezing or by touching contaminated environmental surfaces and subsequently touching one's mouth, nose or eyes.

Ten pandemics have occurred in the past 300 years; there is historical evidence of the success or failure of various strategies to contain or control the spread of influenza. With the exception of a vaccine, antiviral medication, and advanced medical care, many of the strategies used to respond to a modern pandemic are the same as the effective measures of previous generations. For example, though the compulsory restriction of movement in or out of certain regions, known as "cordon sanitaire," was not effective in any but the world's most remote island communities, broad community strategies used to reduce dense social contact were effective and the failure to use such strategies was devastating. The key activities to minimize the impact of a pandemic influenza virus are:

1. Surveillance for disease activity for situational awareness and timely activation of response strategies
2. Accurate communication within and among volunteer and professional responding organizations and with the general public
3. Use of social distancing measures to reduce unnecessary close contacts during a pandemic wave
4. Distribution and use of all available medical resources and personnel

**Pandemic Threat Categories Defined by World Health Organization (WHO):**

The duration of each period or phase is unknown, but the emergence of pandemic viruses is considered inevitable.

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<b>PERIOD</b>	<b>PHASE</b>	<b>DESCRIPTION</b>
<b>Interpandemic</b> No human cases of novel influenza virus	1	No animal influenza viruses circulating with the potential to infect humans
	2	Animal influenza virus is circulating with the potential to infect humans
<b>Pandemic Alert</b> Human cases with increasingly efficient human-to-human spread	3 (May 2006)	Human cases with rare or no human-to-human spread
	4	Small clusters caused by human-to-human spread
	5	Large regional clusters caused by human-to-human spread
<b>Pandemic</b> Worldwide epidemic	6	Geographically widespread and efficiently spread from human-to-human

**V. Planning Assumptions:**

**A. Basis of plan:**

1. The plan is based upon a pandemic of the severity of the 1918-1919 influenza pandemic; public health interventions described herein represent maximal interventions under these conditions. If the characteristics of the actual event do not reflect planning assumptions, responses will be modified accordingly.
2. While focusing primarily on the response to a pandemic (WHO Phase 6), the plan also addresses the response to imported or acquired human infections with a novel influenza virus with pandemic potential (WHO Phases 3-5).

**B. Objectives of pandemic planning:**

1. Primary objective is to minimize morbidity and mortality from disease.
2. Secondary objectives are to preserve social function and minimize economic disruption.

**C. Assumptions for state and local planning:**

1. The plan reflects *current* federal and state response capacity and will be revised annually in light of changes in capacity or scientific understanding.

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2. Tennessee state and local pandemic plans should be consistent with each other and with federal guidelines unless these guidelines fail to reflect the best available scientific evidence.
3. Public education and empowerment of individuals, businesses, and communities to act to protect themselves are a primary focus of state planning efforts; the federal and state government capacity to meet the needs of individuals will be limited by the magnitude of disease and scarcity of specific therapeutic and prophylactic interventions and the limited utility of legal measures to control disease spread.

**D. Disease transmission assumptions:**

1. Incubation period averages 2 days (range 1-10; WHO recommends that, if quarantine is used, it be used up to 7 days following exposure).
2. Sick patients may shed virus up to 1 day before symptom onset, though transmission of disease before symptoms begin is unusual. The peak infectious period is first 2 days of illness (children and immunocompromised persons shed more virus and for a longer time).
3. Each ill person could cause an average of 2-3 secondary cases if no interventions are implemented.
4. There will be at least 2 “waves” (local epidemics) of pandemic disease in most communities; they will be more severe if they occur in fall/winter.
5. Each wave of pandemic disease in a community will last 6-8 weeks.
6. The entire pandemic period (all waves) will last about 2 years before the virus becomes a routine seasonal influenza strain.
7. Disease outbreaks may occur in multiple locations simultaneously, or in isolated pockets.

**E. Clinical assumptions during the entire pandemic period (from federal planning guidance issued in November 2005):**

1. All persons are susceptible to the virus.

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2. Clinical disease attack rate of  $\geq 30\%$  (range: 40% of school-aged children to 20% of working adults).
3. 50% of clinically-ill (15% of population) will seek outpatient medical care.
4. 2%-20% of these will be hospitalized, depending on virulence of strain.
5. Overall mortality estimates range from 0.2% to 2% of all clinically ill patients.
6. During an 8-week wave, ~40% of employees may be absent from work because of fear, illness or to care for a family member (not including absenteeism if schools are closed).
7. Hospitals will have  $\geq 25\%$  more patients than normal needing hospitalization during the local pandemic wave.

**F. Estimate of burden of illness in Tennessee (derived from national estimates from 2005 HHS planning guidance):**

<b>Characteristic</b>	<b>Moderate</b>	<b>Severe</b>
Illness (30%)	1.8 million	1.8 million
Outpatient Care	900,000	900,000
Hospitalization	17,300	198,000
ICU Care	2,575	29,700
Mechanical Ventilation	1,300	14,850
Deaths (Case fatality rate)	4,180 (0.2%)	38,060 (2%)

**G. Assumptions about the Pandemic Alert Period (WHO Phases 3-5):**

1. During the pandemic alert period, a novel influenza virus causes infection among humans who have direct contact with infected animals and, in some cases, through inefficient transmission from person to person. By definition, during the Pandemic Alert Period, cases are sporadic or limited in number with human-to-human spread not yet highly efficient. Limited clusters of disease during this period can be quenched with aggressive steps to stop spread and treat infected individuals.

2. Individual case management, as outlined in Section 7, Supplement 2, will be conducted during the Pandemic Alert Phase. Isolation or quarantine, including the use of court orders when necessary, would be employed to prevent further spread of the virus. Antivirals would be used during this time for post-exposure prophylaxis or aggressive early treatment of cases (supplies permitting), as outlined in Section 6.
3. Efforts to identify and prevent spread of disease from imported human cases and from human cases resulting from contact with infected animals will continue until community transmission has been established in the United States. Community transmission is defined as transmission from person to person in the United States with a loss of clear epidemiologic links among cases. This may occur some time after the WHO declares that a pandemic has begun (WHO Phase 6).

**VI. Concept of Operations:**

**A. WHO Phases 3-5 (Pandemic Alert Period):**

The lead agency for addressing influenza disease among animals is the Department of Agriculture (described in TEMP ESF 11). TDH will provide support to the Department of Agriculture in the prevention of human infections and in surveillance and management of human disease as it pertains to contact with infected animals.

The TDH is the lead agency for responding to human influenza disease caused by a novel influenza virus with pandemic potential, whether imported from an area with ongoing disease transmission or acquired directly from an animal in Tennessee. The State Health Operations Center (SHOC) would be set up, depending upon the scope of and duration of the situation. See Section 7, Supplement 2, for isolation and quarantine guidelines during the Pandemic Alert Period. Guidance for hospital management and investigation of cases during the pandemic alert period is located in Section 4. The CDC will provide additional support and guidance regarding human infection management during this period.

The primary activities during this period are surveillance for imported cases or cases contracted from contact with infected animals. Any detected cases will be aggressively investigated by the TDH and contacts are to be identified, quarantined, and treated, as appropriate. The objective is to stop the spread of the virus into the general community.

**B. WHO Phase 6 (Pandemic):**

The lead agency for the public health response to a pandemic is the Department of Health. The state response will be conducted in collaboration with federal response agencies; primarily, the Department of Health and Human Services (HHS) and Department of Homeland Security (DHS).

The primary activities are surveillance for disease, communication, implementation of general social distancing measures, support of medical care services, appropriate use of available antiviral medications and vaccines, and response workforce support. The TDH is primarily responsible for communication with federal health authorities and creating state-wide pandemic response policies; the implementation of response measures is the responsibility of local communities and local public health authorities. Operational details will be outlined in regional health department pandemic plans.

## **VII. Section Summaries:**

Public health pandemic response policies are outlined in attached sections. Supplements contain additional detail on state policies and procedures in a specific aspect of the section. Attachments to sections or supplements may be sample forms, excerpts from the federal pandemic plan, recommendations for institutional pandemic plans, or other illustrations. Each section is briefly summarized below.

### **Section 1. Ethics and Principles for Planning and Response**

This section outlines an explicit framework for ethical pandemic planning and decision making during a pandemic. The section provides a context for understanding the principles used to formulate policies regarding allocation of resources and disease control measures in the pandemic plan.

### **Section 2. Disease Surveillance**

This section outlines the use and enhancement of current influenza surveillance strategies to monitor for early human infections caused by a novel influenza virus with pandemic potential and to track and respond to the spread of influenza during a pandemic. A focus of this section is the Sentinel Provider Network, a network of outpatient physicians who report the percentage of their patients seen with influenza-like-illness (ILI) and submit occasional specimens for culture at the state laboratory during influenza season.

### **Section 3. Laboratory Diagnostics**

This section outlines laboratory testing and result reporting procedures for novel influenza viruses in Tennessee and describes the volume of testing possible with current resources. The section

also highlights the criteria for novel influenza virus testing before a pandemic (requires concurrence of a CEDS physician) and the purposes and criteria for testing specimens during a pandemic. Attachment A contains laboratory guidance from the federal Health and Human Services Pandemic Plan, released in November 2005.

#### **Section 4. Hospital Planning**

This section outlines the details of healthcare provision, focusing on acute care inpatient facilities, before and during a pandemic. Because the exact nature of pandemic disease cannot be known with certainty, clinical treatment guidelines will be distributed to providers as they become available. The main section has two attachments: Attachment A contains the hospital planning guidance from the federal government, and Attachment B contains a list of hospital planning resources.

**Supplement one**, infection control, focuses on prevention of spread of pandemic influenza and other nosocomial infections. Because a pandemic is expected to overwhelm healthcare systems, strict infection control measures will be the primary means of minimizing hospital stays and morbidity and mortality among staff and patients by preventing the nosocomial spread of influenza and traditional nosocomial pathogens. Attachment A to this supplement summarizes infection control guidance provided in the HHS pandemic plan published in November 2005.

**Supplement two** outlines the plan for collaboration between hospitals and public health for conducting surveillance for disease and regular assessments of available resources. Hospital surveillance will be a critical tool for assessing the severity and prevalence of the pandemic virus; it will provide data for decision-making about scarce resource allocation.

**Supplement three**, surge capacity, outlines the challenges faced by healthcare facilities as they prepare to cope with a sudden increase in the number of seriously ill patients and provides detailed guidance on options to expand patient care capacity. The primary objective of surge capacity is to provide human and material resources necessary to keep existing healthcare facilities functioning at maximum capacity. Because of the widespread and prolonged nature of a pandemic, the establishment of temporary healthcare facilities that rely on borrowed resources and staff are not encouraged. Instead, these resources should be directed to existing facilities as long as needs exist in these facilities. The attachment covering temporary healthcare facilities outlines the critical requirements for establishing a temporary healthcare facility, if this is considered.

**Supplement four** provides a detailed framework for ethical allocation of scarce resources in healthcare provision. This supplement describes options for resource allocation and re-allocation in situations where such decisions must be made.

**Section 5. Vaccine Distribution and Use**

This section describes the principles of state vaccine use. If supplies are limited, as they are under current manufacturing conditions, all vaccine will be administered in designated health department clinics designated for this purpose over the course of months. All vaccinations will be recorded and reported as required by the federal government. Vaccine will be administered to people according to priority groupings, sub-prioritized within the broader groups that are designated by the federal government. Priority groupings are subject to change depending upon the nature of the virus and upon the ultimate decisions about priority groups.

**Section 6. Antiviral Drug Distribution and Use**

This section describes the policies for use of antiviral drugs to prevent spread of novel influenza virus outbreaks with pandemic potential and to treat patients during a pandemic. Principles for use are based upon currently available antiviral medications (5.1 million standard treatment courses in the US). Treatment courses will be pre-positioned in Tennessee in collaboration with the federal Strategic National Stockpile program. This section also refers to the use of antiviral medications stockpiled by hospitals for the use of hospital personnel (outside the state or federal stockpile programs).

In response to isolated cases of novel influenza virus, caused by contact with a sick animal in Tennessee or imported from affected areas, antiviral medications will be provided in accordance with national policies at the time. It is likely that post-exposure prophylaxis of close contacts will be done before the beginning of a pandemic, in efforts to stamp out isolated outbreaks and prevent a pandemic from beginning. Once a pandemic begins, the widespread nature of disease and limited supply of antiviral drugs will necessitate that post-exposure prophylaxis of contacts be stopped in order to save as many lives as possible. During the pandemic, treatment courses will be dispensed to the top priority patients for treatment – those who are hospitalized with pandemic influenza.

**Section 7. Community interventions**

This section outlines social distancing and other community interventions that may be implemented to respond to isolated cases of illness caused by a novel influenza virus with pandemic potential and during a pandemic. The main section reviews general community distancing measures to be implemented during a

pandemic. The criteria for the implementation of social distancing strategies will be uniform across the state. The standard measures will be implemented in a county and its neighboring counties when laboratory and epidemiologic evidence of the presence of the virus circulating in a county. Attachment A to this section gives guidance to businesses concerning the types of issues they may face when preparing business contingency plans for a pandemic and lists some business planning resources.

**Supplement one** summarizes the legal authority of the Commissioner of Health and health officers to implement measures to prevent the spread of disease that may be used during pre-pandemic outbreak investigation and case management, as well as during a pandemic.

**Supplement two** covers the management of outbreaks or isolated cases of a novel influenza virus with pandemic potential. Such outbreaks during the pre-pandemic period will be actively investigated and individual cases and contacts will be tracked and monitored to stamp out such outbreaks. Case management will include isolation of patients and quarantine of contacts, using court-ordered measures only if required. During the pre-pandemic period, the objective is to prevent the novel influenza virus from becoming capable of starting a pandemic. Once a pandemic begins and the influenza virus is spreading easily from person to person, individual case management becomes both inefficient and ineffective at controlling disease; at that point, the focus of disease control shifts to broad community interventions outlined in the main section.

**Supplement three** describes the strategies for controlling influenza among children in schools or child care facilities. The strategies are outlined in stages that parallel the stages of other general community interventions in the main section document. Colleges and universities are not treated like secondary schools and child care facilities, but are considered to be part of the general community with special considerations. Attachment A to this supplement provides information on issues to consider and resources for planning for colleges and universities.

**Supplement four** on special populations attachment highlights the public health issues to be planned for by confined populations: correctional facilities and nursing home residents.

## **Section 8. Public Health Communications**

This section outlines the communication goals and strategies of public health to meet the information needs of the general public, ill persons who are isolated or exposed persons quarantined at

home, the media, the medical community and other pandemic response partners.

**Section 9. Workforce and Social Support**

This section outlines resources and issues for support to the public health workforce and social support to communities. Special attention is paid to the role of Volunteer Organizations Active in Disasters. This section is primarily intended to provide direction to regional pandemic planners in creating operational local plans to address social needs for the response workforce and affected individuals.

**VII. Training:**

The state pandemic preparedness plan will be used to guide the development of regional and local preparedness plans. Plans will be drilled in partnership with other stakeholders and updated to correct weaknesses identified through these exercises.

**VIII. Acronyms:**

AIIRs

Airborne Infection Isolation Rooms

APHIS

Animal and Plant Health Inspection Service

APHL

Association of Public Health Laboratories

BMBL

Biosafety in Microbiological and Biomedical Laboratories

BSL

Biosafety level

CDC

Centers for Disease Control and Prevention

CEDS

Communicable and Environmental Disease Services

CNS

Central Nervous System

DEA

Drug Enforcement Agency

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<u>DEOC</u>	Director's Emergency Operations Center
<u>DHS</u>	Department of Homeland Security
<u>EMT</u>	Emergency Medical Technician
<u>EPA</u>	Environmental Protection Agency
<u>ESF</u>	Emergency Support Function
<u>HEPA</u>	High Efficiency Particulate Air (filter)
<u>HHS</u>	Department of Health and Human Services
<u>HPAI</u>	Highly Pathogenic Avian Influenza
<u>ICU</u>	Intensive Care Unit
<u>IHC</u>	Immunohistochemical
<u>ILI</u>	Influenza-like illness
<u>IT</u>	Information Technology
<u>LEA</u>	Local Educational Authority
<u>LRN</u>	Laboratory Response Network
<u>NIH</u>	National Institutes of Health

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OMS

Outbreak Management System

PCR

Polymerase chain reaction

PPE

Personal Protective Equipment

preK

pre-Kindergarten

PTBMIS

Patient Tracking Billing Management Information System

RT-PCR

Reverse-transcriptase polymerase chain reaction

SARS

Severe Acute Respiratory Syndrome

SHOC

State Health Operations Center

SNS

Strategic National Stockpile

SPN

Sentinel Provider Network

STD

Sexually-transmitted disease

T-HAN

Tennessee Health Alert Network

TB

Tuberculosis

TCA

Tennessee Code Annotated

TDH

Tennessee Department of Health

TEMP

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Tennessee Emergency Management Plan

THA

Tennessee Hospital Association

TPA

Tennessee Pharmacy Association

USDA

US Department of Agriculture

WHO

World Health Organization

# **Section 1: Ethics and Principles for Planning and Response**

**Tennessee Department of Health Pandemic Influenza Response Plan**  
**Section 1: Ethics**

**I. Purpose:**

To outline the explicit ethical values used to develop this plan which are recommended to guide and support decision-making during both preparation and pandemic response at the state, local and facility level. By making ethical values explicit and using them, the intent is to increase trust and solidarity among all stakeholders.

**II. Introduction:**

The Tennessee Pandemic Influenza Response Plan is designed to implement policies and procedures rapidly in order to minimize illness and death from influenza while also minimizing the adverse impact of disease and the response to it on social order and economic stability. Governments, medical personnel, communities and individual citizens will face ethical challenges as a result of scarce critical resources and the need to impose restrictions on normal activities to minimize illness and death. This document is based upon *Stand on Guard for Thee*, a report of the University of Toronto Joint Center for Bioethics Pandemic Influenza Working Group (<http://www.utoronto.ca/jcb/home/documents/pandemic.pdf>).

Certain specific issues require careful ethical consideration in state and local planning. These include:

1. Healthcare providers' duty to accept personal risks to provide care to pandemic victims during an outbreak
2. Restrictions of individual liberty in the interest of public health
3. Allocation of scarce resources through priority-setting

**III. Ethical Principles and Values:**

The following three tables lay out the principles and values that should be used to guide decision-makers throughout pandemic planning and response.

**Table 1. Criteria for response policies**

<b>Criterion</b>	<b>Description</b>
<b>Feasible</b>	Policies should be practical and feasible with available resources
<b>Evidence-based</b>	All policies should be supported by the best available medical and epidemiologic evidence at the time.
<b>Concordant with federal guidance</b>	Insofar as federal guidance is concordant with the best available medical and epidemiologic guidance, all policies should follow federal guidance. Changes in state actions may occur in advance of federal guidance if the federal guidance is lagging behind changing information.

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**Table 2. Values to guide ethical decision-making for pandemic influenza response**

<b>Value</b>	<b>Description</b>
<b>Individual Liberty</b>	Restrictions may be necessary to protect the public from serious harm. Restrictions should be: <ul style="list-style-type: none"> <li>• Proportional to the hazard</li> <li>• Necessary and relevant</li> <li>• Use the least restrictive means necessary</li> <li>• Applied equitably</li> </ul>
<b>Proportionality</b>	Restrictions and measures to protect the public from harm should be proportional to the actual level of risk and benefit to the community
<b>Protecting the public from harm</b>	Restrictions on individual liberty may be necessary to protect the public. Decision makers should: <ul style="list-style-type: none"> <li>• Weigh how imperative is compliance with the measure</li> <li>• Provide reasons to justify the decision to encourage compliance</li> <li>• Establish clear mechanisms to review decisions</li> </ul>
<b>Duty to provide care</b>	Health care professionals have an ethical duty to provide care to the suffering. They must weigh this duty against competing personal obligations and risks. They may be asked to face challenges of scope of practice, professional liability and workplace conditions.
<b>Reciprocity</b>	Society should support those who take on a disproportionate burden to protect the public good and to minimize these burdens as much as possible. Such disproportionate burdens are likely for health care workers, patients and their families.
<b>Stewardship</b>	Decisions should be made to achieve the best patient health and public health outcomes given the unique circumstances of a pandemic.
<b>Equity</b>	Normally, all patients have an equal claim to receive health care. During a pandemic, it may be necessary to defer some health services, including elective procedures and, possibly, some emergency or necessary services.
<b>Privacy</b>	Ordinarily, a right to privacy in health care exists; during a pandemic, situations may occur when this right must be balanced against a need to protect the public from serious harm.

**Table 3. Procedural guidelines for ethical decision-making**

<b>Procedural value</b>	<b>Description</b>
<b>Reasonable</b>	Decisions should be based on reasons that stakeholders can agree are relevant to meeting health needs (e.g., evidence, core values). Decision makers should be credible and accountable.
<b>Open and transparent</b>	The decision-making process should be open to scrutiny and

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**Section 1: Ethics**

	the basis for decisions should be publicly accessible.
<b>Inclusive</b>	Stakeholder views should be considered and stakeholders offered opportunities to be engaged in the process
<b>Responsive</b>	There should be opportunities to review and revise decisions in light of new information. There should be mechanisms to address disputes and complaints.
<b>Accountable</b>	Decision-makers should be answerable for their actions and inactions, which should be grounded in the ethical values proposed above.

# **Section 2: Disease Surveillance**

**Tennessee Department of Health Pandemic Influenza Response Plan**  
**Section 2: Surveillance**

**I. Purpose:**

To detect and track pandemic influenza activity among humans using multiple surveillance systems. Data are to be used to make resource allocation and intervention decisions.

**II Assumptions:**

Influenza disease is tracked each season using a variety of surveillance systems at the local, state and federal levels. An individual case of influenza is not a notifiable disease in state regulations, nor is it expected to become notifiable because of the resulting reporting burden with thousands of cases in a short period of time. Many years of traditional reporting systems have resulted in fairly reliable interpretation of trends in influenza-like-illness (ILI) activity associated with actual influenza disease in a community, despite the range of viruses capable of causing acute febrile respiratory illnesses during fall and winter months.

Details of all surveillance systems are not provided here, because these surveillance systems are already in use. Additional surveillance systems may be instituted by the Centers for Disease Control and Prevention (CDC). The state will participate in these systems as requested. As novel technology makes new surveillance strategies possible, those available for implementation by the Department of Health will be added to future revisions of this plan.

Surveillance for influenza among animals, primarily domestic poultry, is the responsibility of the Tennessee Department of Agriculture. The role of the Tennessee Department of Health (TDH) is to work with the Department of Agriculture to address human health needs in the event of detection of an animal influenza virus with the potential to threaten human health.

**III. Surveillance Systems:**

**A. Sentinel Provider Network (SPN):**

Outpatient surveillance for influenza in Tennessee is presently conducted through the SPN, according to CDC guidelines; this network is expected to be a primary source of outpatient influenza surveillance data during a pandemic. As of January 2006, 26 healthcare providers in Tennessee are part of the network, representing approximately 1 provider per 250,000 persons. The proportion of providers reporting weekly is monitored regularly. Approximately 60% of the expected numbers of weekly reports are submitted each year, overall (Table 1). Providers who do not report consistently during a season are replaced with new volunteers each year. SPN providers collect two or three specimens from patients with ILI at the beginning, middle, and end of the season and from any unusual clinical cases, severe cases, outbreak-related cases, and patients with ILI during

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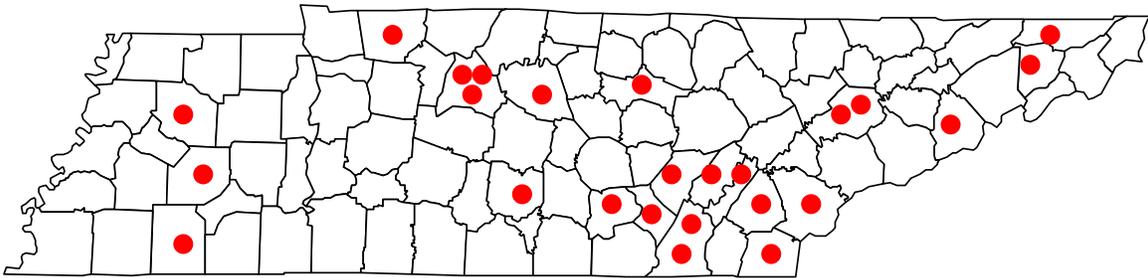
the summer. Fewer than the minimum numbers of expected specimens are submitted each year, though compliance has improved in recent seasons.

The TDH recruits SPN members through the 13 regional CDC nurse/epidemiology personnel. This local network of healthcare providers reports weekly the total number of patient visits and number of patients with ILI. Providers report to CDC via a password-protected Internet site. Data are available to state health department influenza surveillance coordinators on-line. Data reported by providers on the Internet are available in real time. SPN members also send specimens from a subset of patients with ILI to the State Laboratory for diagnostic testing at no cost. Five influenza specimen collection kits are sent out to each provider in Tennessee in mid- October each year from the TDH Laboratory. These collection kits are replenished as used during the influenza season via the TDH Laboratory.

Table 1.

	2002-03	2003-04	2004-05	05-06 YTD
% of total expected ILI reports for the season actually submitted	73	62	57	55
Number of specimens submitted for culture	59	141	147	37

**Distribution of Sentinel Providers, January 2006**



**SPN Expansion for Pandemic Preparedness:**

The Communicable and Environmental Disease Services Section (CEDS) of the TDH will collaborate with Regional Health Departments to expand the existing SPN to provide the primary mechanism for surveillance of outpatient ILI activity statewide, prior to and during a potential influenza pandemic. The network of volunteer clinicians will be increased to ensure

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at least one active provider per 100,000 persons, with appropriate geographic and demographic distribution to ensure that representative data are collected. This will involve the active participation of at least 60 providers state-wide. Additional volunteers will be encouraged.

Year-round, weekly internet reporting of ILI will be required of all participating providers. Providers not actively, consistently and reliably participating will be contacted in person by health department personnel, and will be replaced if they cannot provide adequate data. Providers will be assigned to submit to the TDH Laboratory at least one appropriate respiratory specimen per month, according to a protocol established by the CEDS Influenza Surveillance Coordinator. Specimen collection kits and shipping will be provided by the TDH Laboratory.

Regional health department epidemiology staff will be responsible for recruiting the appropriate sentinel providers within their region, according to guidance provided by the CEDS Influenza Surveillance Coordinator. The CEDS Influenza Surveillance Coordinator and other CEDS staff will coordinate the program centrally, and will assist with communication with the CDC.

Data from this sentinel surveillance system will be monitored regularly by CEDS staff. In the event of a pandemic or other substantive change, participating providers may be asked to change the frequency of reporting or specimen submission, using existing communication mechanisms with network physicians.

**B. Syndromic surveillance:**

Syndromic surveillance systems collecting non-specific health indicator information from a variety of sources have been developed by regional health departments. Systems, such as 911 data, may provide other types of alerts to regional health departments about influenza activity in their regions.

**C. School absenteeism:**

The Department of Education obtains daily student absenteeism rates from all local public school systems through an electronic reporting system. The Department of Education will share these data with the TDH to enhance surveillance for influenza activity evidenced by increasing absenteeism levels. A mild pandemic may not result in mandatory school closure; however, if a severe pandemic virus is detected spreading in the community using other surveillance methods, it is anticipated that schools will be closed.

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**D. Hospital surveillance:**

Hospital surveillance is detailed elsewhere (Section 4, Supplement 2 [Hospital Surveillance]). Once the pandemic response plan is activated, daily electronic reports from hospitals to health departments may include emergency room data on ILI, confirmed disease, admissions, and deaths.

**E. Laboratory surveillance:**

The percentage of specimens testing positive for influenza at state and research hospital laboratories are reported weekly. Seasonal influenza peaks are typically associated with ~25% of submitted specimens testing positive.

# **Section 3:**

# **Laboratory Diagnostics**

## **Attachment A:**

## **Federal Pandemic Plan Laboratory Guidance**

**Tennessee Department of Health Pandemic Influenza Response Plan**  
**Section 3: Laboratory Policy and Procedures**

**I. Responsible Agency:**

The Tennessee Department of Health (TDH) Laboratory is the agency responsible for testing human specimens for pandemic influenza and influenza subtypes with pandemic potential (e.g., H5N1), as well as communicating with other sentinel laboratories licensed in Tennessee.

**II. Purpose:**

The purpose of laboratory testing is to confirm the diagnosis of human influenza caused by novel influenza viruses or a pandemic influenza virus. Such testing will be used to confirm the presence of a novel influenza virus or pandemic virus in the community. During a pandemic, in the absence of serologic testing, testing of clinical specimens also will be done to confirm infection, in order to identify recovered persons that they can work with pandemic influenza patients without risk of contracting the disease, and excluding these recovered persons from priority groups for the administration of vaccine.

**III. Testing of Non-Human Specimens (WHO Phases 3-5):**

Laboratory testing of birds or animals for influenza is the responsibility of the Department of Agriculture. Requests should be directed to the Office of the State Veterinarian at the Department of Agriculture.

**IV. Laboratory Capacity:**

With current equipment, reagents, and personnel, the following numbers of specimens can be tested for influenza using real time reverse transcription polymerase chain reaction (real time RT-PCR) at the state laboratory:

**A. TDH Laboratory Testing Capacity:**

The state public health laboratory in Nashville is capable of testing human specimens for novel influenza viruses using real time RT-PCR according to Laboratory Response Network (LRN) and the American Public Health Laboratory (APHL) protocols. Varying numbers of specimens may be tested, depending upon the number of targets against which each specimen is tested. Each round of testing takes approximately 3 hours.

LRN protocols may also be used to test specimens at state laboratory branches in Jackson, Knoxville and Memphis.

**V. WHO Phases 3-5, Pandemic Alert (Pre-Pandemic):**

**A. Suspect Case Reporting:**

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If a clinician reports a patient with a suspected case of novel influenza that meets the current epidemiological and clinical criteria for testing, according to a physician in the Communicable and Environmental Disease Services (CEDS) section of the TDH, the case will be reported to the Centers for Disease Control and Prevention (CDC) Emergency Operations Center at (770)488-7100. The state laboratory will follow the guidance of the CDC virology laboratory and either submit the specimen directly to the CDC or conduct RT-PCR testing before submission.

**B. Specimen Collection and Shipping:**

1. During the Pandemic Alert Period (WHO Phases 3-5), testing of a human specimen for a novel influenza virus must be authorized by a physician within CEDS.
2. Federal guidance provided by the Department of Health and Human Services (HHS) on specimen collection and shipping, current as of November 2005, is attached to the end of this section. This information is subject to change and will be updated through communications from the state laboratory or CEDS.
3. Unless otherwise directed by a CEDS physician, all influenza specimens should be sent to the State Laboratory in Nashville for testing. Informed consent is not required.  
Address:  
Laboratory Services: Attn. Virology  
630 Hart Lane  
Nashville, Tennessee 37216  
Telephone: (615) 262-6300  
Fax: (615) 262-6393
4. Confirmatory testing of all specimens positive for novel influenza virus will be conducted at CDC. During a pandemic, confirmatory testing will not be done at CDC for most specimens.
5. Only confirmed results will be considered valid and reported to the public.
6. Until and unless commercial tests are accepted as valid by CDC, any commercial laboratory results are considered preliminary until confirmed by CDC and should not be publicly announced as a positive result.

**C. Specimen testing:**

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During this pre-pandemic period, human infections are caused by a novel influenza virus considered to have pandemic potential, but the virus lacks the ability to transmit easily from person to person.

Routine surveillance specimens submitted by the Sentinel Provider Network (SPN) will be processed by real time RT-PCR or culture. Real-time RT-PCR will determine if the specimen is influenza A or B, and specify if the type A virus has hemagglutinin (H) 1, H3, H5 or H7. If there is a risk of detecting a novel influenza virus in Tennessee, all specimens will be tested by real-time RT-PCR before culture to minimize the risk to laboratory personnel. This risk will be communicated to the State laboratory by the State epidemiologist or designee and will be determined based upon the presence of a novel influenza virus capable of causing human disease in the United States and outside a confined area of known risk (e.g., in migratory birds in Tennessee or the Southeastern US).

**D. Results reporting:**

Results of specimen testing will be mailed to providers and will be available to regional health departments electronically. Confirmation will be required by CDC unless CDC announces a change to this policy.

**VI. WHO Phase 6 (Pandemic Period):**

**A. Selecting specimens for testing:**

During a pandemic, once the virus is causing disease in Tennessee, testing of all specimens will cease. Specimens for testing at the State Laboratory or a branch of the State Laboratory will require the approval of a CEDS physician, regional health officer, or their designee, which will be indicated by the presence of a checked field “approved for RT-PCR” and/or “approved for culture” in the Outbreak Management System (OMS) or other database used for laboratory results reporting to the regional health departments.

Justification for confirmatory testing for a clinical case would include: (1) characterization of a significant epidemiologic or clinical change, (2) confirmation of a pandemic virus in a new region of the state or (3) confirmation of disease in a health care provider or other person at high risk of exposure in order to exclude the need for future vaccination and possibly reduce the need for Personal Protective Equipment (PPE) (in the absence of an alternative serologic test).

**B. Specimen testing technique:**

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During a pandemic period, specimens provided by the SPN will be tested by real-time RT-PCR. In order to double the number of specimens tested in a single testing cycle, the real-time RT-PCR may be set up to distinguish only the pandemic H-type (e.g., H5), and generic influenza A or B. The current LRN protocol used in branch state laboratories tests only for H5.

**C. Specimen collection and shipping:**

Same as for the Pandemic Alert Period. Any changes to this guidance will be disseminated to laboratories and clinicians by the State Laboratory and CEDS.

**D. Results reporting:**

Results of specimen testing will be mailed to providers and will be available to regional health departments electronically. OMS or another database will be available at the state laboratory for data entry. Patients already approved for testing should have demographic data already present in OMS, thereby decreasing the work to accession specimens.

Under normal conditions, laboratory personnel responsible for running tests document and send result reports to clinicians. Once laboratory testing exceeds normal capacity, the laboratory will require data entry support staff to permit laboratory personnel to focus on testing.

**VII. Laboratory occupational health:**

All laboratory personnel in state, clinical, or research laboratories working with novel influenza viruses should be monitored in the event of developing any influenza like illness (ILI). Federal guidelines for directors of laboratories handling novel influenza viruses are available in the November 2005 HHS Pandemic Influenza Plan, Appendix 7, Pages S2 28-30, attached to this section. The State Laboratory will distribute this and any new information to laboratories licensed in Tennessee.

**VIII. Laboratory communications:**

The Tennessee State Laboratory is responsible for all communications with sentinel laboratories licensed in Tennessee. The State Laboratory will copy communications to all regional health officers and appropriate CEDS physicians. This includes communicating the following:

1. New testing protocols or other information
2. Occupational health surveillance recommendations or requirements
3. Laboratory safety guidelines

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Information for clinicians will be disseminated by CEDS through channels established for clinician updates (See Section 8 [Communications]).

**IX. Supplementary references:**

**A. Supplement 1: Federal HHS Pandemic Influenza Laboratory References:**

All four appendices are from Supplement 2: Laboratory Diagnostics, in the Department of Health and Human Services (HHS) Pandemic Influenza Preparedness Plan ([www.pandemicflu.gov](http://www.pandemicflu.gov)). These documents are current as of November 2005:

1. Quick Reference Chart of Influenza Diagnostic Tests
2. Laboratory Biosafety Guidelines for Handling and Processing Specimens or Isolates of Novel Influenza Strains
3. Guidelines for Collecting and Shipping Specimens for Influenza Diagnostics
4. Guidelines for Medical Surveillance of Laboratory Research Personnel Working with Novel Strains of Influenza

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**QUICK REFERENCE CHART OF INFLUENZA DIAGNOSTIC TESTS<sup>1</sup>**

From: *Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP)*. MMWR 2004;53(RR-6):1-40.

<b>Procedure</b>	<b>Influenza Types Detected</b>	<b>Acceptable Specimens</b>	<b>Time for Results</b>	<b>Rapid result available</b>
<b>Viral culture</b>	A and B	nasal wash/aspirate, NP <sup>2</sup> swab, nasal aspirate, nasal swab and throat swab, sputum	5–10 days <sup>3</sup>	No
<b>Immunofluorescence Antibody Staining</b>	A and B	nasal wash/aspirate, NP swab, nasal aspirate, nasal swab and throat swab, sputum	2–4 hours	No
<b>RT-PCR<sup>5</sup></b>	A and B	nasal wash/aspirate, NP swab, nasal aspirate, throat swab, bronchial wash, nasal aspirate, sputum	Hours	No
<b>Serology</b>	A and B	paired acute/convalescent serum samples <sup>6</sup>	>2 weeks	No
<b>Rapid Diagnostic Tests</b>				
Directigen Flu A <sup>7</sup> (Becton-Dickinson)	A	NP swab, throat swab, nasal wash, nasal aspirate	See insert	Yes
Directigen Flu A+B <sup>7,9</sup> (Becton-Dickinson)	A and B	NP swab, throat swab, nasal wash, nasal aspirate	See insert	Yes
FLU OIA <sup>7</sup> (Thermo Electron)	A and B <sup>4</sup>	NP swab, throat swab, nasal aspirate, sputum	See insert	Yes
FLU OIA A/B <sup>7,9</sup> (Thermo Electron)	A and B	NP swab, throat swab, nasal aspirate, sputum	See insert	Yes
XPECT Flu A/B <sup>7,9</sup> (Remel)	A and B	Nasal wash, NP swab, throat swab	See insert	Yes
XPECT Flu A/B <sup>7,9</sup> (Remel)	A and B	Nasal wash, NP swab, throat swab	See insert	Yes

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NOW Flu A Test <sup>7,9</sup> NOW Flu B Test <sup>7,9</sup> (Binax)	A B	Nasal wash, NP swab Nasal wash, NP swab	See insert	Yes
QuickVue Influenza Test <sup>8</sup> (Quidel)	A and B <sup>4</sup>	NP swab, nasal wash, nasal aspirate	See insert	Yes
QuickVue Influenza A+B Test <sup>8</sup> (Quidel)	A and B <sup>9</sup> A	NP swab, nasal wash, nasal aspirate	See insert	Yes
SAS Influenza A <sup>7,9</sup> SAS Influenza B <sup>7,9</sup>	B	NP wash, NP aspirate NP wash, NP aspirate	See insert	Yes
ZstatFlu <sup>8</sup> (ZymeTx)	A and B <sup>4</sup>	throat swab	See insert	Yes

<sup>1</sup> The list might not include all FDA-approved test kits.

<sup>2</sup> NP = nasopharyngeal

<sup>3</sup> Shell-vial culture, if available, may reduce time for results to 2 days.

<sup>4</sup> Does not distinguish between influenza A and B virus infections.

<sup>5</sup> RT-PCR = reverse-transcription polymerase chain reaction

<sup>6</sup> A fourfold or greater rise in antibody titer from the acute- (collected within the first week of illness) to the convalescent-phase sample (collected 2–4 weeks after the acute sample) indicates recent infection.

<sup>7</sup> Moderately complex test that requires specific laboratory certification

<sup>8</sup> CLIA-waived test. Can be used in any office setting. Requires a certificate of waiver or higher laboratory certification

<sup>9</sup> Distinguishes between influenza A and B virus infections.

**Disclaimer:** Use of trade names or commercial sources is for identification only and does not imply endorsement by the Centers for Disease Control and Prevention or the Department of Health and Human Services.

**Department of Health and Human Services (HHS) Pandemic Influenza Plan**  
(available at [www.pandemicflu.gov](http://www.pandemicflu.gov))

**HHS Laboratory Appendix 4. Laboratory Biosafety Guidelines for Handling and Processing Specimens or Isolates of Novel Influenza Strains**

**Key Messages:**

1. Commercial antigen detection testing for influenza may be conducted under BSL-2 containment conditions if a Class II biological safety cabinet is used.
2. Clinical specimens from suspected novel influenza cases may be tested by RT-PCR using standard BSL-2 work practices in a Class II biological safety cabinet for initial processing of patient specimens.
3. If a specimen is confirmed positive for influenza A (H5N1) by RT-PCR, additional testing should be performed only under BSL-3 conditions with enhancements. CDC's Influenza Branch should be informed immediately by contacting the CDC Director's Emergency Operations Center (DEOC) at 770-488-7100.
4. A detailed description of recommended facilities, practices, and protective equipment for the various laboratory biosafety levels can be found in the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories (BMBL) manual at [www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm](http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm)
5. BSL-3 with enhancements and Animal Biosafety Level 3 include: all BSL-3 practices, procedures, and facilities, plus the use of negative-pressure, HEPA-filtered respirators or positive air-purifying respirators, and clothing change and personal showering protocols. Additional practices and/or restrictions may be added as conditions of USDA-APHIS permits. Registration of personnel and facilities with the Select Agent Program is required for work with highly pathogenic avian influenza (HPAI) viruses, which are classified as agricultural select agents.
6. State and local public health laboratories may test clinical specimens from suspected novel influenza cases by RT-PCR using standard BSL-2 work practices in a Class II biological safety cabinet. Commercial rapid antigen detection testing may also be conducted under BSL-2 biocontainment conditions.
7. Highly pathogenic avian influenza A (H5) and A (H7) viruses are classified as select agents. USDA regulations require that these viruses (as well as exotic low pathogenic avian influenza viruses) be handled under BSL-3 laboratory containment conditions, with enhancements (i.e.,

controlled-access double-door entry with change room and shower, use of respirators, decontamination of all wastes, and showering of all personnel). Laboratories that work with these viruses must be certified by USDA.

8. Laboratories should not perform virus isolation on respiratory specimens from patients who may be infected with an avian influenza virus unless stringent BSL-3 enhanced containment conditions can be met and diagnostic work can be kept separate from studies with other human influenza A viruses (i.e., H1 or H3). Therefore, respiratory virus cultures should not be performed in most clinical laboratories. Cultures for patients suspected of having influenza A (H5N1) infection should be sent only to state laboratories with appropriate BSL-3 with enhancement containment facilities or to CDC.

### **HHS Laboratory Appendix 5: Guidelines for Collecting and Shipping Specimens for Influenza Diagnostics**

#### **Key Messages:**

1. Appropriate specimens for influenza testing vary by type of test.
2. Before collecting specimens, review the infection control precautions are described in Supplement 3.

#### **I. Respiratory Specimens:**

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

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

Respiratory specimens for detection of most respiratory pathogens, and influenza in particular, are optimally collected within the first 3 days of the onset of illness. Before collecting specimens, review the infection control precautions in Supplement 4.

#### **A. Collecting specimens from the upper respiratory tract:**

##### **1. Nasopharyngeal wash/aspirate:**

- a. Have the patient sit with head tilted slightly backward.

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

**2. Nasopharyngeal or oropharyngeal swabs:**

- a. 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.
- b. To obtain a **nasopharyngeal swab**, insert a swab into the nostril parallel to the palate. Leave the swab in place for a few seconds to absorb secretions. Swab both nostrils.
- c. To obtain an **oropharyngeal swab**, swab the posterior pharynx and tonsillar areas, avoiding the tongue.
- d. Place the swabs immediately into sterile vials containing 2 ml of viral transport media. Break the applicator sticks off near the tip to permit tightening of the cap. Label each specimen container with the patient's ID number and the date the sample was collected.
- e. If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, pack in dry ice (see shipping instructions below).

**B. Collecting specimens from the lower respiratory tract:**

**1. Bronchoalveolar lavage, tracheal aspirate, or pleural fluid tap:**

- a. During bronchoalveolar lavage or tracheal aspirate, use a double-tube system to maximum shielding from oropharyngeal secretions.

- b. Centrifuge half of the specimen, and fix the cell pellet in formalin. Place the remaining unspun fluid in sterile vials with external caps and internal O-ring seals. If there is no internal O-ring seal, then seal tightly with the available cap and secure with Parafilm®. Label each specimen container with the patient's ID number and the date the sample was collected.
- c. If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, ship fixed cells at room temperature and unfixed cells frozen (see shipping instructions below).

**2. Sputum:**

- a. Educate the patient about the difference between sputum and oral secretions.
- b. Have the patient rinse the mouth with water and then expectorate deep cough sputum directly into a sterile screw-cap sputum collection cup or sterile dry container.
- c. If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, pack in dry ice (see shipping instructions below).

**II. Blood Components:**

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

- 1. Collect 5 ml–10 ml of whole blood in a serum separator tube. Allow the blood to clot, centrifuge briefly, and collect all resulting sera in vials with external caps and internal O-ring seals. If there is no internal O-ring seal, then seal tightly with the available cap and secure with Parafilm®.
- 2. The minimum amount of serum preferred for each test is 200 microliters, which can easily be obtained from 5 ml of whole blood. A minimum of 1 cc of whole blood is needed for testing of pediatric patients. If possible, collect 1 cc in an EDTA tube and in a clotting tube. If only 1cc can be obtained, use a clotting tube.
- 3. Label each specimen container with the patient's ID number and the date the specimen was collected.

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

### III. 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 specimen)
4. Specimens should be sent at room temperature (**not frozen**).
5. Fresh-frozen unfixed tissue specimens may be submitted for RT-PCR.
6. Include a copy of the autopsy report (preliminary, or final if available), and a cover letter outlining a brief clinical history and the submitter's full name, title, complete mailing address, phone, and fax numbers, in the event that CDC pathologists require further information. Referring pathologists may direct specific questions to CDC pathologists. The contact number for the Infectious Disease Pathology Activity is 404-639-3133, or the pathologists can be contacted 24 hours a day, 7 days a week through the CDC Emergency Response Hotline at 770-488-7100.

#### **IV. Shipping Instructions:**

State and local health departments should call the CDC Emergency Response Hotline (770-488-7100) before sending specimens for influenza A reference testing. This number is available 24 hours a day, 7 days a week. Hotline staff will notify a member of the Influenza Branch who will contact the health department to answer questions and provide guidance. In some cases, the state health department may arrange for a clinical laboratory to send samples directly to CDC.

Specimens should be sent by Priority Overnight Shipping for receipt within 24 hours. Samples (such as fresh-frozen autopsy samples for RT-PCR or other clinical materials) may be frozen at -70 if the package cannot be shipped within a specified time (e.g., if the specimen is collected on a Friday but cannot be shipped until Monday).

When sending clinical specimens, include the specimen inventory sheet (see below), include the assigned CDC case ID number, and note "Influenza surveillance" on all materials and specimens sent.

Include the CDC case ID number on all materials forwarded to CDC. Protocols for standard interstate shipment of etiologic agents should be followed, and are available at <http://www.cdc.gov/od/ohs/biosfty/shipregs.htm>. All shipments must comply with current DOT/IATA shipping regulations.

#### **HHS Laboratory Appendix 7: Guidelines for Medical Surveillance of Laboratory Research Personnel Working with Novel Strains of Influenza, Including Avian Strains and Other Strains with Pandemic Potential**

##### **Key Messages:**

1. Laboratory workers should receive training on the appropriate biosafety level for the type of work being performed.
2. Before working with avian influenza A viruses, including highly pathogenic strains, laboratory workers should have a baseline serum sample obtained and stored for future reference.
3. Workers in laboratories that contain avian influenza A viruses should report any fever or lower respiratory symptoms to their supervisors. Workers should be evaluated for possible exposures, and the clinical features and course of the illness should be closely monitored.
4. Laboratory workers who are believed to have had a laboratory exposure to an avian influenza A virus or other highly pathogenic strain should be evaluated, counseled about the risk of transmission to others, and

monitored for fever or lower respiratory symptoms as well as for any of the following: sore throat, rhinorrhea, chills, rigors, myalgia, headache, diarrhea.

5. Local and/or state public health departments should be notified promptly of laboratory exposures and illnesses in exposed laboratory workers.

Medical surveillance of laboratory personnel can help to ensure that workers who are at risk of occupational exposure to avian influenza viruses or other novel animal or human influenza strains and who develop symptoms of illness receive appropriate medical evaluation and treatment, both for the benefit of their health and to prevent further transmission.

**I. Prerequisites for Working with Novel Avian or Human Influenza Viruses:**

**A. Baseline serum samples:**

Before working with novel avian or human influenza viruses, laboratory workers should have a baseline serum sample obtained and stored for future reference.

**B. Influenza vaccine:**

Laboratories should offer the current inactivated influenza vaccine to laboratory personnel. Its use is especially encouraged for personnel working with avian viruses in BSL-3 enhanced laboratory conditions and for those who may be exposed to these viruses in the field. Immunization might reduce the chance of illness from exposure to human influenza viruses currently circulating in the community that could lead to confusion in monitoring for avian influenza A infection. Vaccines against novel influenza A viruses (e.g., H5N1) are undergoing clinical trials and might be available in the future.

**C. Oseltamivir prophylaxis:**

1. It is not necessary to require oseltamivir for laboratory research personnel working with highly pathogenic influenza strains, but encourage it for those doing animal experiments only for the time they are working with animals and especially while working with ferrets.
2. When considering oseltamivir prophylaxis, be sure to evaluate appropriate candidates for contraindications, answer their questions, review adverse effects, and explain the benefits.

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3. Maintain a log of persons on oseltamivir, persons evaluated and not on oseltamivir, doses dispensed, and adverse effects.
4. Periodically evaluate and update oseltamivir policies and procedures.

**D. Post-exposure prophylaxis:**

Conditions for use of oseltamivir for post-exposure prophylaxis include a known or suspected laboratory exposure to live avian influenza virus, including highly pathogenic strains, for a person not on oseltamivir. Appropriate healthcare personnel should be available to evaluate immediately and dispense oseltamivir if the exposure occurs during working hours. If exposure occurs after working hours, an exposed laboratory person should present to the Emergency Department and, after evaluation, communicate with CDC for recommendations.

**II. Management of Influenza-Like-Illness in Personnel with Possible Exposure to Novel Avian or Human Influenza Viruses:**

**A. General procedures:**

1. Maintain a daily sign-in/out sheet to record name, date, time in/out, use of oseltamivir, and brief description of job tasks. This record will facilitate retrospective documentation if an illness occurs.
2. Workers should report any influenza-like illness and any potential laboratory exposures to the supervisor.

**B. Evaluation and treatment:**

**1. During regular working hours:**

- a. The affected employee should notify the supervisor. The supervisor should immediately contact the appropriate healthcare personnel and facility contacts (e.g., occupational health, infection control, or designee).
- b. Upon arrival at the designated clinic, the employee should be placed in a private room for isolation where a healthcare provider can provide consultation and evaluation.
- c. The healthcare provider should obtain a respiratory specimen (e.g. nasopharyngeal swab or aspirate) for viral culture. A rapid antigen test<sup>5</sup> with the ability to differentiate

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between influenza A and B should be used for initial diagnosis, followed by virus isolation.

- d. Based on: 1) the rapid test result (if influenza A positive), 2) the status of oseltamivir prophylaxis, and 3) the clinical evaluation, the healthcare provider should determine whether the patient will return to work, be sent home, or be sent to an infectious disease consultant.

**2. During working hours when the employee calls from home:**

- a. The employee should notify the supervisor. The supervisor should discuss the situation with the appropriate healthcare personnel and determine where and by whom the employee will be evaluated and specimens for viral culture will be obtained.
- b. The employee may come to an on-site clinic for evaluation or may elect to see a personal physician. If the employee chooses to see a personal physician, the on-site clinician should discuss with the personal physician the likelihood of a laboratory-acquired infection. The personal physician should be asked to collect specimens for antigen detection and viral culture.
- c. An employee who is not sick enough to be admitted to a hospital should remain at home under the care of a personal physician, pending results from the viral culture. If influenza A (H3N2) or A (H1N1) is identified, the employee should be advised and can resume normal activities as soon as symptoms subside.
- d. If avian influenza A (e.g., H5, H7, H9) is identified, the family and other contacts should be monitored for illness.
- e. Local public health officials should be notified about any confirmed avian influenza infections.

**3. After working hours:**

- a. The employee should notify the supervisor. The supervisor should inform other persons as the situation dictates.
- b. If the employee is acutely ill with symptoms consistent with influenza, the employee and/or supervisor should contact the appropriate healthcare provider for instructions.

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The healthcare provider should conduct the initial evaluation and patient management.

- c. The supervisor should immediately ask the healthcare provider to collect specimens for rapid testing and viral culture.
- d. The employee should follow the advice of the healthcare provider with regard to further evaluation/treatment

# Section 4:

# Hospital Planning

**Attachment A:** Hospital Planning Checklist

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**I. Purpose:**

To provide guidance to hospitals on what they should be doing to plan for an influenza pandemic in conjunction with state pandemic planning efforts.

**II. Introduction:**

An influenza pandemic will place a huge burden on the U.S. health care system. Published estimates based on extrapolation of the 1957 and 1968 pandemics suggest that there could be 839,000 to 9,625,000 hospitalizations, 18-42 million outpatient visits, and 20-47 million additional illnesses, depending on the attack rate of infection during the pandemic. The estimated medical burden of influenza in Tennessee is shown in Table 1. Estimates based on extrapolation from the more severe 1918 pandemic suggest that substantially more hospitalizations and deaths could occur. The demand for inpatient and intensive care unit (ICU) beds and assisted ventilation services could increase by more than 25 percent under the less severe scenario. Pre-pandemic planning by health care facilities is, therefore, essential to provide quality, uninterrupted care to ill persons and to prevent further spread of infection. Effective planning and implementation will depend on close collaboration among state and local health departments, community partners, and local and regional health care facilities. Planning and preparedness must take into account the likelihood that, in a severe pandemic, needs will exceed resources, and that medical care standards may need to be adjusted to save as many lives as possible.

**Table 1: Medical Burden in Tennessee (pop. 6 million) (HHS Plan Estimates)**

<b>Characteristic</b>	<b>Moderate</b>	<b>Severe</b>
Illness (30%)	1.8 million	1.8 million
Outpatient Care	900,000	900,000
Hospitalization	17,300	198,000
ICU Care	2,575	29,700
Mechanical Ventilation	1,300	14,850
Deaths (Case fatality rate)	4,180 (0.2%)	38,060 (2%)

**III. Planning for Provision of Care in Hospitals:**

Tennessee health care facilities must be prepared for the rapid pace and dynamic characteristics of pandemic influenza. All hospitals should be equipped and ready to care for:

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1. a limited number of patients infected with a pandemic influenza virus, or other novel strains of influenza, as part of normal operations; and,
2. a large number of patients in the event of escalating transmission of pandemic influenza.

Hospital response plans for pandemic influenza should:

1. Outline administrative measures for detecting the introduction of pandemic influenza, preventing its spread, and managing its impact on the facility and the staff.
2. Build on existing preparedness and response plans for bioterrorism events, SARS, and other infectious disease emergencies.
3. Incorporate planning suggestions from state and local health departments and other local and regional health care facilities and response partners.
4. Collaborate and coordinate planning with outpatient clinical providers to coordinate patient care.
5. Identify criteria and methods for measuring compliance with response measures (e.g., infection control practices, case reporting, patient placement, health care worker illness surveillance).
6. Review and update inventories of supplies that will be in high demand during an influenza pandemic.
7. Review procedures for the receipt, storage, and distribution of assets received from federal stockpiles.
8. Include mechanisms for periodic reviews and updates.

**A. Planning Process :**

Groups and individuals involved in the hospital planning process should include:

1. An internal, multidisciplinary planning committee with responsibility for pandemic influenza preparedness and response. A pre-existing all-hazards preparedness team (e.g., established for bioterrorism response) might assume this role. Infection control input is vital. Consider representatives from major outpatient referral facilities to coordinate patient care and admission plans.
2. Hospital planning for pandemic influenza should consider concurrent public health, community, and health care planning efforts at the local, state, and regional levels. Some possible mechanisms for collaboration and coordination are to:
  - a. Include a state or local health department representative as an ex-officio member of the hospital planning committee.

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- b. Obtain copies of draft pandemic influenza plans from other local or regional hospitals to use as models. These will be provided at the Tennessee Hospital Association (THA) website.
- c. Work with other local hospitals, community organizations (e.g., social service groups), and the state or local health department to coordinate health care activities in the community and to define responsibilities for each entity during a pandemic.

The Tennessee Department of Health (TDH) Communicable and Environmental Disease Services Section (CEDS) requests each hospital designate at least two persons to be the “**Pandemic Flu Coordinators**”(primary and back-up) at each hospital.

**Objectives:**

- 1. To be the point person for communication of information from CEDS to hospitals (infection control and clinical management guidance)
- 2. To disseminate information to all who need to know in an efficient manner (including, but not limited to: staff involved in triage, emergency departments, ICU and critical care, radiology, laboratory, as well as pulmonologists, respiratory therapists, infectious diseases physicians, infection control and hospital epidemiology)
- 3. To coordinate planning and response to pandemic flu at hospitals in close consultation with infection control personnel.

**Notes:**

- 1. The Pandemic Flu Coordinator does not necessarily need to be an Infection Control Practitioner (ICP), but does need to have a good working relationship the ICP.
- 2. The Pandemic Flu Coordinator could be the communication officer under the HEICS (Hospital Emergency Incident Command System) and should be assigned to the communications section of the HEICS when activated.
- 3. Provide the Regional Hospital Coordinators (RHC) of the TDH with the name and contact information (phone, fax, e-mail and mailing address) for the designated Pandemic Flu coordinators in your hospital. Pandemic Flu Coordinators should also sign up for that role under the Tennessee Health Alert Network (T-HAN).

**B. Planning Elements:**

**1. Hospital Surveillance and Reporting To Health Departments:**

During the pandemic period, health care providers and health care facilities will play an essential role in pandemic influenza surveillance. For detection of cases during the pandemic period, hospitals should have:

- a. Mechanisms for monitoring department visits and hospital admissions and discharges of suspected or laboratory-confirmed pandemic influenza patients. This information will be needed to: 1) assist local public health personnel in monitoring the progress and impact of the pandemic; 2) assess bed capacity and staffing needs; and, 3) detect resurgence in pandemic influenza that might follow the first wave of cases.
- b. Updated information on the types of data that should be reported to state or local health departments (e.g., admissions; discharges/deaths; patient characteristics such as age, underlying disease, and secondary complications; and, illnesses in health care personnel) and plans for how these data will be collected during a pandemic. (See Section 4, Supplement 2 [Hospital-based influenza surveillance])
- c. Criteria for distinguishing novel/pandemic influenza from other respiratory diseases. (see Section 4, Supplement 1 [Infection Control])

**2. Hospital Communications:**

Each hospital should work with public health officials, other government officials, neighboring health care facilities, the lay public, and the press to ensure rapid and ongoing information-sharing during an influenza pandemic.

**External Communications**

- a. Assign responsibility for external communication about pandemic influenza; identify a person responsible for updating public health reporting, a clinical spokesperson, and a media spokesperson. The Pandemic Flu Coordinator will be the point person with whom CEDS and local health department and Regional Hospital Coordinators will communicate clinical and infection control guidance.

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- b. In collaboration with CEDS or local health departments, determine the methods, frequency, and scope of external communications.
  - i. Communication from CEDS to the Pandemic Flu Coordinators will generally be via email.

Determine who (e.g., clinician or infection control professional) will contact CEDS or local health department about suspected novel/pandemic influenza cases

- c. Open communication within and between healthcare facilities will be critical to ensure that proper infection control precautions are taken to prevent inadvertent unprotected exposure to a case patient.
- d. When patients are transferred, appropriate personnel at other healthcare institutions and EMS must be notified if patients may have been exposed to novel/pandemic influenza.
- e. Lessons from SARS:
  - i. The second wave of SARS in Toronto occurred because a patient who was exposed to SARS was transferred to another institution that was unaware of the exposure.
  - ii. In Toronto, staff who were unaware that they were exposed to SARS worked at multiple institutions; they introduced SARS into additional healthcare facilities. Health Departments in Toronto and Singapore responded by not permitting healthcare workers to work at multiple facilities. Hospital planners should consider how to meet staffing needs if such action were necessary to stem the spread of novel/pandemic influenza cases in Tennessee hospitals.
- f. If nosocomial transmission of novel/pandemic influenza is suspected, contact the health department immediately (24/7). Do not wait to complete the internal investigation before notifying the health department.
- g. Designate who will manage all press releases and communications with the general public, news media, and

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employees. This designee should collaborate with the health department to coordinate communications.

- h. Determine how public inquiries will be handled (e.g., refer callers to the health department; provide technical support for handling calls).
- i. Identify the types of information the hospital can provide and the types of inquiries that will be referred to state or local health departments.

**Internal Communications**

- a. Determine how to keep administrators, personnel (including infection control, intake, and triage staff), patients, and visitors informed of the ongoing impact of an influenza pandemic on the facility and on the community. The pandemic flu coordinator will be the point-person contacted by CEDS.
- b. Ensure that the most current information from the health department (e.g., details of times and places where novel/pandemic influenza cases exposures may have occurred) can be widely disseminated to all staff in a timely manner. This is one of the functions of the Pandemic Influenza Coordinator.
- c. Systems should be in place to notify staff of potential exposure. Staff may work at multiple institutions, and unrecognized exposure and infection could put other staff and patients at risk.
- d. Ensure access to contact details (including after hours) for all staff and students. The objective is to identify contacts of potential novel/pandemic influenza virus cases before contacts become symptomatic
  - i. Include all contract staff (e.g., laboratory, dialysis), attending physicians, vendors, students and nursing agencies
  - ii. Time is of the essence (incubation period may be as short as 24 hours).
  - iii. Contact tracing will only be implemented during Pandemic Alert Phases 3-5 and early Phase 6 while there is no evidence of community-transmission

(spread with a loss of epidemiologic links among cases) in the United States.

### **3. Education and Training:**

#### **Staff Education**

- a. General topics for inpatient and outpatient staff education should include:
  - i. prevention and control of influenza;
  - ii. implications of pandemic influenza;
  - iii. role of antiviral drugs in preventing disease and reducing rates of severe influenza and its complications; (see Section 6, Antivirals)
  - iv. infection control strategies for the control of influenza, including respiratory hygiene/cough etiquette, hand hygiene, standard precautions, droplet precautions, and, as appropriate, airborne precautions (see Section 4, Supplement 1 [Infection Control])
- b. Hospital-specific topics for education of staff and affiliated community providers should include:
  - i. policies and procedures for the care of pandemic influenza patients, including how and where pandemic influenza patients will be cohorted (see Section 4, Supplement 1 [Infection Control])
  - ii. pandemic staffing contingency plans, including how the facility will deal with illness in personnel (see Section 4, Supplement 3 [Surge Capacity] and Section 4, Supplement 1 [Infection Control])
  - iii. policies for restricting visitors and mechanisms for enforcing these policies (see Section 4 Supplement 1 [Infection Control])
  - iv. measures to protect family and other contacts from secondary occupational exposure (see Section 7, Supplement 2 [Pre-Pandemic Case Management])
- c. Train intake and triage staff to detect patients with influenza symptoms and to implement immediate containment measures to prevent transmission. (See Section 4, Supplement 1 [Infection Control])

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- d. CEDS will distribute resource materials that can be used for staff education via the Pandemic Flu Coordinators. Hospitals need to designate who will adapt these resource materials to their local needs and who will provide the training.
- e. Supply social workers, psychologists, psychiatrists, and nurses with guidance for providing psychological support to patients and hospital personnel during an influenza pandemic.

**Education of Patients, Family Members, and Visitors**

- a. Patients and others should know what they can do to prevent disease transmission in the hospital, as well as at home and in community settings. Refer to the respiratory etiquette / cover your cough section in Section 4, Supplement 1 [Infection Control])
- b. Identify language-specific and reading-level appropriate materials for educating patients, family members, and hospital visitors during an influenza pandemic. CEDS will assist by disseminating materials to Pandemic Flu Coordinators. Hospitals need to designate who will adapt these resource materials to their local needs.
- c. Develop a plan for distributing information to all persons who enter the hospital. Identify staff to answer questions about procedures for preventing influenza transmission.

**4. Triage, Clinical Evaluation, and Admission Procedures :**

- a. During the peak of a pandemic, hospital emergency departments and outpatient offices are likely to be overwhelmed with patients seeking care. Therefore, triage should be conducted to: 1) identify persons who might have pandemic influenza; 2) separate them from others to reduce the risk of disease transmission; and, 3) identify the type of care they require (i.e., home care or hospitalization).
- b. Develop a strategy for triage, diagnosis, and isolation of possible novel/pandemic influenza patients (see Section 4, Supplement 1 [Infection Control])
- c. Review procedures for the clinical evaluation of patients in the emergency department and in outpatient medical offices to facilitate efficient and appropriate disposition of patients.

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- d. The TDH will alert the Pandemic Flu Coordinator when active screening (direct questioning of all persons entering the hospital for symptoms and signs of pandemic influenza) should be implemented. This is expected to be at the start of the pandemic (WHO Phase 6). In addition to visual alerts, potential screening measures might include priority triage of persons with respiratory symptoms.

**5. Facility Access:**

- a. Hospitals should determine in advance the criteria and procedures they will use to limit access to the facility if pandemic influenza spreads through the community.
- b. Define “essential” and “nonessential” visitors with regard to the hospital and the population served. Develop protocols for limiting nonessential visitors. Consider limiting all hospital visitors (except parent/guardian of small children).
- c. Develop criteria for temporarily closing the hospital to new admissions and transfers. The criteria should consider staffing ratios, isolation capacity, and risks to non-influenza patients.
- d. Determine the role of hospital security services in enforcing access controls.

**6. Occupational Health:**

The ability to deliver quality health care is dependent on adequate staffing and the optimum health and welfare of staff (see Section 4, Supplement 1 [Infection Control] for further details.) During a pandemic, the health care workforce will be stressed physically and psychologically. Like others in the community, many health care workers will become ill.

**a. Managing Ill Workers:**

- i. Establish a plan for detecting signs and symptoms of influenza in health care personnel before they report for duty.
- ii. Develop policies for managing health care workers with respiratory symptoms.

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**b. Time-off Policies:**

- i. Ensure that time-off policies and procedures can be adjusted in light of staffing needs
- ii. Reassignment of High-Risk Personnel
- iii. Establish a plan to protect personnel at high risk for complications of influenza (e.g., pregnant women, immunocompromised persons) by reassigning them to low-risk duties

**c. Psychosocial Health Services:**

- i. Identify mental health and faith-based resources (e.g., Employee Assistance Program, Critical Incident Stress Management, Psychiatry, Chaplain services) for counseling of health care personnel during a pandemic
- ii. Determine a strategy for housing and feeding health care personnel who might be needed on-site for prolonged periods.
- iii. Develop a strategy for accommodating and supporting staff who have child or elder care responsibilities.

**d. Influenza Vaccination and Use of Antiviral Drugs:**

- i. Ensure that a system is in place for documenting influenza vaccination of health care personnel.
- ii. Establish a strategy for rapidly (preferably within 12 hours of onset of symptoms) providing antiviral treatment to health care personnel as recommended by the TDH. For standard human influenza (H3N2), oseltamivir is most effective if started within 12 hours of onset of symptoms, although some benefit is derived if taken up to 48 hours after onset of symptoms.

**7. Surge Capacity:**

Health care facilities should plan ahead to address emergency staffing needs and increased demand for isolation wards, ICUs, assisted ventilation services, and consumable and durable medical

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supplies. Refer to Section 4, Supplement 3 [Surge Capacity] and Section 4, Supplement 1 [Infection Control]) for more details.

**a. Staffing Policies:**

- i. Assign responsibility for the assessment and coordination of staffing during an emergency.
- ii. Determine how the hospital will meet staffing needs as the number of patients with pandemic influenza increases and/or health care and support personnel become ill or remain at home to care for ill family members.
- iii. Consult with the state health department on plans for rapidly credentialing health care professionals during a pandemic.
- iv. Explore opportunities for recruiting health care personnel from other health care settings (e.g., medical offices and day-surgery centers). Consult public health partners about existing state or local volunteer registries.
- v. Following appropriate infection control and personal protection equipment training and fit-testing, all healthcare workers are expected to conduct their normal level of job activities in order to provide care for patients with known or suspected novel/pandemic influenza
- vi. Existing staffing shortages may be amplified by illness among staff members, fear and concern about the disease, and isolation and quarantine of exposed staff or ill/exposed family members. Staffing shortages are likely to escalate as the pandemic progresses. The strain involved in novel/pandemic influenza patient care and prolonged use of personal respiratory protection may intensify staffing challenges. As the number of patients increase and/or staff become ill, a determination will need to be made as to how staffing needs will be met. The staffing needs for highly communicable respiratory disease patient management may be greater (e.g., twice the normal staffing ratio) than that normally provided for other

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non-ICU and ICU patients to allow PPE-free time. Use of alternative staffing resources (e.g., retired healthcare workers, volunteers, contract workers, students) may be needed but will require training and support (including malpractice insurance, occupational health services) during the outbreak response.

- vii. During the influenza pandemic, all infection control professionals will be needed to formally monitor and reinforce compliance with PPE measures and policies.
- viii. If quarantine is used as an exposure management tool, some healthcare workers may be placed on 'home/work restrictions' to ensure sufficient staffing levels. Healthcare workers on home/work restrictions should travel only between home and the healthcare facility for the duration of the restriction.
- ix. Health care workers should have access to mental health professionals to help them cope with the emotional strain of managing a highly communicable respiratory disease outbreak (e.g., Employee Assistance Program, Critical Incident Stress Management, Psychiatry, chaplain services).

**b. Bed Capacity:**

- i. Review and revise admissions criteria for times when bed capacity is limited.
- ii. Develop policies and procedures for expediting the discharge of patients who do not require ongoing inpatient care.
- iii. Develop criteria for temporarily canceling elective surgical procedures and determining what and where emergency procedures will be done during a pandemic.
- iv. Discuss with state and local health departments how bed availability, including available ICU beds and ventilators, will be tracked during a pandemic. It is

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anticipated that the Hospital Resource Tracking System (HRTS), once operational, will be used.

- v. Discuss with health care regulators whether, how, and when “Altered Standards of Care in Mass Casualty Events” <http://www.ahrq.gov/research/altstand/index.html> will be invoked and applied to pandemic influenza.
- vi. Develop Mutual Aid Agreements (MAAs) or Memoranda of Understanding/Agreement (MOU/As) with other local facilities (e.g., rehabilitation, long-term care facilities) who can accept non-influenza patients who do not need critical care.
- vii. Identify areas of the facility that could be vacated for use in cohorting influenza patients.

**c. Consumable and Durable Supplies:**

Develop a surge capacity plan for personal protective equipment (PPE)

- i. Consider creating a stockpile of surgical masks (with or without face-shields) for protection of healthcare workers, visitors and patients**

If masks without face-shields are purchased, it will be important to ensure that goggles or separate face-shields are supplied, and that procedures are in place for the safe and effective cleaning of these devices.

**Pros:** Surgical masks provide protection from droplet spread; most seasonal influenza is believed to be spread via droplets rather than the airborne route. Surgical masks may be in short supply. Surgical masks take up less storage room than N95 respirators, are far less expensive, and may benefit more workers, if N95 respirators are not able to be reused. Surgical masks have a long shelf life. Some distributors may be willing to store the purchased surgical masks at no charge.

**Cons:** Masks help prevent infection with influenza, but do not benefit the sick. On occasions, influenza may be airborne, and thus the surgical mask may not be as effective as a N95 respirator. It is highly unlikely that masks will be able to be re-used.

**ii. Consider creating a stockpile of N95 respirators (or PAPRs) for protection of healthcare workers**

**Pros:** Infection control precautions for airborne infectious diseases such as tuberculosis, measles, and chickenpox, require the use of N95 respirators; however, these may be in short supply. N95 respirators may confer additional protection against influenza when, under certain circumstances, (e.g., during aerosol generating procedures) influenza is airborne, rather than spread via droplets. N95 respirators have a long shelf life. Some distributors may be willing to store the purchased N95 respirators at no charge. It may be possible to reuse N95 respirators; this is currently being examined.

**Cons:** N95 respirators are much more expensive than surgical masks, take up much more storage room and may not confer additional protection against influenza relative to surgical masks in patient encounters where aerosols are not generated.

**iii. Consider creating a stockpile of goggles/face-shields**

**Pros:** Goggles/face-shields are essential to prevent inoculation of the mucosal surfaces of the eye with infectious agents. They should be worn when sprays or splatters of infectious material are likely. In addition, they provide a barrier to prevent self-inoculation with hands that may be contaminated

**Cons:** Need to have a procedure in place to process/clean these goggles/face-shields before they are reused.

**iv. Consider creating stockpile of gloves (sterile and non-sterile) for protection of healthcare workers**

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**Pros:** Gloves are an essential part of standard and contact infection control precautions, protecting healthcare workers from blood borne pathogens and other microbial pathogens. Gloves may be in short supply if trade/distribution routes are interrupted.

**Cons:** Gloves have a limited shelf life; gloves may degrade over time, especially if exposed to high temperatures.

**v. Consider creating stockpile of gowns for protection of healthcare workers**

**Pros:** Gowns are an essential part of contact infection control precautions, protecting healthcare workers from blood borne pathogens and other microbial pathogens. Gowns may be in short supply if trade/distribution routes are interrupted.

**Cons:** Gowns take up a considerable amount of storage space. Most patient interactions do not require use of a gown.

Anticipate needs for antibiotics to treat bacterial complications of influenza, and determine how supplies can be maintained during a pandemic.

Establish contingency plans for situations in which primary sources of medical supplies become limited.

**8. Mortuary Issues:**

To prepare for the possibility of mass fatalities during a pandemic, hospitals should:

- a. Discuss mass fatality plans with local and state health officials. The state's medical examiner has been tasked by the TEMA to develop a detailed mass casualty response plan.
- b. Work with officials to identify temporary morgue sites.
- c. Determine the need for supplies (e.g., body bags) to handle an increased number of deceased.

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- d. Contact precautions should be used when handling the bodies of expired patients who had signs or symptoms compatible with novel/pandemic influenza
- e. Autopsies of expired patients who had signs or symptoms compatible with novel/pandemic influenza should be done with airborne and contact precautions. Infection control and hospital epidemiology should be notified.

**9. Security:**

- a. Additional security may be required, given the increased demand for services, long waits, and because of triage or treatment decisions that patients or families may disagree with. In addition, hospitals have healthcare staff and other resources that may be scarce (e.g., antivirals, personal protective equipment, medications).
- b. Security of antivirals will be taken into consideration in determining the allocation of antivirals.

**10. Vaccine Recipient Prioritization:**

- a. Please refer to TDH Pandemic Influenza Plan (Section 5 [Vaccines]).
- b. Hospitals are requested to develop a priority list (with named individuals) for recipients of influenza vaccine. This list will be provided to the health department in the event of a pandemic, and only persons on that list will be able to obtain the vaccine. The chief medical officer or similarly senior physician should be the responsible party for this prioritization.
- c. An excellent resource for decision-making on prioritization (based on individual health care worker risk) is provided in the following SHEA position paper, published in ICHE, November 2005: Talbot TR, Bradley SE, Cosgrove SE, Ruef C, Siegel JD, Weber DJ. Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages. *Infect. Control Hosp. Epidemiol* 2005; 26:882-90. The article is available at [http://www.shea-online.org/Assets/files/HCW\\_Flu\\_Position\\_Paper\\_FINAL\\_9-28.pdf](http://www.shea-online.org/Assets/files/HCW_Flu_Position_Paper_FINAL_9-28.pdf) and

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<http://www.journals.uchicago.edu/ICHE/journal/issues/v26n11/11650/11650.web.pdf>

- d. Hospitals are expected to consider all persons (including non-employees such as attending physicians and agency staff) when developing vaccine recipient lists. A comprehensive list of staff to be considered is found on page 3 of the CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings (2005) available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm>

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Section 4 Attachment A: Hospital Preparedness Checklist**

**Attachment A: Hospital Preparedness Checklist  
(Appendix 2, Supplement 3, HHS Plan, November 2005)  
Preparedness Subject**

**1. Structure for planning and decision making**

- An internal, multidisciplinary planning committee for influenza preparedness has been created.
- A person has been designated as the influenza preparedness coordinator. (Insert name)  
\_\_\_\_\_
- Members of the planning committee include the following hospital staff members (insert names)
  - Administration \_\_\_\_\_
  - Legal counsel \_\_\_\_\_
  - Infection control \_\_\_\_\_
  - Hospital disaster coordinator \_\_\_\_\_
  - Risk management \_\_\_\_\_
  - Facility engineering \_\_\_\_\_
  - Nursing administration \_\_\_\_\_
  - Medical staff \_\_\_\_\_
  - Intensive care \_\_\_\_\_
  - Emergency Department \_\_\_\_\_
  - Laboratory services \_\_\_\_\_
  - Respiratory therapy \_\_\_\_\_
  - Psychiatry \_\_\_\_\_
  - Environmental services \_\_\_\_\_
  - Public relations \_\_\_\_\_
  - Security \_\_\_\_\_
  - Materials management \_\_\_\_\_
  - Staff development \_\_\_\_\_
  - Occupational health \_\_\_\_\_
  - Diagnostic imaging \_\_\_\_\_
  - Pharmacy \_\_\_\_\_
  - Information technology \_\_\_\_\_
  - Other members \_\_\_\_\_
  - Other members \_\_\_\_\_

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- A state or local health department person has been identified as a committee liaison.  
(Insert name) \_\_\_\_\_
- A linkage with local or regional emergency preparedness groups has been established  
(Planning organization) \_\_\_\_\_

**2. Development of a written pandemic influenza plan**

- A written plan has been completed or is in progress that includes the elements listed in #3 below.
- The plan specifies the circumstances under which the plan will be activated.
- The plan describes the organization structure that will be used to operationalize the plan.
- Responsibilities of key personnel related to executing the plan have been described.
- A simulation exercise has been developed to test the effectiveness of the plan.
- A simulation exercise has been performed. (Date performed \_\_\_\_\_)

**3. Elements of an influenza pandemic plan**

- A **surveillance plan** has been developed.
- Syndromic surveillance has been established in the emergency room.
- Criteria for distinguishing pandemic influenza is part of the syndromic surveillance plan.
- Responsibility has been assigned for reviewing global, national, regional, and local influenza activity trends and informing the pandemic influenza coordinator of evidence of an emerging problem. (Name \_\_\_\_\_)
- Thresholds for heightened local surveillance for pandemic influenza have been established.
- A system has been created for internal review of pandemic influenza activity in patients presenting to the emergency department.
- A system for monitoring for nosocomial transmission of pandemic has been implemented and tested by monitoring for non-pandemic influenza.
- A **communication plan** has been developed.
- Responsibility for external communication has been assigned.
  - Person responsible for updating public health reporting  
\_\_\_\_\_
- Clinical spokesperson for the facility \_\_\_\_\_
- Media spokesperson for the facility \_\_\_\_\_
- Key points of contact outside the facility have been identified.
  - State health department contact \_\_\_\_\_
  - Local health department contact \_\_\_\_\_

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- Newspaper contact(s) \_\_\_\_\_
  - Radio contact(s) \_\_\_\_\_
  - Public official(s) \_\_\_\_\_
  - A list of other healthcare facilities with whom it will be necessary to maintain communication has been established.
  - A meeting with local healthcare facilities has been held to discuss a communication strategy.
  - A plan for updating key facility personnel on a daily basis has been established.
  - The person(s) responsible for providing these updates are:  
\_\_\_\_\_  
\_\_\_\_\_
  - A system to track pandemic influenza admissions and discharges has been developed and tested by monitoring non-pandemic influenza admissions and discharges in the community.
  - A strategy for regularly updating clinical, ED, and outpatient staff on the status of pandemic influenza, once detected, has been established.  
(Responsible person \_\_\_\_\_)
  - A plan for informing patients and visitors about the level of pandemic influenza activity has been established.
  - An **education and training plan** on pandemic influenza has been developed.
  - Language and reading level-appropriate materials for educating all personnel about pandemic influenza and the facility's pandemic influenza plan, have been identified.
  - Current and potential sites for long-distance and local education of clinicians on pandemic influenza have been identified.
  - Means for accessing state and federal web-based influenza training programs have been identified.
  - A system for tracking which personnel have completed pandemic influenza training is in place.
  - A plan is in place for rapidly training non-facility staff brought in to provide patient care when the hospital reaches surge capacity.
- 
- A method for prioritizing healthcare personnel for receipt of vaccine or antiviral prophylaxis based on level of patient contact and personal risk for influenza complications has been established.
  - A system for detecting symptomatic personnel before they report for duty has been developed.
  - This system has been tested during a non-pandemic influenza period.
  - A policy for managing healthcare personnel with symptoms of or documented pandemic influenza has been established. The policy considers:

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- When personnel may return to work after having pandemic influenza
- When personnel who are symptomatic but well enough to work, will be permitted to continue working
- A method for furloughing or altering the work locations of personnel who are at high risk for influenza complications (e.g., pregnant women, immunocompromised healthcare workers) has been developed.
- Mental health and faith-based resources who will provide counseling to personnel during a pandemic have been identified.
- A strategy for housing healthcare personnel who may be needed on-site for prolonged periods of time is in place.
- A strategy for accommodating and supporting personnel who have child or elder care responsibilities has been developed.

- 
- A **vaccine and antiviral use** plan has been developed.
  - A contact for obtaining influenza vaccine has been identified.  
(Name) \_\_\_\_\_
  - A contact for obtaining antiviral prophylaxis has been identified.  
(Name) \_\_\_\_\_
  - A priority list (based on HHS guidance for use of vaccines and antivirals in a pandemic when in short supply) and estimated number of patients and healthcare personnel who would be targeted for influenza vaccination or antiviral prophylaxis has been developed.
    - Number of first priority personnel \_\_\_\_\_
    - Number of second priority personnel \_\_\_\_\_
    - Number of remaining personnel \_\_\_\_\_
    - Number of first priority patients \_\_\_\_\_
    - Number of second priority patients \_\_\_\_\_
  - A system for rapidly distributing vaccine and antivirals to patients has been developed.
  - Issues related to **surge capacity** have been addressed.
  - A plan is in place to address **unmet staffing needs** in the hospital.
  - The minimum number and categories of personnel needed to care for a group of patients with pandemic influenza has been determined.
  - Responsibility for assessing day-to-day clinical staffing needs during an influenza pandemic has been assigned.
    - Persons responsible are: (names and/or titles)  
\_\_\_\_\_  
\_\_\_\_\_

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- Legal counsel has reviewed emergency laws for using healthcare personnel with out-of-state licenses.
- Legal counsel has made sure that any insurance and other liability concerns have been addressed.
- Criteria for declaring a “staffing crisis” that would enable the use of emergency staffing alternatives have been defined.
- The plan includes linking to local and regional planning and response groups to collaborate on addressing widespread healthcare staffing shortages during a crisis.
- A priority list for reassignment and recruitment of personnel has been developed.
- A method for rapidly credentialing newly recruited personnel has been developed.
- Mutual AID Agreements (MAAs) and Memoranda of Understanding/Agreement (MOU/As) have been signed with other facilities that have agreed to share their staff, as needed.
- Strategies to **increase bed capacity** have been identified
- A threshold has been established for canceling elective admissions and surgeries
- MOAs have been signed with facilities that would accept non-influenza patients in order to free-up bed space
- Areas of the facility that could be utilized for expanded bed space have been identified
- The estimated normal patient capacity for this facility is: \_\_\_\_ Maximum surge capacity: \_\_\_\_
- Plans for expanded bed capacity have been discussed with local and regional planning groups
- Anticipated **durable and consumable resource** needs have been determined
- A primary plan and contingency plan to address supply shortages has been developed
- Plans for obtaining limited resources have been discussed with local and regional planning and response groups.
- A strategy for handling increased numbers of deceased persons has been developed.
- Plans for expanding morgue capacity have been discussed with local and regional planning groups.
- Local morticians have been involved in planning discussions.
- Mortality estimates have been used to estimate the number of body bags and shrouds.
- Supply sources for postmortem materials have been identified.

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**I. Resource List for Healthcare Planning:**

Some of these resources were provided as an appendix to the recommendations provided by the Maryland Hospital Association

**II. Pandemic Influenza Plans:**

- A. Currently available State Plans** may be found on the following Council of State and Territorial Epidemiologists website:  
<http://www.cste.org/specialprojects/Influenzaplans/StateMap.asp>
- B. Tennessee's Pandemic Influenza Plan:**  
Website to be determined
- C. Currently available National Plans** may be found on the following WHO website:  
<http://www.who.int/csr/disease/influenza/nationalpandemic/en/index.html>
- D. WHO Global Influenza Preparedness Plan:**  
[http://www.who.int/csr/resources/publications/influenza/WHO\\_CDS\\_CSR\\_GIP\\_2005\\_5/en/index.html](http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_5/en/index.html) Document defines the role of WHO and recommendations for national measures before and during pandemics.
- E. WHO Checklist for Influenza Pandemic Preparedness Planning:**  
[http://www.who.int/csr/resources/publications/influenza/WHO\\_CDS\\_CSR\\_GIP\\_2005\\_4/en/index.html](http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_4/en/index.html)
- F. SHEA (Society for Healthcare Epidemiology of America):**  
Resources are available at: <http://www.shea-online.org/news/avianflu.cfm>  
Institutional pandemic plans are available at:  
[http://www.shea-online.org/pandemic\\_plans.cfm](http://www.shea-online.org/pandemic_plans.cfm)
- G. Tennessee Hospital Association (THA):**  
Institutional plans will be made available on [www.tha.com](http://www.tha.com)

**III. Tools:**

- A. FluAid**  
<http://www.cdc.gov/flu/pandemic/impactestimate.htm>  
FluAid 2.0 provides estimates of the total deaths, hospitalizations, and outpatient visits that might occur during an influenza pandemic.
- B. FluSurge**  
<http://www.cdc.gov/flu/pandemic/impactestimate.htm>  
This specialized spreadsheet-based software estimates the potential surge in demand for hospital-based health care during a pandemic. For each

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week of a pandemic, FluSurge 2.0 calculates the potential demand for hospital beds, intensive care unit beds, and mechanical ventilators. Demand for resources is compared with actual capacity. FluSurge 2.0 is a companion to the previously released FluAid 2.0.

**IV. CDC: Engineering/Environmental Control:**

Information on environmental control measures/Engineering controls such as negative pressure rooms or airborne infection isolation (AII) rooms:

CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings (2005) at

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm> and

CDC/HICPAC Guidelines for Environmental Infection Control in Healthcare Facilities (2003)

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm>

**V. CDC: Infection Control Guidelines:**

<http://www.cdc.gov/ncidod/dhqp/guidelines.html>

**VI. CDC: Information on avian influenza:**

<http://www.cdc.gov/flu/avian/index.htm>

**VII. Prioritization for influenza vaccination of healthcare workers:**

**A. SHEA Position paper:**

An excellent resource for decision-making on prioritization (based on individual health care worker risk) is provided in the following SHEA position paper, published in ICHE, November 2005: Talbot TR, Bradley SE, Cosgrove SE, Ruff C, Siegel JD, Weber DJ. Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages. Infect. Control Hosp. Epidemiol 2005; 26:882-90. The article is available at

<http://www.shea->

[online.org/Assets/files/HCW\\_Flu\\_Position\\_Paper\\_FINAL\\_9-28.pdf](http://www.shea-online.org/Assets/files/HCW_Flu_Position_Paper_FINAL_9-28.pdf) and

<http://www.journals.uchicago.edu/ICHE/journal/issues/v26n11/11650/11650.web.pdf>

**B. CDC:**

A comprehensive list of staff to be considered for vaccination is found on page 3 of the CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings (2005) available at

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm>

**VIII. AHRQ Health Emergency Assistance Line and Triage Hub (HEALTH) Model:**

The model is designed to minimize surges in patient demand on the health care delivery system during a bioterrorist event or other public health emergency.

- A. **Full Report**—Health Emergency Assistance Line and Triage Hub (HEALTH) Model (AHRQ Publication No. 05-0040) (<http://www.ahrq.gov/research/health/health.pdf>) This report helps planners determine the requirements, specifications, and resources needed for developing an emergency contact center such as the HEALTH model.
- B. **Contact Center Assessment Tool Set :** (<http://www.ahrq.gov/research/health/health.asp>)

**IX. AHRQ Bioterrorism Planning and Response Resource Page:**

<http://www.ahrq.gov/browse/bioterbr.htm>

This resource includes a listing of a variety of tools and resources on issues from community prophylaxis to surge capacity in health facilities.

- A. **Emergency Preparedness Resource Inventory (EPRI): A Tool for Local, Regional, and State Planners:** (<http://www.ahrq.gov/research/epri/>) The Emergency Preparedness Resource Inventory (EPRI) is a tool allowing local or regional planners to assemble an inventory of critical resources that would be useful in responding to a bioterrorist attack. In addition to a Web-based software tool, EPRI includes an Implementation Report, a Technical Manual, and an Appendix.
- B. **Altered Standards of Care in Mass Casualty Events:** (<http://www.ahrq.gov/research/altstand/index.html>) This report discusses the potential of a mass casualty event to compromise the ability of health systems to deliver services meeting established standards of care.
- C. **Computer Staffing Model for Bioterrorism Response:** (<http://www.ahrq.gov/research/biomodel.htm>) This new resource is the Nation's first computerized staffing model that is downloadable as a spreadsheet or accessible as a Web-based version. It can be used to calculate the specific needs of local health care systems based on the number of staff they have and the number of patients they would need to treat quickly in a bioterrorism event.

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- D. Rocky Mountain Regional Care Model for Bioterrorist Events: Locate Alternate Care Sites During an Emergency:**  
<http://www.ahrq.gov/research/altsites.htm> The alternate care site selection tool is designed to allow regional planners to locate and rank potential alternative sites—stadiums, schools, recreation centers, motels, and other venues—based on whether they have adequate ventilation, plumbing, food supply and kitchen facilities, and other factors.
- E. Hospital bed definitions:**  
<http://www.ahrq.gov/research/havbed/definitions.htm>
- X. HRSA Bioterrorism and Hospital Preparedness:**  
<http://www.hrsa.gov/bioterrorism/preparationandplanning/healthcare&facilities.htm>  
A comprehensive list of resources and documents
- XI. ASTHO "Preparedness Planning for State Health Officials - Nature's Terrorist Attack - Pandemic Influenza":**  
<http://www.astho.org/pubs/PandemicInfluenza.pdf>  
Provides checklists for state health officials to assist in preparedness planning. A brief summary of major issues to consider is also included.
- XII. Educational Materials samples:**
- A. The TDH has developed educational posters and bookmarks on respiratory etiquette or “Cover your cough” in English and Spanish: these can be found on <http://www2.state.tn.us/health/FactSheets/etiquette.htm>
- B. Additional posters developed by CDC can be found at <http://www.cdc.gov/flu/protect/covercough.htm>.
- C. Posters developed by the Infection control professionals from Veteran’s Affairs hospitals as part of their “Infection: don’t pass it on campaign” can be found at [http://www.publichealth.va.gov/InfectionDontPassItOn/detail\\_resp.htm](http://www.publichealth.va.gov/InfectionDontPassItOn/detail_resp.htm)
- D. Flu related educational materials can be found at: <http://www.health.state.ny.us/nysdoh/flu/resources.htm>
- XIII. HHS healthcare surge capacity document:**  
[http://www.os.hhs.gov/asphep/mscc\\_handbook.html](http://www.os.hhs.gov/asphep/mscc_handbook.html)
- XIV. OSHA—Best Practices for the Protection of Hospital-Based First Receivers:**  
[http://www.osha.gov/dts/osta/bestpractices/html/hospital\\_firstreceivers.html](http://www.osha.gov/dts/osta/bestpractices/html/hospital_firstreceivers.html)

**XV. Information on Handling Human Remains During Mass-Casualty Events:**

- A. Interim Health Recommendations for Workers who Handle Human Remains [www.bt.cdc.gov/disasters/tsunamis/handlerremains.asp](http://www.bt.cdc.gov/disasters/tsunamis/handlerremains.asp)
- B. Disposing of Liquid Waste from Autopsies in Tsunami-Affected Areas [www.bt.cdc.gov/disasters/tsunamis/pdf/tsunami-autopsyliquidwaste.pdf](http://www.bt.cdc.gov/disasters/tsunamis/pdf/tsunami-autopsyliquidwaste.pdf)
- C. Management of Dead Bodies in Disaster Situations [www.paho.org/English/DD/PED/ManejoCadaveres.htm](http://www.paho.org/English/DD/PED/ManejoCadaveres.htm)
- D. Health Concerns Associated with Disaster Victim Identification After a Tsunami—Thailand, Dec 26, 2004–Mar 31, 2005. MMWR 15 April 2005;54(14):349-52. [www.cdc.gov/mmwr/preview/mmwrhtml/mm5414a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5414a1.htm)

**XVI. Presentations:**

- A. *2004 AHRQ-sponsored series "Addressing Surge Capacity in a Mass Casualty Event"* <http://www.hsrnet.net/ahrq/surgecapacity/>
- B. *Presentations from First National Congress on Public Health Readiness* <http://www.ama-assn.org/ama/noindex/category/11053.html>  
<http://www.bt.cdc.gov/training/ncphr/>  
-CDC Presentations only  
These slideshows represent presentations from speakers at the 1st National Congress on Public Health Readiness held July 20-22, 2004.
- C. *"No Vacancy: Healthcare Surge Capacity in Disasters."* <http://www.ama-assn.org/ama1/pub/upload/mm/415/hick.ppt>  
Jonathan L. Hick, MD, Medical Director, Office of Emergency Preparedness, Hennepin County Medical Center, Minneapolis, Minnesota
- D. *Bioterrorism Preparedness: A Hospital Tabletop Exercise*  
SHEA 14th Annual Scientific Meeting, Philadelphia, PA April 17, 2004  
Prepared by Kelly Henning, MD

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- E.** *Seasonal & Pandemic Influenza 2006: At the Crossroads...A Global Opportunity*, Washington, DC, January 31 to February 2, 2006. slides available at:  
<http://www.shea-online.org/news/avianflu.cfm>

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**I. Purpose:**

Because antiviral medication and vaccine supplies are likely to be very scarce during a pandemic and may not be available at times, healthcare facilities must rely upon infection control measures to reduce transmission of novel/pandemic influenza virus to other patients, staff and visitors. In addition, infection control is necessary to prevent other hospital-acquired infections that would pose competing demands on scarce resources such as mechanical ventilators and critical care beds.

**II. Assumptions:**

- A. Incubation period for seasonal influenza is 24 hours to 5 days; estimates for novel/pandemic influenza virus range from 24 hours to 10 days.
- B. Some persons may shed seasonal virus for 24 hours before they develop symptoms; it is unclear how much transmission occurs within that time-frame. However, transmission is most likely after development of symptoms.
- C. In the absence of antiviral therapy, viral shedding of seasonal influenza is greatest during the first 2 days of symptoms, and continues until 5 days after onset of illness, but can continue for more than 7 days, especially in children and immunocompromised hosts.
- D. Transmission occurs when infectious particles are deposited directly or via contaminated hands on mucosal surfaces (i.e., eyes, nose, respiratory mucosa).
- E. Droplets (rather than droplet nuclei) are the believed to be the predominant mode of transmission for seasonal influenza. Droplets may disperse for 3-6 feet. Surgical masks are considered adequate to prevent transmission via droplets.
- F. Airborne transmission is not common. However, aerosols (that reach the alveoli) are 10-100 times more infectious than droplets that deposited in the nasopharynx.
- G. Aerosol-generating procedures include endotracheal intubation, suctioning, and nebulizer treatments. Surgical masks do not provide adequate protection against aerosols. N95 respirators should be used for aerosol-generating procedures.
- H. Seasonal (H3N2) influenza virus may survive 48 hours on hard non-porous surfaces (e.g., stainless steel), 8-12 hours on cloth, paper and tissue, and 5 minutes on hands at 35-49% humidity and a temperature of 28° C (82.4°F). Survival is enhanced under conditions of cool

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temperatures and low humidity (typically the winter months). Virus can be transferred from nonporous surfaces to hands for 24 hours and from paper tissues to hands for 15 minutes.

- I. Influenza viruses are susceptible to all Environmental Protection Agency (EPA) registered disinfectants.
- J. Novel influenza viruses may cause symptoms or be detected in tissues atypical of seasonal influenza; for example, although diarrhea is a prominent symptom in patients with H5N1, and active replication of H5N1 has occurred in human gastrointestinal mucosa, there has been no evidence to date that it can be transmitted from person-to-person via the fecal-oral route.
- K. Novel/pandemic influenza viruses may behave differently (e.g., amount/duration/peak of viral shedding) from seasonal influenza virus.
- L. As more is known about a novel or pandemic influenza virus, these assumptions and recommendations may change.
- M. During a pandemic, it is highly likely that there will be alternate standards of care (see Section 4, Supplement 3 [Surge Capacity]).
- N. Patients should be admitted to the hospital for care only if hospital services are deemed necessary and beneficial.

This section on infection control should be read in conjunction with Section 4 (Hospital Planning). The hospital planning section covers issues such as facility access controls and stockpiling of personal protective equipment.

Some recommendations may not be feasible during a pandemic. In recognition of this, each infection control recommendation is subdivided into those measures applicable to (a) Pandemic Alert Period (Phases 3, 4, 5) and (b) Pandemic Period (Phase 6). At the time of writing, we are in the Pandemic Alert Period (Phase 3). Hospitals need to implement the activities pertaining to the Pandemic Alert Period now and should plan how they would implement activities during the pandemic itself (Phase 6)

**Index of Infection Control Recommendations:**

	Pandemic Alert Period Phases 3,4,5	Pandemic Period Phase 6
(1) Implement "Cover your cough"	X	X
(2) Implement surveillance and triage	X	modified
(3) Implement isolation precautions	X	modified
(4) Implement transport protocols	X	modified

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(5) Implement patient placement, isolation, and cohorting protocols	X	modified
(6) Implement engineering and environmental controls	X	modified
(7) Ensure staff are fit-tested and can use PPE	X	X
(8) Ensure ability to track movements of staff, patients and visitors	X	Not applicable
(9) Report individual suspect cases to health department	X	Not applicable Hospital-based aggregate surveillance
(10) Consider purchasing antivirals for use in staff	X	X; Antivirals not likely available for purchase
(11) Implement exposure reporting and evaluation	X	modified
(12) Ensure protocols in place to prevent transmission from diagnostic specimens	X	modified
(13) Ensure infection control has sufficient resources	X	modified

**III. Pandemic Alert Period (Phases 3, 4 and 5) Infection Control Measures:**

**A. Implement “Cover your Cough” Education** (also known as “respiratory hygiene / cough etiquette” or “good health manners”)

**Objective:**

Reduce the spread of illnesses (including influenza) spread via respiratory droplets in areas such as waiting rooms of Emergency Departments or outpatient clinics.

**Key Points:**

1. All patients or visitors with fever + cough or fever + rash should be provided with a surgical mask. (Rash is NOT a major symptom of influenza, however, the combination with fever may indicate another communicable disease (e.g., meningococcus, measles, chickenpox, smallpox), where droplet and/or airborne precautions are needed.)
2. Provide instructions on proper use and disposal of masks. The Tennessee Department of Health (TDH) has developed educational posters and bookmarks in English and Spanish: these can be found on <http://www2.state.tn.us/health/FactSheets/etiquette.htm>

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3. Additional posters developed by CDC can be found at <http://www.cdc.gov/flu/protect/covercough.htm>. Posters developed by the Infection control professionals from Veteran's Affairs hospitals as part of their "Infection: don't pass it on campaign" can be found at [http://www.publichealth.va.gov/InfectionDontPassItOn/detail\\_resp.htm](http://www.publichealth.va.gov/InfectionDontPassItOn/detail_resp.htm)
4. For patients who cannot wear a surgical mask, provide tissues and instructions on when to use them (i.e., when coughing, sneezing, or controlling nasal secretions), how and where to dispose of them and the importance of hand hygiene after handling this material.
5. Provide hand hygiene materials in waiting room areas and encourage patients with respiratory symptoms to perform hand hygiene. Alcohol concentrations of alcohol-based hand sanitizers should be between 60 and 95%.
6. Designate an area in the waiting room where patients with respiratory symptoms can be segregated (ideally by at least 3 feet) from other patients who do not have respiratory symptoms.
7. Place patients with respiratory symptoms in a private room (preferred) or cubicle as soon as possible.
8. Implement use of surgical masks by healthcare personnel during the evaluation of patients with respiratory symptoms.
9. Consider the installation of plexiglass barriers at the point of triage or registration to protect healthcare personnel from contact with respiratory droplets.
10. If no barriers are present, instruct registration and triage staff to remain at least 3 feet from unmasked patients and to consider wearing surgical masks during respiratory infection season (October-May) and once novel/pandemic influenza virus cases have been identified in the U.S. (as communicated to the Pandemic Flu Coordinator by the TDH) or Pandemic Phase (Level 6). If triage staff are in an area where aerosol-generating procedures are performed, N95 respirators should be used.
11. Continue to use droplet precautions to manage patients with respiratory symptoms until it is determined that the cause of symptoms is not an infectious agent that requires precautions beyond Standard Precautions.

**B. Implement Surveillance and Triage (phases 3, 4, 5)**

**Objective:**

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To detect cases infected with a novel influenza strain (with pandemic potential) and prevent transmission to staff, visitors and other patients.

**Key Points:**

1. Screening questions are likely to change over time depending on the geographic spread of a novel or pandemic influenza virus. The TDH Communicable and Environmental Disease Services Section (CEDS) will communicate the up-to-date screening questions to the Pandemic Flu Coordinators. These screening questions involve clinical and epidemiologic criteria. Examples of clinical criteria (e.g., fever, cough, myalgia) and epidemiologic (e.g., travel to certain locations, exposure to certain activities (e.g., contact with sick poultry) or occupations (e.g., healthcare workers, laboratory workers).
2. The Pandemic Flu Coordinator should update clinicians, intake and triage staff on the appropriate screening questions and the status of a novel/pandemic influenza virus locally, nationally and globally.
3. Note date and time and location of patient, when patient was provided with surgical mask and when staff implemented use of personal protective equipment (PPE) (including type of PPE used: e.g., N95 or surgical mask).
4. Plan how to handle larger number of patients who meet the screening criteria. Consider routing such patients to a place specifically designated to evaluate such persons.
  - a. A clinic on- or off-site may fulfill this role, especially if there is easy access to laboratory and radiology services.
  - b. Ideally this novel/pandemic influenza assessment clinic would have a separate entrance/exit from the rest of the hospital, to minimize exposure to staff, visitors and patients.
  - c. Determine the number of patients that could be evaluated in that assessment center in one day. During a pandemic wave, it may be necessary to change locations of this assessment clinic to meet increased demands.
  - d. Decide who gets routed to this separate assessment clinic; consider whether patients are likely to be admitted or will

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require acute interventions (e.g., intubation) that can be provided at the assessment clinic.

- e. Consider how patients that need to be admitted will be transported.
  - f. Ensure that staff can use PPE effectively, are trained and updated regularly
5. Intake and triage staff in this section should be trained on how to assess risks for a novel or pandemic influenza virus and use any applicable tools (thermometers, respiratory signs/symptoms checklists) to screen patients. The TDH will provide some training tools to the Pandemic Flu Coordinator. Hospitals will need to adapt these to local conditions.
6. Because many patients in emergency departments (ED) and intensive care units (ICU)s undergo aerosol-generating procedures, it may be logistically easier to have a policy of using N95 respirators (rather than surgical masks) in the EDs and ICUs

**C. Implement Isolation Precautions (phases 3, 4, 5)**

**Objective:**

Minimize exposure of patients, staff and visitors to novel influenza virus.

**Key Points:**

- 1. Staff should be reminded about the importance of strict adherence to and proper use of standard infection control, especially hand hygiene and isolation.
- 2. All patients with suspected novel/pandemic influenza virus seen in the ED or other clinic should immediately be placed in a private room meeting airborne infection isolation (AII) requirements (isolation rooms, air exhausted directly to the outside, negative pressure) if available, otherwise use a private room. A surgical mask should be placed on the patient.
- 3. Staff should perform and document a tissue test to ensure negative pressure before placing patient in the AII room. The tissue test should be performed daily thereafter and documented.
- 4. All patients with suspected novel/pandemic influenza should be placed on Droplet and Contact Precautions. All persons entering such a room should wear a surgical mask upon entry.

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5. If aerosol generating procedures are likely, it is preferable to place such patients in an AII room and to use airborne precautions (e.g., an N95 respirator)
6. Example of a protocol for entering an Airborne/Contact Precaution room
  - a. N95 respirator (medical clearance, fit test and training required before use); secure ties or elastic bands at middle of head and neck; fit flexible band to nose bridge; fit snug to face and below chin)
  - b. Gloves (extend to cover wrist of isolation gown)
  - c. Gown (fully cover torso from neck to knees, arms to end of wrists, and wrap around the back; fasten in back of neck and waist)
  - d. Protective eyewear (for splashes and to prevent self-inoculation)
  - e. Goggles for aerosol generating procedures
7. An example of a protocol for leaving room is provided (except for the N95 respirator, remove PPE at doorway or in anteroom)
8. Note that in this example, the N95 respirator is used for a single patient encounter only and not throughout the shift. Pending further evidence and guidance from CDC, this may be modified. N95 respirators may be provided to staff for the duration of a shift (or longer). The main theoretical concern is whether any influenza particles deposited on the outside of the N95 respirator pose a risk of infection to the wearer and what can/should be done to mitigate that risk if it exists (e.g., wear goggles or face shield to prevent self-inoculation of ocular mucosa, place a surgical mask over the N95 respirator and remove the surgical mask after aerosol generating procedures).

**At the door just prior to exit**

- a. Remove gloves by peeling off inside-out. Dispose of gloves in trash.
- b. Remove goggles or face shield by handling the head band or ear pieces.
- c. Remove gown by unfastening the back and then remove with inside outward (touching inside of gown only). Dispose of gown in trash.
- d. Exit room, close the door.

**At door just outside of room**

- a. Clean hands with alcohol based hand rub.

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- b. Remove N95 respirator and discard in trash.
  - c. Perform hand hygiene with antiseptic soap and water immediately after removing all PPE.
  - d. Put on clean exam gloves and decontaminate goggles (if reusable) by wiping exterior surface with alcohol or EPA approved disinfectant.
  - e. Remove gloves and perform hand hygiene with antiseptic soap or alcohol-based hand rub.
  - f. Signs describing the protocol for entering and leaving the room will be placed on the inside and outside of the door. Examples of a poster can be found on: <http://www.cdc.gov/ncidod/dhqp/ppe.html> and [http://www.publichealth.va.gov/InfectionDontPassItOn/index\\_ppe.htm](http://www.publichealth.va.gov/InfectionDontPassItOn/index_ppe.htm)
9. A log should be maintained of all persons entering the room of patients with a suspect or probable novel/pandemic influenza virus
10. Aerosol-generating procedures (e.g., sputum induction, airway suctioning, aerosol medication therapy, bronchoscopy, endotracheal intubation, BiPAP, CPAP):
- a. Airborne/Contact Precautions (including eye protection for all patients) should be used for performing all procedures that generate aerosols.
  - b. Limit the use of aerosol-generating procedures on novel/pandemic influenza patients to those that are deemed medically necessary
  - c. Treatments should be performed in an AIIR if available
  - d. Minimize the number of healthcare workers in the room
  - e. Healthcare workers should wear a fit tested N95 respirator (or a PAPR)
  - f. Use clinically appropriate sedation during intubation and bronchoscopy to minimize resistance and coughing during the procedure.
  - g. Ambu bags must be equipped with a small-volume heat and moisture exchange filter
  - h. Use bacterial/viral filters on exhalation valves of mechanical ventilators.
  - i. Eye protection should consist of goggles that fit snugly around the eyes.
  - j. A face shield may be worn over goggles to protect exposed areas of the face but should not be used as a primary form of eye protection for these procedures.

**D. Implement Transport Protocols (phases 3, 4, 5)**

**Objective:**

Minimize exposure of patients, staff and visitors to novel influenza.

**Key Points:**

1. Minimize intra-hospital transport of patients with suspected novel influenza virus.
2. When patient is being transported for essential diagnostic tests or from clinic/ED to hospital room, have patient wear a surgical or procedure mask.
3. Envelope-wrap or drape the patient in a clean sheet prior to transport.
4. Transportation should be arranged so that such patients can quickly have the necessary procedure/testing done shortly after and then immediately transported back to their room using the same stretcher.
5. Always notify receiving area prior to patient transport.
6. When transporting patients, identify a path segregated from the main traffic routes as much as possible. Transport of such patients on an elevator should be done without non-essential staff or visitors in the elevator.
7. Ventilators used for patient transport must use bacterial/viral filters on the exhalation valves.
8. Transporters should wear N95 respirators if patients are likely to undergo aerosol-generating procedures in their presence; otherwise wear surgical masks. Gloves, gowns, and eye protection should be worn.
9. Clean the stretcher immediately after use with a disinfectant wipe or an EPA registered disinfectant.

**E. Implement Patient Placement, Isolation and Cohorting Protocols  
(phases 3, 4, 5)**

**Objective:**

Minimize exposure of patients, staff and visitors to novel influenza virus.

**Key Points:**

1. Patients with suspect or probable novel/pandemic influenza virus should be admitted only if admission is medically indicated (see Section 7, Supplement 2 [pre-pandemic case management]).
2. If possible, the patient should continue to wear a surgical or procedure mask throughout their admission. These masks can be placed over intra-nasal cannulae. If a surgical or procedural mask cannot be tolerated, encourage the patient to use tissues when coughing or sneezing and provide tissues and hand-hygiene supply within easy reach of the patient.
3. Patients requiring hospitalization should ideally be admitted to a room meeting airborne infection isolation criteria.
  - a. Identify all Airborne Infection Isolation Rooms (AIIRs) in the facility including E.D, ICUs, pediatrics, coronary care.
  - b. Check that airborne infection isolation rooms are functional (using tissue paper or smoke test).
  - c. Designate novel/pandemic influenza virus units/rooms (for patients requiring ICU care and those that require general medical supportive care).
  - d. Rooms on a novel/pandemic influenza virus unit should be private (i.e., single occupancy).
  - e. If possible, the novel/pandemic influenza virus unit should be at negative pressure relative to the rest of the hospital (consider corridors, elevators, stairwells).
  - f. Adjustment of airflow to create a novel/pandemic influenza virus ward often is inexpensive, but requires sufficient lead-time to review engineering blue prints and to consult with facility engineers.
  - g. Details on environmental infection control/ engineering can be found at [http://www.cdc.gov/ncidod/dhqp/gl\\_environinfection.html](http://www.cdc.gov/ncidod/dhqp/gl_environinfection.html)
4. The number of staff allowed to enter the room should be minimized to only essential personnel.
5. Ideally, a monitor will be placed outside the patient's door to assist with proper use of PPE and maintain the entry/exit log.

6. **A lack of AIIRs and/or a need to concentrate infection control efforts and resources may lead to a strategy that includes the following:**
  - a. Cohorting patients in individual rooms on the same floor, rather than placing them in AIIRs throughout the hospital;  
or
  - b. Converting private AIIRs to double rooms to accommodate more patients requiring airborne isolation. This strategy would only be implemented following a recommendation from CEDS at the TDH, and to the extent that staff could manage the number of patients on the unit.
  - c. Whenever possible, hospitalized pandemic influenza patients should have procedures/tests done in their own rooms, rather than transporting to other areas.

**F. Implement Engineering and Environmental Controls (phases 3, 4, 5)**

**Objectives:**

1. Minimize exposure of patients, staff and visitors to novel/pandemic influenza.
2. To ensure airborne infection isolation rooms (AIIR or negative pressure rooms) are functional.

**Key Points:**

1. Designate who (e.g., Plant Engineering) will be responsible for ensuring that the AIIRs are functioning properly.
2. Information on environmental control measures such as AIIRs can be found at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm> (CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings (2005) and [http://www.cdc.gov/ncidod/dhqp/gl\\_environmentinfection.html](http://www.cdc.gov/ncidod/dhqp/gl_environmentinfection.html) (CDC/HICPAC Guidelines for Environmental Infection Control in Healthcare Facilities (2003)).
3. Nursing staff must perform a tissue test and document results prior to placing a patient in an AIIR and at least on a daily basis thereafter.

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4. If all AIIRs are occupied, identify non-AIIR rooms for influenza care that could be modified to achieve appropriate airflow direction and/or air exchanges. Possibilities include mounting a small fan in the window or using commercially available, portable isolation containment units that can be used in ICUs, EDs, medical wards or outside. Manufacturers of these units claim that two persons can set such a unit up within 60 minutes.
5. Preference for AIIRs during the pre-pandemic period will be: 1) patients who meet the novel influenza case definition and then 2) patients who are exposed and symptomatic but do not meet the novel influenza case definition. Hospital epidemiology /infection control and the Hospital Epidemiologist in CEDS should be consulted if there are other patients requiring airborne isolation (e.g., tuberculosis, measles, chickenpox), so that AIIR use is prioritized according to risk to other patients, visitors and staff.
6. If the patient must temporarily leave the AIIR, the door should be kept closed for a minimum of 30 minutes prior to anyone entering without wearing a respiratory protection device. Likewise, the door should remain closed for a minimum of 30 minutes with the isolation sign displayed when a patient is discharged from an AIIR. The 30 minute time period will allow the room ventilation system to remove any droplets/droplet nuclei.
7. Develop an environmental disinfection policy. For example:
  - a. Frequently touched surfaces should be cleaned frequently with an EPA-approved disinfectant-detergent or 1:10 dilution of bleach and water.
  - b. Following discharge, hospital rooms housing novel/pandemic influenza patients should receive terminal cleaning and disinfection using your Hospitals' Environmental Service policy. Environmental service personnel should wear gloves, gowns, surgical mask and eye protection (i.e., goggles or face shield) until cleaning is complete.
  - c. In clinics and procedure areas (e.g., Radiology), all equipment (e.g., stretchers) having direct or close contact with patients with suspected novel/pandemic influenza cases must be disinfected immediately after use with an EPA-approved disinfectant-detergent or 1:10 dilution of bleach and water.
  - d. These environmental guidelines may be revised by the TDH as additional information becomes available.

**E. Ensure Staff are Fitted for N95 Respirators and Can Use PPE Correctly (phases 3, 4, 5)**

**Objective:**

Protect staff from becoming infected with communicable infectious diseases, including novel influenza virus.

**Key Points:**

1. Emphasis should be placed on PPE training and N95 fit-testing for staff that may be called on to take care of patients infected with communicable infectious diseases, including novel influenza virus, and/or are likely to be exposed to aerosol-generating procedures. This may include staff in emergency department, intensive care, general medical, respiratory therapy, radiology, support and janitorial staff. Non-clinical staff that spend significant face-time with patients or staff (e.g., janitorial staff) that enter rooms where aerosol-generating procedures have been performed should be included. A very comprehensive list of staff that should be included in a tuberculosis screening program can be found on page 3 of the CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings (2005) that are available on:  
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm>
2. Information on fit-testing can be found at <http://www.osha.gov/SLTC/respiratoryprotection/index.html>
3. Stock crash carts with N95 respirators, face shields and goggles
4. Staff must know exact procedures on how to don and remove PPE
5. CDC has developed a video, slide set and poster to assist in educating healthcare staff on these procedures. These materials are available at: <http://www.cdc.gov/ncidod/dhqp/ppe.html>. Similar posters have been developed by infection control professionals from VA hospitals:  
[http://www.publichealth.va.gov/InfectionDontPassItOn/index\\_ppe.htm](http://www.publichealth.va.gov/InfectionDontPassItOn/index_ppe.htm)

**F. Ensure Mechanisms are in Place to Track Movement of Patients, Staff and Visitors throughout the Facility (phases 3, 4, 5)**

**Objectives:**

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To rapidly identify contacts of possible novel influenza cases.

To identify and quarantine asymptomatic contacts or isolate contacts with symptoms (fever, cough, shortness of breath).

**Key Points:**

1. This section is applicable only until community transmission is occurring in the United States and there are no longer clear epidemiologic links among cases.
2. Time is of the essence. Incubation period for influenza can be as short as 24 hours.
3. This may be achieved by implementing sign in/ sign out sheets at ward level.
4. Investigate whether your facility maintains an electronic record of staff movement, and how this information can be obtained in a timely manner.
5. Investigate other sources of information: e.g., radiology appointments.
6. Consider restricting visitors to novel influenza patients, or to all inpatients (except for children) to reduce the burden of contact tracing.
7. The local/regional health department should be contacted to assist in the identification and monitoring of contacts of potential cases infected with a novel influenza virus.

**G. Report Suspect Cases to the Health Department (phases 3, 4, 5)**

**Objectives:**

1. To ensure that cases and contacts of patients with novel influenza virus get access to the appropriate diagnostic tests.
2. To ensure that appropriate infection control precautions and/or isolation and/or quarantine measures (if appropriate) are taken to reduce transmission to others.
3. To ensure the latest information on clinical management/ treatment of novel influenza viruses is communicated to clinicians.

**Key Points:**

1. Individual suspect cases should be reported by phone to the health department immediately (24/7).
2. As of March, 2006, diagnostic tests (RT-PCR) for H5 and H7 novel influenza viruses are available through the State Public Health Laboratory. The laboratory will not test any samples for novel influenza viruses without approval by a physician from CEDS. Assistance on the interpretation of diagnostic tests will be provided by CEDS.
3. Hospital staff are expected to assist public health staff to obtain the clinical and epidemiologic information necessary for disease control. This may include information such as potential sources of infection (e.g., travel itinerary), contacts during the incubation period and in the infectious period (from 24 hours before onset of symptoms onwards), details of when the patient was provided with a surgical mask, locations of the patient within the healthcare setting (date/time in/out, what PPE staff and visitors were required to wear). Details will be provided by the TDH to the Pandemic Flu Coordinators. Follow-up clinical information is also expected (e.g., results of chest x-ray [CXR], admission to ICU, death, alternate diagnoses). The hospital should designate who will be responsible for reporting the case, communicating initial information and follow-up information to the Health Department. The specific information required will be based upon the epidemiology at the time.

**J. Consider the Purchase of Antiviral Medications for Use in Staff  
(phases 3, 4, 5)**

**Objective:**

Reduce illness and death from novel/pandemic influenza in patients and staff

**Key Points:**

1. Please refer to Section 6 (antivirals) for detailed discussion on overall use of antivirals in Tennessee.
2. There are limited data on the benefit of using antivirals (e.g., oseltamivir) in reducing illness and death.
3. It is unclear whether the novel/pandemic influenza virus will be susceptible to oseltamivir.

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4. The current treatment course may need to be modified to treat a novel/ pandemic influenza virus (e.g., increase the dose and/or duration of treatment).
5. There are limited supplies of antivirals stockpiled in the U.S in the Strategic National Stockpile (SNS). As of March 2006, 5.1 million standard treatment courses of antivirals have been stockpiled.
6. The State of Tennessee does not have a separate stockpile at this writing.
7. There will be strict restrictions on the use of antivirals from the federal stockpile; the TDH will follow federal guidance. In specific situations before a pandemic begins, the State Epidemiologist or their designee at the TDH may authorize prophylactic use to respond to pre-pandemic outbreaks of a novel influenza virus. Prophylaxis of healthcare providers using state or federal stockpiled antiviral medications will not be done during a pandemic; the limited supplies will be reserved for treatment of ill patients only.
8. Hospitals should consider purchasing a stockpile of antivirals for use in their staff. HRSA funds may be used for that purpose.
9. Keep track of any supplies of antivirals held by the hospital according to funding source (i.e., federal, HRSA funds or hospital funds), as there are different restrictions on their use (e.g. antivirals purchased with HRSA funds are for staff use and cannot be used to treat patients).
10. Antivirals may be designated as a controlled substance (see Section 6 [antivirals]) to ensure accountability and security. Instructions on use of DEA numbers for antiviral prescriptions will be provided by the TDH.
11. Ensure that antiviral supplies are physically secure in the hospital pharmacy/ any satellite pharmacies because of the risk of theft or misuse.
12. For standard human influenza (H3N2), oseltamivir is most effective if started within 12 hours of onset of symptoms, although some benefit is derived if taken up to 48 hours after onset of symptoms. For optimal results, it is recommended to develop occupational health plans to assess staff and provide them with oseltamivir within 12 hours of onset of symptoms.

**K. Implement Exposure Reporting and Evaluation Protocols (phases 3, 4, 5)**

**Objectives:**

1. Minimize exposure of patients, staff and visitors to novel influenza before a pandemic begins.
2. Provide assessment and treatment (if available)
3. Minimize staffing disruption

**Key Points:**

1. Occupational exposure consists of providing care to a novel influenza patient or being in the same room of a person with suspected novel influenza without proper PPE.
2. All occupational exposures must be reported to the appropriate occupational health service provider. The occupational health service providers will notify the local/regional health department of all employee exposures, as part of the follow-up on suspect cases and their contacts. Details to be provided include date(s) of exposure, duration of exposure, what PPE staff was wearing, whether the suspect case-patient was wearing a surgical mask and whether aerosol-generating procedures were performed. Any change in clinical status of the exposed staff member will be communicated to the health department.
3. Any employee with respiratory symptoms should report to their occupational health provider for evaluation at such time when the Pandemic Flu Coordinator is notified by the State Epidemiologist or their designee at the TDH to implement this policy. Hospitals may wish to implement this at an earlier stage.
4. Management of asymptomatic healthcare workers exposed to novel influenza
  - a. Persons who have been exposed to novel influenza should notify their occupational health service provider. They should also be vigilant for fever or respiratory symptoms following exposure for 10 days (or the time-period provided by CEDS at such time). Those who develop fever or respiratory symptoms should limit interactions outside the home and should not go to work, school, out-of-home child care, worship services, other public areas.

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- b. Exposed unprotected healthcare workers who are asymptomatic, depending upon the disease, may be furloughed at the discretion of the Medical Director of the applicable occupational health service during the incubation period of the disease.
  - c. Exposed, unprotected healthcare workers who are asymptomatic and who are allowed to work must be evaluated prior to work each day by the appropriate occupational health service. Hospitals should designate which occupational health service/section of the hospital (e.g., E.D.) is responsible for: employees, students, attending physicians and contractors.
  - d. Such examinations will be performed for a time period (as provided by CEDS, based on the latest available information) following the last unprotected exposure. In addition, exposed asymptomatic healthcare workers should take their own temperature 2x per day and if they feel febrile and they shall report any elevated temperatures  $>38.0^{\circ}\text{C}$  ( $100.4^{\circ}\text{F}$ ) to their occupational health provider.
  - e. Healthcare workers in some or all units with respiratory symptoms may be required to undergo rapid testing for influenza A, influenza B, and RSV. Depending on the negative predictive value (NPV) of the diagnostic test available at the time, healthcare workers who test negative may be allowed to continue to work, while wearing a mask and practicing good hand hygiene. CEDS will provide guidance on the NPV of specific diagnostic tests for novel influenza available at the time.
5. Management of symptomatic healthcare workers exposed to novel influenza
- a. Exposed healthcare workers who develop fever and/or respiratory tract symptoms should not report to work. They should immediately report by phone the development of fever and/or respiratory tract symptoms. An appropriate health provider (e.g., Medical Director Occupational Health, Nurse Practitioner Occupational Health) will evaluate symptomatic persons as medically necessary. It should be determined in advance where such staff will be evaluated (e.g., influenza assessment clinic).
  - b. The healthcare worker may be provided with antiviral therapy if available (i.e., if the hospital has purchased a supply of antivirals). Establish a strategy for rapidly (preferably within 12 hours of onset of symptoms)

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providing antiviral treatment to health care personnel as recommended by CEDS.

- c. If symptoms do not progress to meet the suspect novel influenza case definition within the specified time period (as provided by CED, based on the latest available information) the person may be allowed to return to work (depending on their duties), school, out-of-home child-care, worship or other public areas, and infection control precautions can be discontinued.
  - d. Healthcare workers will be prioritized for diagnostic testing for novel influenza virus. Following recovery, such healthcare workers will be immune. They may not require future vaccination (if the virus has not changed) and they could provide care in high-risk settings.
6. Management of asymptomatic healthcare workers with a high-risk exposure to a novel influenza

To manage an unprotected high-risk exposure of a worker (e.g., the worker is in the same room as probable novel influenza patient during a high-risk aerosol-generating procedure and infection control precautions are either absent or breached) who is asymptomatic, the worker:

- a. Should be excluded from duty for a time period (as provided by CEDS, based on the latest available information) following the date of the last high-risk exposure.
- b. May be required by the Department of Health to limit activities outside the health care setting.
- c. Should undergo and document/record active surveillance for the development of fever or respiratory symptoms.

**L. Implement Measures to Prevent Transmission from Diagnostic Specimens (phases 3, 4, 5)**

**Objective:**

Minimize exposure of patients, staff and visitors to novel influenza during the collection, transportation and processing of specimens

**Key Points:**

1. Minimize high-risk procedures to obtain diagnostic specimens (e.g., induced sputum, bronchoscopy) if appropriate specimens can be obtained through less risky methods.

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2. If aerosol-generating procedures are performed, all staff in the room must use the appropriate PPE as described above (must use N95 respirator or PAPR and goggles).
3. Do not use a tube pneumatic system for transportation of respiratory specimens from suspect novel influenza cases.
4. Alert the microbiology laboratory of suspect novel influenza cases for any respiratory specimens, so that appropriate precautions can be taken.
5. Viral culture should not be performed in clinical laboratories on suspect novel/pandemic influenza cases because of risk to laboratory personnel.

**M. Ensure Infection Control has Adequate Resources (phases 3, 4, 5)**

**Objectives:**

1. Minimize exposure of patients, staff and visitors to novel influenza.
2. Minimize nosocomial transmission of novel influenza virus to staff to reduce absenteeism from illness and fear of illness.
3. Maximize availability of scarce resources by minimizing hospital-acquired infections.

**Key Points:**

1. Infection control professionals will be needed to formally monitor and reinforce compliance with PPE measures and policies.
2. Continued attention to infection prevention/control measures (e.g., for central line insertions, prevention of ventilator-associated pneumonia) will prevent hospital acquired infections which would significantly increase hospital stays and impact the availability of scarce resources such as mechanical ventilators and critical care beds (Section 4, Supplement C [Ethical allocation of scarce resources]).
3. Infection control is essential to the provision of safe medical care. Patients should derive clear benefit from being in a hospital. For example, being admitted to/ remaining in a healthcare facility with ongoing nosocomial transmission of influenza may be more hazardous than being at home, if the patient does not require life-saving interventions in a hospital setting.

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4. Attention to basic infection control (e.g., availability and use of hand-hygiene supplies) must be reinforced, especially in response to increased patient care demands, reduced staffing and scarce resources.
5. Strongly consider stockpiling essential PPE equipment (see Section 4 Hospital Planning).
6. Ensure that access to hand-hygiene supplies, environmental disinfectants and other essential supplies for infection prevention will be maintained during a pandemic; consider stockpiling.

**IV. Pandemic Period (Phase 6) Infection Control Measures:**

- A. Implement “Cover your Cough” Education** (also known as “respiratory hygiene / cough etiquette” or “good health manners”)

**Objective:**

Reduce the spread of illnesses (including influenza) spread via respiratory droplets in areas such as waiting rooms of Emergency Departments or outpatient clinics.

**Key Points:**

1. All patients or visitors with fever + cough or fever + rash should be provided with a surgical mask. (Rash is NOT a major symptom of influenza, however, the combination with fever may indicate another communicable disease (e.g., meningococcus, measles, chickenpox, smallpox), where droplet and/or airborne precautions are needed.)
2. Provide instructions on proper use and disposal of masks. The Tennessee Department of Health (TDH) has developed educational posters and bookmarks in English and Spanish: these can be found on <http://www2.state.tn.us/health/FactSheets/etiquette.htm>
3. Additional posters developed by CDC can be found at <http://www.cdc.gov/flu/protect/covercough.htm>. Posters developed by the Infection control professionals from Veteran’s Affairs hospitals as part of their “Infection: don’t pass it on campaign” can be found at [http://www.publichealth.va.gov/InfectionDontPassItOn/detail\\_resp.htm](http://www.publichealth.va.gov/InfectionDontPassItOn/detail_resp.htm)

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4. For patients who cannot wear a surgical mask, provide tissues and instructions on when to use them (i.e., when coughing, sneezing, or controlling nasal secretions), how and where to dispose of them and the importance of hand hygiene after handling this material.
5. Provide hand hygiene materials in waiting room areas and encourage patients with respiratory symptoms to perform hand hygiene. Alcohol concentrations of alcohol-based hand sanitizers should be between 60 and 95%.
6. Designate an area in the waiting room where patients with respiratory symptoms can be segregated (ideally by at least 3 feet) from other patients who do not have respiratory symptoms.
7. Place patients with respiratory symptoms in a private room (preferred) or cubicle as soon as possible.
8. Implement use of surgical masks by healthcare personnel during the evaluation of patients with respiratory symptoms.
9. Consider the installation of plexiglass barriers at the point of triage or registration to protect healthcare personnel from contact with respiratory droplets.
10. If no barriers are present, instruct registration and triage staff to remain at least 3 feet from unmasked patients and to consider wearing surgical masks during respiratory infection season (October-May) and once novel/pandemic influenza virus cases have been identified in the U.S. (as communicated to the Pandemic Flu Coordinator by the TDH) or Pandemic Phase (Level 6). If triage staff are in an area where aerosol-generating procedures are performed, N95 respirators should be used.
11. Continue to use droplet precautions to manage patients with respiratory symptoms until it is determined that the cause of symptoms is not an infectious agent that requires precautions beyond Standard Precautions.
12. If no barriers are present, instruct registration and triage staff to remain at least 3 feet from unmasked patients and to consider wearing surgical masks (not only during the usual influenza season). If triage staff are in an area where aerosol-generating procedures are performed, N95 respirators should be used.

**A. Implement Surveillance and Triage (phase 6)**

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**Objective:**

To detect cases infected with pandemic influenza and prevent transmission to staff, visitors and other patients.

**Key Points:**

1. Screening questions are likely to change over time depending on the geographic spread of a pandemic influenza virus. CEDS will communicate the up-to-date screening questions to the Pandemic Flu Coordinators.
2. The Pandemic Flu Coordinator should update clinicians, intake and triage staff on the appropriate screening questions and the status of a novel/pandemic influenza virus locally, nationally and globally.
3. Plan how to handle larger number of patients who meet the screening criteria. Consider routing such patients to a place specifically designated to evaluate such persons.
  - a. A clinic on- or off-site may fulfill this role, especially if there is easy access to laboratory and radiology services.
  - b. Ideally this pandemic influenza assessment clinic would have a separate entrance/exit from the rest of the hospital, to minimize exposure to staff, visitors and patients.
  - c. Determine the number of patients that could be evaluated in that assessment center in one day. During a pandemic wave, it may be necessary to change locations of this assessment clinic to meet increased demands.
  - d. Decide who gets routed to this separate assessment clinic; consider whether patients are likely to be admitted or will require acute interventions (e.g., intubation) that can be provided at the assessment clinic.
  - e. Consider how patients that need to be admitted will be transported.
  - f. Ensure that staff can use PPE effectively, are trained and updated regularly.
4. Intake and triage staff should be trained on how to assess risks for a pandemic influenza virus and use any applicable tools (thermometers, respiratory signs/symptoms checklists) to screen patients. CEDS will provide some training tools to the Pandemic Flu Coordinator. Hospitals will need to adapt these to local conditions.

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5. Because many patients in emergency departments (ED) and intensive care units (ICU)s undergo aerosol-generating procedures, it may be logistically easier to have a policy of using N95 respirators (rather than surgical masks) in the EDs and ICUs

**C. Implement Isolation Precautions (phase 6)**

**Objective:**

Minimize exposure of patients, staff and visitors to pandemic influenza.

**Key Points:**

1. Staff should be reminded about the importance of strict adherence to and proper use of standard infection control, especially hand hygiene and isolation.
2. All patients with suspected pandemic influenza virus seen in the ED or other clinic should be provided with a surgical mask, and separated from non-influenza patients. Surgical masks should remain on patients during their hospital stay if tolerated (e.g., place surgical mask over nasal cannulae providing oxygen) to reduce dispersal of droplets/aerosol from patients.
3. All staff should wear surgical masks and eye-protection (e.g., goggles or face shield) within the hospital (unless wearing a N95 respirator or powered air-purifying respirator, or PAPR).
4. N95 respirator (or PAPR) use: in critical care areas (e.g., ICU), emergency departments and other areas where aerosol-generating procedures are performed frequently, staff should wear N95 respirators whilst in those areas.
  - a. It is anticipated that during a pandemic, N95 respirators may be used for an entire shift, and not discarded after each patient. Investigations are underway on potentially re-using a single N95 respirator for multiple shifts. The main theoretical concern is whether any influenza particles deposited on the outside of the N95 respirator pose a risk of infection to the wearer and what can/should be done to mitigate that risk if it exists (e.g., wear goggles or face shield to prevent self-inoculation of ocular mucosa, place a surgical mask over the N95 respirator and remove the surgical mask after aerosol generating procedures).
5. Aerosol-generating procedures (e.g., sputum induction, airway suctioning, aerosol medication therapy, bronchoscopy, endotracheal intubation, BiPAP, CPAP):

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- a. Airborne/Contact Precautions (including eye protection for all patients) should be used for performing all procedures that generate aerosols.
- b. Limit the use of aerosol-generating procedures on novel/pandemic influenza patients to those that are deemed medically necessary
- c. Treatments should be performed in an AIIR if available
- d. Minimize the number of healthcare workers in the room
- e. Healthcare workers should wear a fit tested N95 respirator (or a PAPR)
- f. Use clinically appropriate sedation during intubation and bronchoscopy to minimize resistance and coughing during the procedure.
- g. Ambu bags must be equipped with a small-volume heat and moisture exchange filter
- h. Use bacterial/viral filters on exhalation valves of mechanical ventilators.
- i. Eye protection should consist of goggles that fit snugly around the eyes.
- j. A face shield may be worn over goggles to protect exposed areas of the face but should not be used as a primary form of eye protection for these procedures.

**D. Implement Transport Protocols (phase 6)**

**Objective:**

Minimize exposure of patients, staff and visitors to pandemic influenza.

**Key Points:**

1. Minimize intra-hospital transport of patients with suspected pandemic influenza virus.
2. When patient is being transported for essential diagnostic tests or from clinic/ED to hospital room, have patient wear a surgical or procedure mask.
3. When transporting patients, identify a path segregated from the main traffic routes as much as possible. Transport of such patients on an elevator should be done without non-essential staff or visitors in the elevator
4. Ventilators used for patient transport must use bacterial/viral filters on the exhalation valves.

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5. Transporters should wear N95 respirators if patients are likely to undergo aerosol-generating procedures whilst they are present; otherwise wear surgical masks.
6. Clean the stretcher immediately after use with a disinfectant wipe or an EPA registered disinfectant

**E. Implement Patient Placement, Isolation and Cohorting Protocols (phase 6)**

**Objective:**

Minimize exposure of patients, staff and visitors to pandemic influenza.

**Key Points:**

1. Patients with suspect or probable novel/pandemic influenza virus should be admitted only if medically indicated (see Section 4, Supplements 3 [Surge Capacity] and 4 [Ethical Allocation of Scarce Resources]).
2. If possible, the patient should continue to wear a surgical or procedure mask throughout their admission. These masks can be placed over intra-nasal cannulae. If a surgical or procedural mask cannot be tolerated, encourage the patient to use tissues when coughing or sneezing and provide tissues and hand-hygiene supply within easy reach of the patient.
3. Many patients requiring hospitalization will not be able to be admitted to a room meeting airborne infection isolation criteria. CEDS will distribute recommendations to Pandemic Flu Coordinators as to who should be prioritized for those rooms, e.g., patients that are likely to undergo aerosol-generating procedures and that are likely shedding large quantities of virus.
  - a. Identify all Airborne Infection Isolation Rooms (AIIRs) in the facility including ED, ICUs, pediatrics, coronary care.
  - b. Check that airborne infection isolation rooms are functional (using tissue paper or smoke test).
  - c. Designate pandemic influenza virus units/rooms (for patients requiring ICU care and those that require general medical supportive care).
  - d. Rooms on a pandemic influenza virus unit should be private (i.e., single occupancy).

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- e. If possible, the pandemic influenza virus unit should be at negative pressure relative to the rest of the hospital (consider corridors, elevators, stairwells).
  - f. Adjustment of airflow to create a pandemic influenza virus ward often is inexpensive, but requires sufficient lead-time to review engineering blue prints and to consult with facility engineers.
  - g. Details on environmental infection control/ engineering can be found at [www.cdc.gov/ncidod/hip/enviro/Enviro\\_guide\\_03.pdf](http://www.cdc.gov/ncidod/hip/enviro/Enviro_guide_03.pdf).
4. The number of staff allowed to enter the room should be minimized to only essential personnel.
  5. A lack of AIIRs and/or a need to concentrate infection control efforts and resources may lead to a strategy that includes the following:
    - a. Cohorting patients in individual rooms on the same floor, rather than placing them in AIIRs throughout the hospital; or
    - b. Converting private AIIRs to double rooms to accommodate more patients requiring airborne isolation. This strategy would only be implemented following approval from CEDS at the TDH, and to the extent that staff could manage the number of patients on the unit.
    - c. A lack of hospital beds may trigger issuance of a state executive order permitting the use of non-licensed inpatient beds for patient management (e.g., post-anesthesia care unit [PACU] or observation beds) to the extent that staff can manage the number of hospitalized patients at the recommendation of the State Epidemiologist or their designee (see Section 4, Supplement 3 [Surge Capacity]).
    - d. During a pandemic when high patient volume is expected, patients might be divided into the following cohorts for room placement:
      - i. patients who are exposed and asymptomatic;
      - ii. patients who are exposed and symptomatic but do not meet the pandemic influenza case definition;
      - iii. patients who meet the pandemic influenza case definition;
      - iv. non-exposed patients.

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- e. Whenever possible, hospitalized pandemic influenza patients should have procedures/tests done in their own rooms, rather than transporting to other areas.

**F. Implement Engineering and Environmental Controls (phase 6)**

**Objectives:**

1. Minimize exposure of patients, staff and visitors to pandemic influenza.
2. To ensure AIIRs are functional.

**Key Points:**

1. Designate who (e.g., Plant Engineering) will be responsible for ensuring that the AIIRs are functioning properly.
2. Information on environmental control measures such as AIIRs can be found at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm> (CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings (2005) and [http://www.cdc.gov/ncidod/dhqp/gl\\_environmentinfection.html](http://www.cdc.gov/ncidod/dhqp/gl_environmentinfection.html) (CDC/HICPAC Guidelines for Environmental Infection Control in Healthcare Facilities (2003)).
3. Nursing staff must perform a tissue test and document results prior to placing a patient in an AIIR and at least on a daily basis thereafter.
4. If all AIIRs are occupied, identify non-AIIR rooms for influenza care that could be modified to achieve appropriate airflow direction and/or air exchanges. Possibilities include mounting a small fan in the window or using commercially available, portable isolation containment units that can be used in ICUs, EDs, medical wards or outside. Manufacturers of these units claim that two persons can set such a unit up within 60 minutes.
5. The TDH will provide guidance on prioritization of AIIRs during a pandemic. Hospital epidemiology /infection control and the Hospital Epidemiologist in CEDS should be consulted if there are other patients requiring airborne isolation (e.g., tuberculosis, measles, chickenpox), so that AIIR use is prioritized according to risk to other patients, visitors and staff.
6. Develop an environmental disinfection policy. For example:

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- a. Frequently touched surfaces should be cleaned frequently with an EPA-approved disinfectant-detergent or 1:10 dilution of bleach and water.
- b. In clinics and procedure areas (e.g., Radiology), all equipment (e.g., stretchers) having direct or close contact with patients with suspected pandemic influenza cases must be disinfected immediately after use with an EPA-approved disinfectant-detergent or 1:10 dilution of bleach and water.
- c. These environmental guidelines may be revised by CEDS as additional information becomes available.

**G. Ensure Staff are Fitted for N95 Respirators and Can Use PPE Correctly (phase 6)**

**Objective:**

Protect staff from becoming infected with communicable infectious diseases, including novel influenza virus.

**Key Points:**

1. Emphasis should be placed on PPE training and N95 fit-testing for staff that may be called on to take care of patients infected with communicable infectious diseases, including novel influenza virus, and/or are likely to be exposed to aerosol-generating procedures. This may include staff in emergency department, intensive care, general medical, respiratory therapy, radiology, support and janitorial staff. Non-clinical staff that spend significant face-time with patients or staff (e.g., janitorial staff) that enter rooms where aerosol-generating procedures have been performed should be included. A very comprehensive list of staff that should be included in a tuberculosis screening program can be found on page 3 of the CDC Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings (2005) that are available on:  
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm>
2. Information on fit-testing can be found at <http://www.osha.gov/SLTC/respiratoryprotection/index.html>
3. Stock crash carts with N95 respirators, face shields and goggles
4. Staff must know exact procedures on how to don and remove PPE
5. CDC has developed a video, slide set and poster to assist in educating healthcare staff on these procedures. These materials are

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available at: <http://www.cdc.gov/ncidod/dhqp/ppe.html>. Similar posters have been developed by infection control professionals from VA hospitals: [http://www.publichealth.va.gov/InfectionDontPassItOn/index\\_ppe.htm](http://www.publichealth.va.gov/InfectionDontPassItOn/index_ppe.htm)

**H. Consider the Purchase of Antiviral Medications for Use in Staff (phase 6)**

**Objective:**

Reduce illness and death from novel/pandemic influenza in patients and staff.

**Key Points:**

1. Please refer to Section 6 (antivirals) for detailed discussion on overall use of antivirals in Tennessee.
2. There are limited data on the benefit of using antivirals (e.g., oseltamivir) in reducing illness and death.
3. It is unclear whether the novel/pandemic influenza virus will be susceptible to oseltamivir.
4. The current treatment course may need to be modified to treat a novel/ pandemic influenza virus (e.g., increase the dose and/or duration of treatment).
5. There are limited supplies of antivirals stockpiled in the U.S in the Strategic National Stockpile (SNS). As of March 2006, 5.1 million standard treatment courses of antivirals have been stockpiled.
6. The State of Tennessee does not have a separate stockpile at this writing.
7. There will be strict restrictions on the use of antivirals from the federal stockpile; the TDH will follow federal guidance. In specific situations before a pandemic begins, the State Epidemiologist or their designee at the TDH may authorize prophylactic use to respond to pre-pandemic outbreaks of a novel influenza virus. Prophylaxis of healthcare providers using state or federal stockpiled antiviral medications will not be done during a pandemic; the limited supplies will be reserved for treatment of ill patients only.

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8. Hospitals should consider purchasing a stockpile of antivirals for use in their staff. HRSA funds may be used for that purpose.
9. Keep track of any supplies of antivirals held by the hospital according to funding source (i.e., federal, HRSA funds or hospital funds), as there are different restrictions on their use (e.g. antivirals purchased with HRSA funds are for staff use and cannot be used to treat patients).
10. Antivirals may be designated as a controlled substance (see Section 6 [antivirals]) to ensure accountability and security. Instructions on use of DEA numbers for antiviral prescriptions will be provided by the TDH.
11. Ensure that antiviral supplies are physically secure in the hospital pharmacy/ any satellite pharmacies because of the risk of theft or misuse.
12. For standard human influenza (H3N2), oseltamivir is most effective if started within 12 hours of onset of symptoms, although some benefit is derived if taken up to 48 hours after onset of symptoms. For optimal results, it is recommended to develop occupational health plans to assess staff and provide them with oseltamivir within 12 hours of onset of symptoms.
13. Antivirals are unlikely to be available for purchase by hospitals during the pandemic period.

**I. Implement Exposure Reporting and Evaluation Protocols (phase 6)**

**Objectives:**

1. Minimize exposure of patients, staff and visitors to pandemic influenza.
2. Provide assessment and treatment (if available).
3. Minimize staffing disruption.

**Key Points:**

1. Occupational exposure consists of providing care to a pandemic influenza patient or being in the same room of a person with suspected pandemic influenza without proper PPE.
2. All employees should monitor their temperature twice a day and be vigilant for development of respiratory symptoms.

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3. Healthcare workers who develop fever and/or respiratory tract symptoms should not report to work. They should immediately report by phone the development of fever and/or respiratory tract symptoms.
4. An appropriate health provider (e.g., Medical Director Occupational Health, Nurse Practitioner Occupational Health) should evaluate symptomatic persons as medically necessary. Hospitals should designate which occupational health service/section of the hospital (e.g., E.D.) is responsible for: employees, students, attending physicians and contractors. It should be decided in advance where such personnel will be evaluated (e.g., influenza assessment clinic).
5. Healthcare workers in some or all units with respiratory symptoms may be required to undergo rapid testing for influenza A, influenza B, and RSV. Depending on the negative predictive value (NPV) of the diagnostic test available at the time, healthcare workers who test negative may be allowed to continue to work, while wearing a mask and practicing good hand hygiene. CEDS will provide guidance on the NPV of specific diagnostic tests for novel influenza available at the time.
6. The healthcare worker may be provided with antiviral therapy if available (i.e., if the hospital has purchased a supply of antivirals). Establish a strategy for rapidly (preferably within 12 hours of onset of symptoms) providing antiviral treatment to health care personnel as recommended by the TDH.
7. If symptoms do not progress to meet the suspect pandemic influenza case definition within the specified time period (as provided by the TDH, based on the latest available information) the person may be allowed to return to work (depending on their duties), school, out-of-home child-care, worship or other public areas; infection control precautions can be discontinued.
8. Healthcare workers will be prioritized for diagnostic testing for pandemic influenza virus. Following recovery, such healthcare workers will be immune. They may not require vaccination (if the virus has not changed) and they could provide care in high-risk settings.

**J. Implement Measures to Prevent Transmission from Diagnostic Specimens (phase 6)**

**Objective:**

Minimize exposure of patients, staff and visitors to novel influenza during the collection, transportation and processing of specimens.

**Key Points:**

1. Minimize high-risk procedures to obtain diagnostic specimens (e.g., induced sputum, bronchoscopy) if appropriate specimens can be obtained through less risky methods.
2. If aerosol-generating procedures are performed, all staff in the room must use the appropriate PPE as described above (must use N95 respirator or PAPR and goggles).
3. Do not use a tube pneumatic system for transportation of respiratory specimens from suspect novel influenza cases.
4. Alert the microbiology laboratory of suspect novel influenza cases for any respiratory specimens, so that appropriate precautions can be taken.
5. Viral culture should not be performed in clinical laboratories on suspect novel/pandemic influenza cases because of risk to laboratory personnel.

**K. Ensure Infection Control has Adequate Resources (phase 6)**

**Objectives:**

1. Minimize exposure of patients, staff and visitors to pandemic influenza.
2. Minimize nosocomial transmission of pandemic influenza virus to staff to reduce absenteeism from illness and fear of illness.
3. Maximize availability of scarce resources by minimizing hospital-acquired infections

**Key Points:**

1. During the influenza pandemic, all infection control professionals will be needed to formally monitor and reinforce compliance with PPE measures and policies. This should be their primary responsibility. The TDH will provide guidance as to which reporting requirements (e.g., CMS) will be suspended. It is strongly recommended that personnel other than infection control professionals be tasked with reporting aggregate data to CEDS (See Section 4, Supplement 2 [Hospital-based Influenza Surveillance]).

**Tennessee Department of Health Pandemic Influenza Response Plan**  
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2. Continued attention to infection prevention/control measures (e.g., for central line insertions, prevention of ventilator-associated pneumonia) will help prevent hospital acquired infections which would significantly increase hospital stays and impact the availability of scarce resources such as mechanical ventilators and critical care beds (Section 4, Supplement 4 [Ethical allocation of scarce resources]).
3. Infection control is essential to the provision of safe medical care. Patients should derive clear benefit from being in a hospital. For example, being admitted to/ remaining in a healthcare facility with ongoing nosocomial transmission of influenza may be more hazardous than being at home, if the patient does not require life-saving interventions in a hospital setting.
4. Attention to basic infection control (e.g., availability and use of hand-hygiene supplies) must be reinforced, especially in response to increased patient care demands, reduced staffing and scarce resources.
5. Infection control must be involved in the planning and oversight of any temporary healthcare facilities established by a hospital (see Section 4, Supplement 4 [Surge Capacity] and its Attachment A [Temporary alternate healthcare facilities]).
6. Strongly consider stockpiling essential PPE equipment (see Section 4, Hospital Planning).\
7. Ensure that access to hand-hygiene supplies, environmental disinfectants and other essential supplies for infection prevention will be maintained during a pandemic; consider stockpiling.

**IV. References:**

- A. HHS Pandemic Influenza Plan. US Department of Health and Human Services. November 2005. <http://www.hhs.gov/pandemicflu/plan/>
- B. World Health Organization Avian Influenza (Bird Flu Factsheet), February 2006. available at [http://www.who.int/mediacentre/factsheets/avian\\_influenza/en/](http://www.who.int/mediacentre/factsheets/avian_influenza/en/)
- C. CDC interim guidance on infection control measures for H5N1 (accessed in March 2006) <http://www.cdc.gov/flu/avian/professional/infect-control.htm>

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- D. University of North Carolina Highly Communicable Respiratory Diseases: Preparedness and Response Plan, March 6, 2006. (Dr David Weber, personal correspondence). Note: in 2003, UNC managed a confirmed case of SARS (a hospital employee).
  
- E. Rhode Island Hospital Pandemic Influenza Planning (February 3, 2006), Drs. Selim Sulin and Leonard Mermel from the SHEA member's website at: [http://www.shea-online.org/pandemic\\_plans.cfm](http://www.shea-online.org/pandemic_plans.cfm)
  
- F. Public Health Guidance for Community-Level Preparedness and Response to Severe Acute Respiratory Syndrome (SARS). Version 2. Centers for Disease Control. Atlanta, GA. July 2004. [www.cdc.gov/ncidod/sars/sarsprepplan.htm](http://www.cdc.gov/ncidod/sars/sarsprepplan.htm)
  
- G. SARS Hospital Preparedness Guidance, Tennessee Department of Health, January 2003

**BOX 1. Summary of Infection Control Recommendations for Care of Patients with  
Pandemic Influenza in Supplement 4, HHS Pandemic Influenza Plan, November  
2005**

<b>COMPONENT</b>	<b>RECOMMENDATIONS</b>
<b>STANDARD PRECAUTIONS</b>	See <a href="http://www.cdc.gov/ncidod/hip/ISOLAT/std_prec_excerpt.htm">www.cdc.gov/ncidod/hip/ISOLAT/std_prec_excerpt.htm</a>
<b>Hand hygiene</b>	Perform hand hygiene after touching blood, body fluids, secretions, excretions, and contaminated items; after removing gloves; and between patient contacts. Hand hygiene includes both hand washing with either plain or antimicrobial soap and water or use of alcohol-based products (gels, rinses, 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 antimicrobial or plain soap and water because of their superior microbicidal activity, reduced drying of the skin, and convenience.
<b>Personal protective equipment (PPE)</b>	<ul style="list-style-type: none"><li>• For touching blood, body fluids, secretions, excretions, and contaminated items; for touching mucous membranes and non-intact skin</li><li>• During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated</li><li>• During procedures and patient care activities likely to generate splash or spray of blood, body fluids, secretions, excretions</li></ul>
<b>Safe work practices</b>	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).
<b>Patient resuscitation</b>	Avoid unnecessary mouth-to-mouth contact; use mouthpiece, resuscitation bag, or other ventilation devices to prevent contact with mouth and oral secretions.
<b>Soiled patient care equipment</b>	Handle in a manner that prevents transfer of microorganisms to oneself, others, and environmental surfaces; wear gloves if visibly contaminated; perform hand hygiene after handling equipment.
<b>Soiled linen and laundry</b>	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.

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Section 4 Supplement 1 Attachment A: Infection Control Summary

**COMPONENT**

**RECOMMENDATIONS**

**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.

**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 (medical and non-medical) in accordance with facility procedures and/or local or state regulations; wear gloves when handling waste; wear gloves when handling waste containers; perform hand hygiene.

**Respiratory hygiene/cough etiquette**

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.

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.

**DROPLET PRECAUTIONS**

[www.cdc.gov/ncidod/hip/ISOLAT/droplet\\_prec\\_excerpt.htm](http://www.cdc.gov/ncidod/hip/ISOLAT/droplet_prec_excerpt.htm)

**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.

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Section 4 Supplement 1 Attachment A: Infection Control Summary**

**COMPONENT**

**RECOMMENDATIONS**

**Other**

Follow standard precautions and facility procedures for handling linen and laundry and dishes and eating utensils, and for cleaning/disinfection of environmental surfaces and patient care equipment, disposal of solid waste, and postmortem care.

**AEROSOL-GENERATING PROCEDURES**

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 a fit-tested N95 respirator or other appropriate particulate respirator.

**Tennessee Department of Health Pandemic Influenza Response Plan  
Section 4 Supplement 2: Hospital Based Influenza Surveillance**

**I. Purposes:**

Hospital-based surveillance will provide critical real-time data on the impact of the pandemic in Tennessee for the following purposes:

1. To justify the need for federal and state resources devoted to pandemic response
2. To help state officials allocate federal and state resources to hospitals and communities
3. To identify the start and end of a pandemic wave in a community or region
4. To identify disease activity levels that trigger community social distancing interventions (e.g., school and public gathering cancellations)
5. To identify disproportionately affected risk groups
6. To provide data to support either maintaining or adjusting social distancing interventions or scarce resource allocation policies

**II. Introduction and Rationale:**

During a pandemic, certain scarce resources such as antivirals and influenza vaccine will be under the control of the federal government. These scarce resources and other federal assistance will be allocated to States. At the time of writing, the federal government has not published information about exactly how these resources will be allocated. It is assumed that allocations will be based upon a combination of need and population size.

No specific data collection form or definitions have been provided by the Centers for Disease Control and Prevention (CDC) at this writing. The specific data points requested in Tennessee's Draft Hospital-Based Influenza Surveillance Data Collection Form (provided at the end of this section) have been derived from the Department of Health and Human Services (HHS) Pandemic Influenza Plan, released in November 2005. Future modifications will be made, as needed.

**III. Concept of Operations:**

Hospital-based influenza surveillance data includes information not routinely collected every day. Data sources may be widely distributed (e.g., emergency department, admissions office, intensive care units, laboratory, and mortuary). The pandemic flu coordinator or their designee should identify the best method of obtaining this data in real time. Infection control and information technology staff may provide useful insight and assistance. Institutional pandemic response plan exercises should include a test of collecting these data for a period of 3-4 days (preferably including Saturday and Sunday) to identify and address potential reporting problems. An institution-specific protocol should be developed for collecting the necessary data; at least three (3) persons be trained to collect these

**Tennessee Department of Health Pandemic Influenza Response Plan**  
**Section 4 Supplement 2: Hospital Based Influenza Surveillance**

data to assure reporting 7 days a week. The infection control personnel should not be assigned primary responsibility for gathering these data, so they may implement and monitor infection control measures to protect staff and patients from influenza.

Once the state pandemic response plan is activated, following the federal declaration that a pandemic has begun, data collected will be entered by the designated hospital staff on a specific pandemic flu reporting module on the Hospital Resource Tracking System (HRTS) software, when HRTS becomes operational. If a pandemic begins before HRTS is fully operational, data will be gathered by fax or phone contact, or using a commercial web-based data collection service and uploaded into a database developed by the Communicable and Environmental Disease Services (CEDS) section of the Tennessee Department of Health (TDH).

More or less detailed data will be required at different times during the pandemic; individual questions in the pandemic flu reporting module of HRTS will be turned on or off as needed, in order to reduce hospitals' data collection burden. CEDS will be responsible for analysis and dissemination of data collected through hospital-based pandemic influenza surveillance.

The hospital will be held responsible for ensuring that data are accurate and entered in a timely manner. Validity should be evaluated periodically during the course of a pandemic.

**DRAFT Hospital-Based Influenza Surveillance  
 (Pandemic)**

Note: Questions selected for response at a given time will be based upon epidemiologic needs at that time.

**1) Emergency Department (ED) presentations**

- 1. A) 24 hour time-period (ED) ending on:
- 1. B) Number of patients seen in the ED in the preceding 24 hours
- 1. C) Number of patients seen in the influenza/ respiratory assessment ED in the preceding 24 hours [applicable only if there is a separate influenza/ respiratory assessment area]
- 1. D) Number of patients seen with influenza like illness (ILI)

MM/DD/YYYY

**2) Admissions**

- 2. A) 24 hour time-period (Admissions) ending on:
- 2. B) Number of patients admitted with ILI (all sources of admission-- ED, transfers, direct admission)

*Age group*

0-1 years

2-4 years

5-18 years

19-34 years

35-49 years

50-64 years

65+ years

Sum (# persons admitted)

*Aggregate number (if unable to provide age-group) of persons admitted with ILI*

- 2. C) # of total admissions (regardless of diagnosis)

MM/DD/YYYY
------------

calculated field

**3) Ventilator Usage**

- 3. A) Point-in-time (Ventilator)
- 3. B) Number of patients on ventilator for suspected influenza or its complications
- Age group*

MM/DD/YYYY

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0-1 years	
2-4 years	
5-18 years	
19-34 years	
35-49 years	
50-64 years	
65+ years	
Sum (# persons on ventilators for suspected influenza)	calculated field
<i>Aggregate number (if unable to provide age-group) of persons with suspected influenza on ventilators</i>	
3. C) # of persons on ventilator (regardless of diagnosis)	

**4) Laboratory Confirmed Influenza**

	MM/DD/YYYY
4. A) 24 hour time-period (lab diagnoses) ending on:	
4. B) Number of patients with newly laboratory confirmed influenza	
<i>Age group</i>	
0-1 years	
2-4 years	
5-18 years	
19-34 years	
35-49 years	
50-64 years	
65+ years	
Sum (# persons with laboratory confirmed influenza)	calculated field
<i>Aggregate number (if unable to provide age-group) of persons with laboratory confirmed influenza</i>	
4. C) Total number of specimens tested for influenza	

**5) Mortality**

	MM/DD/YYYY
5. A) 24 hour time-period (mortality) ending on:	
5. B) Number of patients who have died in the above time period (all causes of death)	
List ages (allow N entries)	

**6) Potential Nosocomial Transmission of ILI**

6. A) 24 hour time-period ending on:	MM/DD/YYYY
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Section 4 Supplement 2: Hospital Based Influenza Surveillance**

6. B) # of ILIs among patients admitted with alternate diagnoses, onset of fever >72 hours after admission

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6. C) # of lab. confirmed influenza among patients admitted with alternate diagnoses, onset of fever >72 hours after admission

--

**7) Staff Absenteeism**

7. A) 24 hour time-period (staff absenteeism) ending on:

MM/DD/YYYY
------------

7. B) # staff absent

--

**8) Alerts that influenza virus may be changing\***

8. A) Date of report of alert of potential change in influenza virus

MM/DD/YYYY
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8. B) # of patients admitted with potential vaccine failure (had 2 doses of vaccine  $\geq$  2 weeks before onset of symptoms)

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8. C) # of patients admitted with potential failure of antiviral prophylaxis

--

8. D) # of deaths in persons who appear to have failed antiviral treatment despite starting it within 48 hours of symptom onset

--

**Acronyms:**

**ED** = emergency department

**ILI** = Influenza like illness (fever >100.4°F, + cough or sore throat or shortness of breath). For the purposes of hospital-based surveillance the term ILI also includes laboratory confirmed influenza and patients admitted with complication of influenza (e.g., viral pneumonia, exacerbation of asthma secondary to influenza)

**Lab.** = laboratory

**TDH** = Tennessee Department of Health

**#** = number

**Instructions for Completing the Hospital-Based Influenza Surveillance Form:**

**“24 hour time-period ending on”:** please fill in the date that the data gathering stopped. For example: time period 1/2/2006 10 am to 1/3/2006 10 am = 1/3/2006; time period 1/2/2006 00.00 to 1/2/2006 23.59= 1/2/2006; time period 1/2/2006 12:00 noon to 1/3/2006 12:00 noon= 1/3/2006. The exact time that each 24 hour period may vary for each of the sections (ED/ Admissions etc...). Record the date that the time-period ended.

1. C) Only fill this out if the hospital has a dedicated influenza/ respiratory symptom triage clinic that collects data separately from the ED. Leave blank if these data are already included in 1. B).

2. B) State the number of patients admitted to the hospital with ILI from all sources (emergency department, direct admit, transfers etc...). If possible, break down admissions by age-group. If unable to break down the admission by age-group, please provide the aggregate (the total number of admissions).

2. C) State all admissions regardless of diagnosis (include all admissions from ED, transfers, direct admits).

3. A) point in time means that you choose a particular time of the day (or night) when measured. For example, at 1 am there were 23 patients on ventilators for suspected influenza or its complication.

0-1 years	0
2-4 years	0
5-18 years	0
19-34 years	6
35-49 years	8
50-64 years	5
65+ years	4
Sum (# persons on ventilator with suspected influenza)	23

3. C) The total number of persons on a ventilator at a specific point in time (e.g. 30 at 1 am)

4. B) The number of influenza cases confirmed by laboratory testing (depending on the results of evaluations of rapid tests, this may or may not include results of rapid tests in the numerator and denominator).

4. C) The number of specimens tested for influenza (may or may not include rapid tests)

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5. B) Enter the age in years for deaths that have occurred since date of last entry. If children are aged less than one year, enter "0" for age.
  
6. B) Enter the number of patients who have developed ILI 72 hours or more after admission, and were afebrile at time of admission. This has been described as "fever surveillance" and can be an early indicator of nosocomial transmission of influenza.
  
6. C) Enter the number of laboratory confirmed cases of influenza, with an onset of symptoms >72 hours after admission.
  
7. B) Enter the number of staff that called in sick in the preceding 24 hour period.
  
8. B, C, D) Clinicians will be asked to contact the designated data collector for each healthcare institution if they come across these situations. This information will be used by the TDH as an early warning system that the virus may be changing (becoming drug resistant or mutating, or that there is a mismatch between the vaccine strain and the circulating strain). Additional studies would be conducted by TDH staff once a threshold is exceeded. Viral cultures from patients fitting these criteria should be sent to the TDH laboratory.

**Tennessee Department of Health Pandemic Influenza Response Plan  
Section 4 Supplement 3: Surge Capacity**

**I. Purpose:**

To assist local communities and hospitals in the development and implementation of surge capacity plans.

**II. Assumptions:**

A. The severity, duration, and consequences of influenza pandemics are not predictable. Estimates of demands on the healthcare system vary depending on the virulence of the pandemic strain. The Department of Health and Human Services (HHS) recommends that States plan for a severe scenario (Table 1).

**Table 1: Medical Burden in Tennessee (pop. 6 million) (HHS Plan Estimates)**

Characteristic	Moderate	Severe
Illness (30%)	1.8 million	1.8 million
Outpatient Care	900,000	900,000
Hospitalization	17,300	198,000
ICU Care	2,575	29,700
Mechanical Ventilation	1,300	14,850
Deaths (Case fatality rate)	4,180 (0.2%)	38,060 (2%)

- B. Hospitals should expect that  $\geq 25\%$  more patients than normal will need hospitalization during the 6-8 weeks of a local pandemic wave.
- C. During a 6-8 week wave, at any one time,  $\sim 40\%$  of employees may be absent because of illness, fear or to care for a family member. Maintaining adequate staffing is expected to be a significant challenge.
- D. Schools and day-care centers may be closed for prolonged periods of time (6-8 weeks); child care needs may adversely affect the ability of some staff to work.
- E. Pandemics move through community in waves. Each wave in a community will last 6-8 weeks. There will be at least 2 “waves” of pandemic disease, likely separated by several months
- F. The entire pandemic period (all waves) will last about 18 months to 2 years

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**Section 4 Supplement 3: Surge Capacity**

- G. Disease may break out in multiple locations simultaneously, or in isolated pockets
- H. Because pandemic influenza is expected to affect multiple locations simultaneously, each hospital and community should plan to be responsible for responding to the pandemic with local resources. Hospitals should write plans that take into account the possibility that no outside assistance will be available from other healthcare facilities, the state or federal government.
- I. There are no State stockpiles of mechanical ventilators; the Strategic National Stockpile (SNS) has a limited number of ventilators for the US; if ventilators were allocated according to population-size, Tennessee could expect to obtain an insignificant number of additional mechanical ventilators.
- J. Influenza vaccine will not become available until 4-6 months into the pandemic. If current manufacturing techniques and formulations are used, the vaccine produced in one year would be enough for only 5% of the population. New vaccine formulations and production technology are under investigation, but not currently available.

**III. Concept of Operations:**

Surge capacity means that hospitals and communities can respond to increasing demands by 1) increasing beds, 2) modifying licensure requirements for healthcare facilities and 3) addressing staffing needs.

**A. Surge Capacity: Beds:**

Standardized definitions are essential to ensure that all agencies, organizations and hospitals speak the same language. Tennessee has adopted the hospital-bed definitions proposed by Agency for Healthcare Research and Quality (AHRQ). These definitions will be used for all communication with hospitals, including the Hospital Resource Tracking System (HRTS) once operational. They are consistent with the definitions used in the Joint Annual Report (JAR).

Hospital-Bed Definitions:

1. **Licensed Beds:** The maximum number of beds for which a hospital holds a license to operate. Many hospitals do not operate all of the beds for which they are licensed.
2. **Physically Available Beds:** Beds that are licensed, physically set up, and available for use. These are beds regularly maintained in the hospital for the use of patients, which furnish accommodations

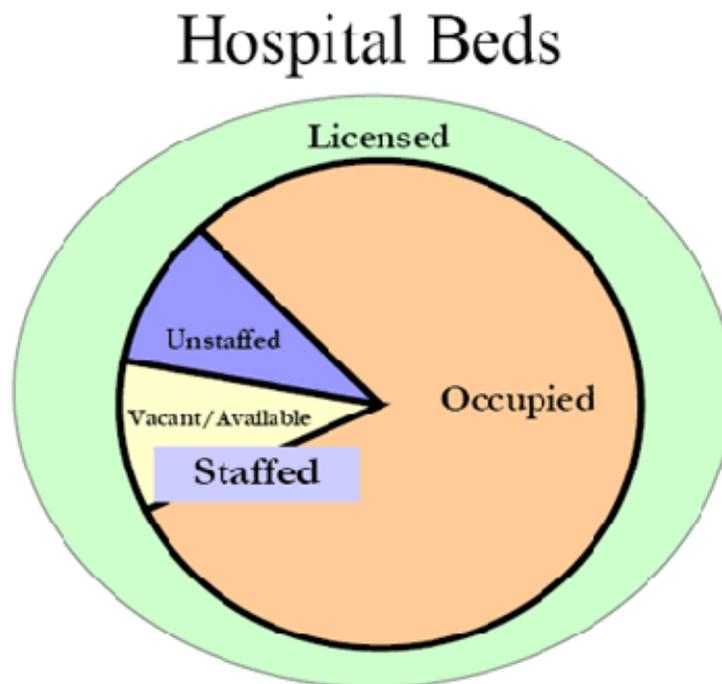
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with supporting services (such as food, laundry, and housekeeping). These beds may or may not be staffed but are physically available.

3. **Staffed Beds:** Beds that are licensed and physically available for which staff is on hand to attend to the patient who occupies the bed. Staffed beds include those that are occupied and those that are vacant.
4. **Unstaffed Beds:** Beds that are licensed and physically available and have no current staff on hand to attend to a patient who would occupy the bed.
5. **Occupied Beds:** Beds that are licensed, physically available, staffed, and occupied by a patient.
6. **Vacant/Available Beds:** Beds that are vacant and to which patients can be transported immediately. These must include supporting space, equipment, medical material, ancillary and support services, and staff to operate under normal circumstances. These beds are licensed, physically available, and have staff on hand to attend to the patient who occupies the bed.

The relationship between the different types of beds is shown below.

(a) Figure 1. Licensed Hospital Beds



**Staffed Beds = Vacant/Available Beds + Occupied Beds**  
**Physical Available Beds = Staffed + Unstaffed Beds**

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Beds also can be categorized according to the type of patient they serve:

1. **Adult Intensive Care (ICU):** Can support critically ill/injured patients, including ventilator support.
2. **Medical/Surgical:** Also thought of as “Ward” beds.
3. **Burn or Burn ICU:** Either approved by the American Burn Association or self-designated. (These beds should not be included in other ICU bed counts.)
4. **Pediatric ICU:** The same as adult ICU, but for patients 17 years and younger
5. **Pediatrics:** Ward medical/surgical beds for patients 17 and younger
6. **Psychiatric:** Ward beds on a closed/locked psychiatric unit or ward beds where a patient will be attended by a sitter.
7. **Negative Pressure/Isolation:** Beds provided with negative airflow, providing respiratory isolation. Note: This value may represent available beds included in medical/surgical counts of other types of beds (e.g., medical/surgical, ICU).
8. **Operating Rooms:** An operating room that is equipped and staffed and could be made available for patient care in a short period.

For purposes of estimating institutional surge capability in dealing with patient disposition during a large mass casualty incident, the following bed availability estimates also may be reported:

1. **24-hour Beds Available:** An informed estimate of how many staffed, vacant beds for each category above could be made available above the current number within 24 hours. This would include created institutional surge beds as well as beds made available by discharging/transferring patients.
2. **72-hour Beds Available:** An informed estimate of how many staffed, vacant beds for each category above could be made available above the current number within 72 hours. This would include created institutional surge beds as well as beds made available by discharging/transferring patients.

**Baseline hospital bed capacity** is those inpatient beds that are routinely equipped AND staffed. Some hospitals may have beds that are usually empty, even though there is adequate staff to care for patients in those beds. These beds are considered part of baseline capacity, or **Current Daily Staffed Bed Capacity** in Health Resources and Services Administration (HRSA) terminology. For purposes of developing a Surge Capacity Plan, we will assume that these beds are full.

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During a pandemic there will be increased demands for both medical (general ward) beds and critical care beds.

Considerations for creating additional medical (general ward) beds:

1. Utilize reserve capacity. Use beds that are physically available, and not routinely staffed (see (3) surge capacity: staffing, on how this may be achieved)
2. Selectively reduce elective admissions.
3. Use rehabilitation facilities or other alternate care sites associated with the hospital.
4. Place beds, stretchers, or cots in hallways, classrooms, or other non-patient care areas. Expanding surge capacity this way may require caches of equipment, supplies, and pharmaceuticals, depending on the size of the facility. Staffing for these beds will depend on their location. Care of patients in beds in hallways most likely will be absorbed by the staff on those units.

Considerations for creating additional critical care beds (intensive care, coronary care, ventilated):

1. Utilize reserve critical care capacity. Use beds that are physically available, but not routinely staffed.
2. Selectively reduce elective admissions (to reduce intensive care/high dependency bed requirement).
3. Utilize special service units such as Post Anesthesia Care Units (PACU), Admit/Recovery Units (ARUs), Cardiac Catheterization Labs, Endoscopy labs, temporary holding units for ER overflow

**B. Surge Capacity: Licensure of healthcare facilities:**

Licensure of healthcare facilities is required for reimbursement by the Center for Medicare and Medicaid Services (CMS); however, many of the requirements for licensure will not be able to be met during a pandemic, when demand for healthcare services is high, but staff and other resources are limited. The director of healthcare facilities, TDH oversees licensure of healthcare facilities.

During a pandemic, the Governor may sign an executive order, waiving rules necessary to allow healthcare facilities to use areas within hospitals for the treatment of patients, even though that was not the original intent of these locations (e.g., use of recovery area as an impromptu ICU to ventilate patients, an ambulatory surgical center as a triage center, patients to be on beds in corridors, etc.). Such an order could allow temporary healthcare facilities (e.g., in motels/hotels) to be set up, if this option is chosen. However, these converted patient care areas will be subject to

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meeting basic infrastructure requirements (e.g., infection control: availability of sinks, soap, towels).

The Director of Healthcare Facilities, TDH is the responsible party and will liaise with CMS, to communicate issues faced by hospitals under pandemic circumstances, which may include reimbursement issues.

C. Surge Capacity: Staffing:

An influenza pandemic will severely stress all resources, especially human resources.

Hospitals should:

1. Develop plans to reassign staff to areas within the hospital with acute staffing needs. Reassignments should build on existing staff skill-sets. Strategies to consider include:
  - a. Intensive care units may be staffed by: nursing staff from intermediate/ step-down units, anesthesiology, PACUs, dialysis, radiology, gastroenterology and catheter laboratories, acute care nurse practitioners (e.g., from cardiothoracic services).
  - b. Microbiology laboratories may be staffed by: staff and or students from affiliated academic research laboratories.
  - c. Medical wards may be staffed by: staff from surgical wards, operating rooms
2. Consider developing just-in-time training materials (e.g., video or slide show) to facilitate rapid training of reassigned staff, students or volunteers. Some of these materials need to be facility/equipment specific; some may be able to be shared between hospitals.
3. Consider altering the staffing ratios (nurse to patient ratios) in ICUs and medical wards. Determine the minimum staffing ratios required to maintain safe care. Note: altered standards of health care may be accepted during a pandemic (see Section 4, Supplement 3 [ethical allocation of scarce resources]).
4. Cross-train staff in policies (e.g., infection control), procedures, equipment use, maintenance and cleaning; record what training each staff member has received. Strategies may include cross-training respiratory therapists and critical care nursing staff on use of mechanical ventilators used in the operating rooms, training

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- operating room staff on use of ICU mechanical ventilators), maintenance, cleaning.
5. Ensure that essential/critical positions are backed up by alternate staff, and that these staff understand and have access to relevant policies and decision-making tools.
  6. Identify critical staff that may be able to perform their duties from home, thereby decreasing their chances of exposure. Prepare to set up this option rapidly by completing required set-up work in advance (e.g., telecommunications/computer/security access).
  7. Minimize the risks of staff becoming ill by:
    - a. Encouraging sick staff members to stay at home
    - b. Providing respiratory etiquette supplies and reminders (tissues, masks, posters)
    - c. Having adequate supplies of personal protective equipment (PPE), such as N95 respirators, surgical masks, goggles, gloves and hand-hygiene materials will reassure staff concerned about their safety in the workplace. Creation of a stockpile of PPE is encouraged; prolonged disruption of supplies of PPE is expected.
    - d. Providing easy access to hand-hygiene supplies
    - e. Enforcing infection control policies through training, signage, monitoring
    - f. Implementing social distancing measures in the work place to prevent large crowded gatherings (e.g., staggered meal breaks)
    - g. Cleaning frequently touched surfaces regularly with disinfectant
    - h. Vaccinating health care workers (when vaccine becomes available) (see Section 5 [Vaccine]).
  8. Establish honest, frequent, and regular communication channels to provide the best available information to staff, in order to control rumors and foster trust.
  9. Consider developing plans for emergency childcare, eldercare and pet care to decrease the number of staff absent because of these responsibilities.

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10. Consider providing accommodation for staff who are unable to or do not wish to return home because of transportation problems or fear of exposing family members
11. Consider purchasing a stockpile of oseltamivir or zanamivir for early treatment of sick staff members (see Section 6 [Antivirals]). Develop procedures to provide medication within 12 hours of onset of symptoms.

**D. Volunteers:**

Collaborate with community pandemic planners to optimize use of established volunteer organizations such as the Red Cross to help out in hospitals (e.g., serving meals, porters) and to support sick persons at home. Just in time training (train-the-trainer) modules should be considered to achieve a rapid increase in the number of skilled workers. These modules could be used to teach volunteers to provide basic care and/or take basic observations, e.g., heart rate and respiratory rate, thereby identifying people who require more skilled assessment. Modules can be prepared and tested in advance.

**IV. Credentialing of staff:**

Credentialing of staff is a requirement for accreditation of hospitals by the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO), a requirement of hospital licensure and required to receive reimbursement for services delivered. Hospitals have bylaws that outline what needs to be verified before that person is provided privileges within a hospital.

The Tennessee Department of Health (TDH) Health Related Boards license healthcare professionals with the exception of pharmacists who are licensed by the Department of Commerce and Insurance. As part of issuing the original license to the healthcare professional, the Health Related Boards review basic education, board certification or eligibility, experience in performing technical procedures, and evidence of disciplinary action or malpractice suits. Persons may have active or inactive licenses. The most common reason for an inactive license is failure to notify the TDH of a change of address.

During a pandemic, the TDH intends to request an executive order to allow persons with inactive licenses to be issued a temporary active license, after completing a brief online form. Payment of fees and documentation of continuing education will be waived. Following review by the Health Related Boards, the healthcare professional will be issued a new card. The new status of the healthcare professional will be available online for hospitals to review. The Director of Health Related Boards at the TDH will oversee this activity.

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**V. References:**

Hospital bed definitions: <http://www.ahrq.gov/research/havbed/definitions.htm>

**I. Purpose:**

This provides information to consider when considering a temporary inpatient health care facility as a means to increase patient care surge capacity, after assuring hospitals have the necessary human and physical resources for optimal function during a pandemic.

**II. Concept of operations:**

The first priority during a pandemic will be to ensure adequate staffing in existing hospitals (see Section 4, Supplement 3 [surge capacity]). Because of severe staffing challenges, adequate staffing of temporary alternate healthcare facilities is unlikely to be possible during a pandemic.

Establishment of temporary alternate healthcare facilities requires significant resources (logistical, management, financial, personnel). Communities should not plan on creating such temporary alternate healthcare facilities unless they can assure that existing hospitals will be adequately staffed and that sufficient and consistent staffing will be available to staff temporary alternate healthcare facilities for several weeks.

It will be important to ensure to the greatest possible extent, a safe environment for the provision of care, placing a high priority on infection control measures (see Section 4, Supplement 4 [Ethical Allocation of Scarce Resources]). Care of patients in the home should be done whenever possible.

Hotels, motels, closed hospitals or other venues may be considered as potential sites. The Regional Hospital Coordinators (RHCs) may assist in identifying such sites, and may provide guidance/templates on creation of temporary alternate healthcare facilities.

During a pandemic, the Governor may be asked to sign an executive order, waiving the regulations necessary to allow temporary alternate healthcare facilities to be set up, if this option is chosen. However, these converted patient care areas will be subject to meeting basic infrastructure requirements (e.g., infection control: availability of sinks, soap, towels) (see Section 4, Supplement 3 [Surge Capacity]).

**III. Options:**

**A. Rehabilitation facilities:**

As many patients as possible admitted for rehabilitation should be discharged home with increased support services. Rehabilitation facilities may provide a similar level of care as hotels or motels. If oxygen outlets are not available, alternate sources of oxygen (e.g., oxygen cylinders) may

**Tennessee Department of Health Pandemic Influenza Response Plan**  
**Section 4 Supplement 3 Attachment A: Temporary Alternate Healthcare Facilities**

need to be provided; this may create logistical difficulties. Staffing needs have to be considered.

**B. Hotels/Motels:**

These could be considered for recovering patients and those who would normally be discharged with home health care, if a hospital has adequate staff to serve patients lodged in such a facility. To ensure that nurses and other employees caring for patients housed in a hotel are covered by employers' liability coverage, hotels would need to be operated in this capacity under the auspices of a specific hospital. Hospitals may wish to engage in discussions with hotels/motels and develop Memoranda of Understanding (MOU). The RHCs will be able to provide hospitals with resources/ checklists that may assist hospitals in deciding upon specific sites. Staffing needs have to be considered when assessing the feasibility of this option; one source to consider is home-health care nurses, if available.

**C. Closed hospitals /closed hospital wings:**

Recently closed hospitals/hospital wings could potentially provide basic infrastructure (i.e., toilets, cooking facilities) for patient care. The status of these hospitals/hospital wings and suitability for use in a pandemic should be investigated. Contact the Director of Health Care Facilities to assist with this request.

**D. Home-Healthcare:**

The main function of home-healthcare during a pandemic is to facilitate early discharge. The major challenge in expanding home health services to many people rapidly is the need to minimize the time staff must spend traveling between patients.

**Tennessee Department of Health Pandemic Influenza Response Plan  
Section 4 Supplement 4: Ethical Allocation of Scarce Resources**

**I. Purpose:**

During a pandemic, demand will greatly exceed supply of certain resources such as mechanical ventilators, vaccines and antivirals. A detailed framework for ethical decision making is described in Section 1 (Ethics and Principles for Planning and Response).

**II. Ethical Principles and Values:**

Policies should be practical and feasible with available resources, evidence-based (supported by the best available medical and epidemiologic evidence at the time) and concordant with federal guidance, insofar as federal guidance is concurrent with the best available medical and epidemiological knowledge. The underlying assumption of the federal guidance documents from the Department of Health and Human Services (HHS), published in November 2005, is that the key objectives of the pandemic response are to minimize mortality, morbidity and social disruption.

Changes in the usual standards of healthcare will be required to achieve the goal of saving the most lives. It will be necessary to allocate scarce resources in ways that can save as many lives as possible. Decisions about allocations of scarce resources should be reasonable, open and transparent, responsive to new conditions or advancement in knowledge and decision-makers should be accountable.

The underlying ethical principles of stewardship, reciprocity and equity apply during pandemic influenza. Outlined below are examples of how these ethical principles can be applied in decision-making about who should get or continue to have access to mechanical ventilation/ ICU care/ hospitalization/ oseltamivir or other scarce resources.

Illustrations on how these ethical principles would be applied in hospitals:

**A. Patients should derive benefit from being in a hospital/temporary alternate healthcare facility (Stewardship):**

Ensure to the greatest possible extent, a safe environment for the provision of care, placing a high priority on infection control measures. For example, being in a healthcare facility with ongoing nosocomial transmission of influenza may be more hazardous than being at home, unless the patient requires care only available in a hospital.

**B. The 5 year life expectancy of individual patients. (Stewardship):**

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To save the maximum number of lives, it would be more appropriate, all other things being equal, to preferentially use the scarce resource to treat the person with a greater 5-year life expectancy.

**C. The expected absolute mortality reduction achieved by the intervention. (Stewardship):**

To save the maximum number of lives, it would be more appropriate, all other things being equal, to preferentially use the scarce resource to treat the person who is expected to achieve a greater absolute reduction in mortality by the use of that scarce resource.

**D. The duration that the patient will utilize a specific scarce resource. (Stewardship):**

To save the maximum number of lives, it would be more appropriate, all other things being equal, to preferentially treat the person who will utilize a specific scarce resource for a shorter amount of time (e.g., expect to be on a ventilator for 5 days vs. 21 days). In extreme cases, transferring a scarce resource from one patient to another may be deemed necessary.

**E. Workers that have responded to pandemic influenza and placed themselves at increased risk of exposure (Reciprocity):**

Society should support those who take on a disproportionate burden of personal risk, (e.g., exposing themselves to pandemic flu) in order to take care of the sick.

The responsible party for allocation of scarce resources within each healthcare institution shall be identified as part of institutional preparedness planning; this party should be the chief medical officer (CMO), or a similarly senior healthcare provider in consultation with clinicians.

In the event that healthcare facilities are overwhelmed and unable to provide the usual standard of care, an executive order may be signed that would limit liability for healthcare facilities and individual healthcare providers, provided that they use their best clinical judgment in concordance with guidance from the Tennessee Department of Health (TDH).

Table 1 provides a conceptual framework for maximizing the benefits of a scarce resource such as ventilators. Factors that may influence supply and demand are outlined, especially those that are modifiable (e.g., ensuring staff are cross-trained, minimizing mechanical breakdown, minimizing downtime for cleaning, reducing demand and duration of ventilation by prevention of hospital acquired infections such as ventilator associated pneumonia, central line associated blood

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Section 4 Supplement 4: Ethical Allocation of Scarce Resources**

stream infections). This concept may be applied to maximize the benefit of other, non-disposable scarce resources.

**III. Other resources:**

One helpful resource for making decisions when demand for care outstrips the available resources is “Alternate Standards of Care in Mass Casualty Events” from Agency for Healthcare Research and Quality found at [www.ahrq.gov/research/altstand/altstand.pdf](http://www.ahrq.gov/research/altstand/altstand.pdf).

Another helpful resource is the article written by Hick and O’Laughlin on “Concept of Operations for Triage of Mechanical Ventilation in an Epidemic” in the February 2006 issues of the Academic Emergency Medicine Journal available at <http://www.aemj.org/cgi/reprint/13/2/223>.

**Table 1: Framework for maximizing use of scarce resources – mechanical ventilators**

Factors Affecting Ventilator Supply and Demand		Mod-ifiable	Modification Methods / Comments	Responsible Party For Modifications
<b>Duration</b>	Duration of the pandemic wave (the longer each wave, the more ventilator-days are available)	Not known	(1) Social distancing (2) Personal protection	TDH: Communicating the message effectively to individuals, employers, businesses
<b>Duration</b>	Duration of ventilator support required by patients with influenza related illness (clinical course)	Not known	Clinical management of pandemic flu. Additional knowledge required.	Clinical investigators. Unclear if any studies have been designed or gone through IRB, or who is coordinating this effort.
<b>Duration</b>	Duration of ventilator support required by patients with influenza related illness due to hospital-acquired infection	Yes	Prevent healthcare-associated infections (e.g., ventilator associated pneumonia [VAP], central line associated blood stream infections [CLABSI], surgical site infection [SSI])	Hospitals
<b>Demand</b>	Competing demands for ventilators (e.g., post-surgery,	Yes	(1) Reduce elective procedures (e.g., defer elective surgery) (2) Consider sedation vacation to allow earlier extubation	Hospitals

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Factors Affecting Ventilator Supply and Demand		Mod-ifiable	Modification Methods / Comments	Responsible Party For Modifications
	heart-attack, etc.)			
<b>Demand</b>	Competing demands for ventilators (due to adverse events in hospital)	Yes	(1) Prevent hospital acquired infections VAP, CLABSI, SSIs (2) Rapid Response Teams (prevent patients from coding, thus requiring ICU)	Hospitals
<b>Demand</b>	Virulence of the influenza strain (how many ill persons will require mechanical ventilation)	No	<b>COMMENT:</b> This may change between waves and may change within a wave.	
<b>Demand</b>	Ability to decrease the number of persons infected who seek healthcare, and continue to progress to the stage of requiring mechanical ventilation	Not known	Potential role of antivirals (no data available currently on utility of antivirals for this outcome), however very limited supply is available.	Clinical investigators. Unclear if any studies have been designed or gone through IRB, or who is coordinating this effort.
<b>Staff</b>	Number of staff at work who can properly operate mechanical ventilators	Yes	(1) Cross-training of staff (2) Provision of just-in-time training (3) Effective PPE use among critical care staff (4) Implementation of infection control measures to reduce risk to staff, including review of sick leave policy; infectious staff should not work in critical care areas. (5) Prioritization of ICU staff to receive influenza vaccine, ensure good uptake by staff. (6) Ensure that staff are enabled to work if not sick (childcare/eldercare/ transportation)	Hospitals

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**Section 4 Supplement 4: Ethical Allocation of Scarce Resources**

Factors Affecting Ventilator Supply and Demand		Mod-ifiable	Modification Methods / Comments	Responsible Party For Modifications
Staff	Mechanical breakdown/ failure of ventilators	Yes	(1) Ensure ventilators are maintained to decrease chance of breakdown or failure (2) Ensure a supply of spare parts that are needed frequently (may have disruption of supplies) (3) Have Biomedical Technician on call or on site 24/7 as well as a back-up / cross-training of staff	Hospitals
Staff	Available, trained staff to clean ventilators between patients	Yes	Ensure that multiple staff are familiar with cleaning protocols, so that ventilators have minimal downtime (staff available 24/7). It will be important that cleaning does get performed properly to prevent outbreaks of ventilator-associated pneumonia	Hospitals
Supply	Identify ventilators outside of critical care areas	Yes	(1) Identify ventilators in emergency departments, operating rooms, post anesthesia areas, ambulatory surgical centers, transportation (2) Ensure that critical care staff and others know how to operate these ventilators to ventilate patients with influenza / ARDS	Hospitals
Supply	Ventilators from rental companies	Not known	<b>COMMENT:</b> Be aware of the potential for double counting these units in that other healthcare facilities may be planning to rent the same units.	Hospitals
Supply	Ventilators from State stockpile	Not known	<b>COMMENT:</b> There is currently NO State stockpile of ventilators in TN	TEMA
Supply	Ventilators from Federal stockpile	Not known	<b>COMMENT:</b> The number of ventilators available is extremely small, none may be available for use in TN.	Federal Government
Other	Medical gas supply (oxygen / suctioning equipment)	Not known	Perform inventory of medical gas (and oxygen/suction) supply issues. What is the maximum number of ventilators that can be operated in a specifically physical location at one time (speak with engineers).	Hospitals

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Factors Affecting Ventilator Supply and Demand		Mod-ifiable	Modification Methods / Comments	Responsible Party For Modifications
Other	Documentation of advance directives and physician orders for scope of treatment (POST)	Yes	(1) Encourage completion of physician orders for scope of treatment (in consultation with patient and family members) (2) Encourage patients to complete advanced care plans	Hospitals
Other	Use of electrically powered resuscitators when mechanical ventilators are not available	Yes	<b>COMMENT:</b> Automatic resuscitators only work in patients with normal lungs, not patients with pneumonia/ARDS. They could potentially be used in patients requiring mechanical ventilation for other reasons, in order to free up mechanical ventilators for other patients. (1) Ensure adequate equipment (resuscitators.) to allow patients to be hand-bagged (2) Cross-training of staff/volunteers to use resuscitator and monitor patient (3) Provide just-in-time training (4) Provide clear protocols for using the resuscitator, including when to stop	Hospitals
Other	Hand-bagging of patients when mechanical ventilators are not available	Yes	(1) Ensure adequate equipment (ambu-bags, etc.) to allow patients to be hand-bagged (2) Cross-training of staff/volunteers to hand-bag (3) Provide just-in-time training (4) Provide clear protocols for hand-bagging, including when to stop	Hospitals
Other	Remove patients from ventilation support	Yes	(1) Develop protocols when it is inappropriate to continue ventilator support (ethics, evidence based medicine) (2) Prepare an evidence based list of the statistical benefit of ongoing ventilator support for various conditions at various time intervals post-intubation (3) Engage in discussions of medical ethics considerations	Hospitals and TDH who will provide guidance regarding ethics from a consultant. Unclear if any national/State organization is putting together a list of statistical benefits of ongoing ventilator support. Article by Hick and O'Laughlin, 2006 provides some helpful insights

# **Section 5: Vaccine Distribution and Use**

**Tennessee Department of Health Pandemic Influenza Response Plan**  
**Section 5: Vaccine Policies and Procedures**

**I. Purpose:**

To administer vaccine against pandemic influenza in order to make the best use of scarce resources in light of medical, societal, and ethical considerations in order to minimize disease morbidity and mortality. Vaccine must be administered efficiently and monitored appropriately, in accordance with federal guidance.

**II. General Assumptions:**

The state pandemic plan for vaccine is based upon estimates of production time, capacity, and vaccine efficacy at this writing. Novel technology to shorten production time, expand capacity and improve efficacy are under development. Policies and procedures will be revised to reflect such changes as they become a reality.

Assumptions inherent in the current policy are:

1. Vaccine will be administered to persons in accordance with priority categories issued by the federal government at the time.
2. No vaccine targeted to the pandemic strain will be available at the outset of a pandemic.
3. Vaccine will begin to arrive in Tennessee 4-6 months following the beginning of a pandemic.
4. Vaccine will stay in the country where it is manufactured; the United States has only one domestic manufacturing facility owned by Sanofi Pasteur in Swiftwater, Pennsylvania.
5. Vaccine will be manufactured only for the pandemic strain. Manufacturers are expected to have to halt production of vaccine against routine seasonal influenza strains, which may continue to cause illness and deaths during a pandemic.
6. Two doses of vaccine, administered 1 month apart, will be required for full protection. The first dose primes the immune system and provides insignificant protection from disease.
7. Research indicates immunization against pandemic influenza using the existing FDA-licensed influenza vaccine methodology will require much more antigen than immunization against seasonal influenza.
8. One year of vaccine production in the US, using current technology, would yield enough vaccine to immunize <5% of the population with 2 doses (<280,000 Tennesseans).

### III. Vaccine Administration Priority Groups in Tennessee:

#### A. Rationale:

Federal guidance has been provided for the prioritization of pandemic vaccine recipients, with the intention of minimizing disease morbidity and mortality. In accordance with federal guidance, Tennessee has sub-prioritized within the broader priority groups in order to facilitate implementation of the state vaccination strategy.

Note: The prioritization of recipients may change in future federal guidance. The priority tiers listed here match the federal guidance issued in 2005. The most important aspect of state preparation is to determine how to identify members of each risk group and how to administer vaccine to them, irrespective of their placement in future priority rankings.

In accordance with current federal guidance, the top priority in minimizing disease morbidity and mortality is to protect direct patient care providers and those who maintain the critical processes to keep health care facilities operational. The rationale for this is: (1) many patients are more likely to suffer adverse health outcomes if health care facilities are not fully functional because of illness or death of personnel who carry out essential services, especially when there is a surge in the number of patients requiring hospital care, and (2) persons treating the sick are at increased risk of infection and may spread the disease to uninfected patients and healthcare staff. Persons performing these services in Tennessee are eligible, irrespective of state of residence.

The second priority tier is made up of those most likely to suffer severe illness or death as a result of infection. The priority groups listed here are laid out in 2005 federal guidelines. The groups at highest risk of severe illness and death are subject to change once a pandemic virus emerges and disease patterns are characterized. Sub-prioritization of those at highest risk is ordered from the young to the elderly; vaccine is more likely to be protective to the young than the elderly. Elderly and immunocompromised residents of long-term care facilities are not included in this tier for two reasons: control of access to these residents can minimize their risk of infection; studies show that immunization of health care providers in these facilities is as effective as immunization of residents. High risk conditions are the same as those cited as high risk conditions for severe seasonal influenza.

Veteran's Administration (VA) Hospitals and the National Guard are not listed at this time because federal guidance has not yet clarified whether these groups will be the direct responsibility of the federal government or

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the state in which they exist. Priority groups not the responsibility of the state (active duty military, vaccine manufacturers) also are not listed here.

With current capacity, it is not expected that tiers beyond the first two would be reached with vaccine manufactured during a pandemic; priority groups listed after these are as outlined in federal guidance without further sub-prioritization. Any necessary revision of the medically high risk priority groups will be made by the Commissioner of Health, with the recommendations of the State Epidemiologist.

**B. Tentative federal priority tiers (as of November 2005):**

**1. Top Tier (health care service providers):**

- a. All direct patient care providers in hospital settings (this includes physicians with privileges who are not hospital employees) and top 10% of non-patient care personnel responsible for critical hospital operations
- b. Direct patient care providers in outpatient facilities that will have to provide care to pandemic influenza patients (primary care, infectious disease, cardiology, pulmonology, oncology, diabetes, obstetrics, gastroenterology clinics, federally qualified health centers [FQHCs] and outpatient public health clinics) and top 10% of non-patient care personnel responsible for critical functions in these facilities. Outpatient clinics that do not normally provide such care, but alter their scope of services to provide care to infected patients during a pandemic wave also qualify.
- c. Emergency medical service personnel (EMT-Ps, paramedics) AND patient care providers in long-term residential care facilities
- d. Certified first responder medical personnel (EMT) affiliated with fire and police departments
- e. Balance of non-patient care workers supporting essential functions in hospitals
- f. Balance of non-patient care workers supporting essential functions in outpatient facilities providing care to pandemic influenza patients
- g. Pandemic influenza vaccinators

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- h. Patient care providers in inpatient settings for non-pandemic influenza patients (e.g., Institutes for Mental Disease)
- i. Health care providers in outpatient facilities providing essential medical services to non-pandemic patients (e.g., neurology, psychiatry, orthopedics, day surgery, pharmacists)

**2. Second Tier (medically high risk):**

- a. Persons 6 months to 64 years with 2 or more influenza high risk conditions, not including essential hypertension
- b. Persons 6 months or older with a history of hospitalization for pneumonia or influenza or other influenza high risk condition in the past year
- c. Persons  $\geq 65$  years with one or more influenza high risk condition, not including essential hypertension

**3. Third Tier (medically at-risk groups):**

- a. Pregnant women
- b. Household contacts of severely immunocompromised persons
- c. Household contacts of children  $< 6$  months of age

**4. Fourth Tier (preservation of social function):**

- a. Public health emergency response workers critical to pandemic response, but not providers of direct patient care
- b. Key state and local government leaders

**5. Fifth Tier (medically at-risk):**

- a. 6 months to 64 years with 1 high risk condition (other than essential hypertension)
- b. 6-23 months old, healthy
- c.  $\geq 65$  years and healthy

**6. Sixth Tier (preservation of social function):**

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- a. Public safety workers who are non-EMTs (police, fire, 911 dispatch, correctional facility staff)
- b. Other public health emergency responders that do not provide direct patient care (about 2/3 of public health staff)
- c. Utility workers involved in critical processes to support the work of power, water, sewage systems
- d. Transportation workers transporting fuel, water, food, medical supplies and public transportation
- e. Telecommunications/Information Technology (IT) staff for essential network operations and management

**7. Seventh Tier (preservation of social function):**

- a. Additional key government health decision-makers
- b. Funeral directors/embalmers

**8. Eighth Tier (lowest medical risk):**

- a. Healthy persons 2-64 years not in above categories

**IV. Vaccine administration principles:**

- A. Vaccine will be obtained by the state in the manner designed by the federal government.
- B. Vaccine will be distributed to the public through the network of 13 rural regional and metropolitan health departments and will be administered by health department personnel.
- C. The proportion of vaccine initially allocated to each regional health department will be proportional to the population in each region.
- D. Vaccine will not be allocated to a lower priority group until at least 75% of the estimated number of higher priority persons statewide have been vaccinated and/or supply exceeds the immediate demand in that group.

**V. State administration and distribution oversight:**

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Oversight of vaccine administration and distribution at the state level will be the responsibility of the senior federal public health advisor in the state immunization program, or alternatively, the state immunization program manager.

**VI. Guidance for local vaccine administration planning:**

- A. Vaccine will arrive in relatively small, frequent shipments over many months; the site for vaccination should be an area dedicated to this purpose. One or two locations in each major city and no more than 2-3 locations in rural regions are recommended.
- B. All normal vaccine storage standards should be met. In addition, vaccine must be secured against theft.
- C. Data entry into the Patient Tracking Billing Management Information System (PTBMIS) and a federally-approved vaccine administration database will be required to track vaccine administration – dedicated data entry staff should be identified. The federal government plans to use such data to justify subsequent vaccine shipments to the state.
- D. Pre-pandemic local planning should include identifying a vaccine administration point of contact at hospitals and established outpatient clinics. It is recommended that these persons be identified by title, rather than name. In hospitals and other healthcare facilities that designate a Pandemic Flu Coordinator to be the primary point of contact for the Department of Health, these should be designated by the Pandemic Flu Coordinator. They will be responsible for providing lists of persons meeting the criteria for vaccination in each sub-group of tier one at their facility.
- E. Local plans should estimate the number of persons in each of the sub-groups of at least the top two tiers of recipients and include how to obtain lists of recipients in each category when needed.
- F. For tier one recipients, vaccine administration points of contact at each hospital or outpatient facility are responsible for communicating to qualified personnel within their institution details of where and when to obtain vaccine.
- G. Vaccine recipients will require identification each time they present for a dose. Recipients requiring vaccination because of their occupation will require a form of identification from their employer or will need to be identified by name to the health department by their employer. For example, hospitals will provide lists of names of personnel, in priority order, for immunization to the health department. Children with

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appointments may be confirmed with a parents' identification. Recipients also should present their immunization card at the time of the second dose.

- H. After the first dose, the recipient should receive an immunization card from the health department noting the date of their first dose and the due date for the second dose
- I. Recipients are responsible for communicating their immunization status to their employer (e.g., by providing a copy of their pandemic influenza immunization card)
- J. Appointments are recommended to control crowding
- K. Persons due for a second dose of vaccine take priority over persons not yet vaccinated. Vaccine is only protective 2 weeks after the second dose.
- L. If a regular supply of vaccine, delivered at least once monthly, is assured, vaccine should not be held in reserve at health departments for second doses. Second doses should be taken from subsequent shipments.
- M. Opening vaccination up to lower priority groups will be decided at the state level and implemented at the same time statewide. If a region's needs are saturated earlier than others, vaccine will be directed to other regions of the state to assure the quickest possible vaccination of the entire priority group statewide.
- N. Second tier patients may be identified by documentation of qualifying high risk conditions (e.g., possession of prescriptions, medical records). Vaccination appointments should be made only for vaccine as it becomes available. Waiting lists are recommended. Specific recommendations will be made during the pandemic, as those medically at highest risk are designated.

# **Section 6: Antiviral Drug Distribution and Use**

**Tennessee Department of Health Pandemic Influenza Response Plan**  
**Section 6: Antiviral Medications**

**I. Purpose:**

To optimize the use of the antiviral medications under state control to minimize morbidity and mortality from pandemic influenza. To prevent hoarding, theft, and misuse of antiviral medications.

**II. Situation:**

Antiviral medications, primarily neuraminidase inhibitors, are expected to be the only specific therapeutic agents available to treat or prevent influenza at the onset of a pandemic. The state of Tennessee will have access to stockpiles of antivirals through federal and/or state stockpiles.

To maximize benefit, antivirals should be administered as quickly as possible after onset of symptoms. For example, antivirals fail to affect the duration of illness with seasonal influenza if administered >48 hours after symptom onset. The optimal timing, dosage, and duration of treatment for pandemic influenza may be known only after the pandemic begins. Treatment guidelines will be disseminated as they become available.

**III. Assumptions:**

Priorities in this plan reflect the federal priorities issued in November 2005; state guidelines will be adjusted to conform to changes in federal guidelines to optimize treatment effectiveness. Antiviral distribution and tracking will follow federal guidelines. Future revisions of the state pandemic plan will reflect significant changes in the quantity of antivirals available in Tennessee and changes in scientific understanding of optimal treatment.

The supply of antivirals will be inadequate to treat everyone who would benefit from them. They should be used to minimize severe morbidity and mortality; specific ethical guidance on the use of scarce resources is provided in Section 4, Supplement 4. Antivirals should be used in accordance with federal priority guidelines. The top priority is the treatment of hospitalized patients.

Antivirals will not be used for prophylaxis except as approved by the Commissioner of Health, State Epidemiologist or their designee in exceptional circumstances during the pre-pandemic period as outlined at the end of this section. The primary reason for discontinuing prophylaxis during a pandemic is that 6 to 10 treatment courses would be necessary to prophylax a single healthcare provider through a pandemic wave; the supply of antivirals will be too small to divert so many courses away from patients needing treatment.

The federal government may federalize supplies of antivirals at distributor warehouses; if not, the state shall secure any available antivirals at distributor warehouses in Tennessee in order to distribute them to acute care hospitals for the

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treatment of sick patients. This plan presumes a scenario where a pandemic strain is causing severe disease; in the event of a mild pandemic, the state may not implement all possible steps.

**IV. Concept of Operations:**

**A. Controlled substance regulation:**

Immediately after the Centers for Disease Control and Prevention (CDC) or World Health Organization (WHO) declare that a novel influenza virus is spreading easily from person to person (WHO Phase 5) and causing severe disease, the Department of Health may issue an emergency regulation classifying antiviral medications indicated for treatment of influenza infection (e.g., oseltamivir and zanamivir) as controlled substances. All necessary regulations for controlled substances will be implemented; Drug Enforcement Agency (DEA) numbers will be required on all prescriptions and supplies secured and tracked.

**B. Control of antivirals in distributor warehouses:**

In the absence of federalization of all antiviral supplies, the Governor may issue an executive order placing under state control antiviral medications or other essential medical supplies at distributor warehouses in Tennessee and allocating them to the state antiviral stockpile. Because antiviral supplies available in retail pharmacies are small and widely dispersed, no actions to redistribute medications from retail pharmacists are planned, though the state will collaborate with the Tennessee Pharmacy Association (TPA) to strongly recommend these medications be used in a manner consistent with state priorities to minimize severe illness and death. The state will work with the TPA to communicate recommendations and distribute information to pharmacists state-wide.

**C. Strategic National Stockpile (SNS):**

Stockpiles under state control will be distributed through the SNS distribution system as outlined in the Tennessee Emergency Management Plan (TEMP) ESF 8 Annex 2 – Terrorism Response Plan. The State SNS Coordinator, located in the Communicable and Environmental Disease Services section of the Department of Health, will oversee the distribution of state and federal stockpiled supplies to inpatient hospital pharmacies.

The 2005 federal guidelines give top priority for antiviral treatment to patients requiring hospitalization; for this reason, antivirals under state control will be distributed to inpatient hospital pharmacies.

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The federal government indicates that antiviral supplies will be pre-positioned in the state; terms of this pre-positioning are forthcoming at this writing. Ultimately, supplies will be placed in inpatient hospital pharmacies for dispensing. If supplies must be sent to Tennessee before federal pre-positioning plans are in place, stockpiled antiviral medication will be allocated to the inpatient pharmacies of acute care hospitals in the state of Tennessee. Hospitals should store stockpiles in a highly secure location until they are needed. The potential for theft or misuse is considered high.

**D. Distribution of SNS antivirals:**

Approximately 60% of the stockpile available in Tennessee will be allocated initially to each of the acute care hospitals in proportion to the number of staffed beds in the most recently reported year.

Equation (for the 60% of the stockpile initially distributed):

$(\# \text{ staffed beds in most recently reported year} \div \# \text{ staffed beds in all TN hospitals}) \times (\# \text{ treatment courses available}) = \# \text{ treatment courses sent to the hospital.}$

The balance of the stockpile will be distributed to hospitals to replenish depleted supplies based upon documented appropriate use. Regional Hospital Coordinators will monitor proper use and inventory of antiviral medications and communicate needs to the SNS Coordinator. Decisions concerning subsequent allocations will take into account hospital inpatient surveillance data, whether a hospital enforces state guidelines for the appropriate use of antivirals for inpatients and whether it provides adequate safeguards against theft or misuse.

Patients requiring outpatient doses to complete their treatment course will be discharged with antivirals properly labeled from the inpatient pharmacy supply.

**E. Hospital stockpiles:**

Hospitals that have invested in their own stockpiles using federal grant money or other funds will use their own antivirals according to guidance from the Tennessee Department of Health and the terms of the funding. For example, many Tennessee hospitals receive federal funds that may be invested in antivirals or protective equipment for the use of hospital personnel. It is recommended that these resources be used to treat ill personnel only, not for prophylaxis, because antivirals are unlikely to be available for purchase after a pandemic begins.

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**Section 6: Antiviral Medications**

Hospital personnel may be treated using antivirals from the general state or federal stockpile if they meet the standard state criteria for treatment with antivirals from the SNS (e.g., if they require inpatient care and treatment is possible within the appropriate timeframe).

**F. Antivirals in post-exposure prophylaxis for pre-pandemic cases (WHO Phases 3-5):**

Once the pandemic strain is established in Tennessee, contact tracing and post-exposure prophylaxis (with the objective of containing an outbreak) will be discontinued; before this stage, antivirals may be approved by the Commissioner of Health, State Epidemiologist, or their designee for post-exposure prophylaxis in two settings:

1. Following high risk exposure to poultry, wild birds or a person infected with a novel influenza virus capable of causing human infection (e.g., H5N1 avian influenza)
2. To prevent the beginning of community transmission of a pandemic virus in the state by providing post-exposure prophylaxis to those with high risk exposure to a traveler infected with an influenza virus with pandemic potential

# **Section 7:**

# **Community Interventions**

**Attachment A:** Business Recommendations

**Supplement 1:** Legal Authority

**Supplement 2:** Pre-Pandemic Case Management

**Supplement 3:** Pre-Kindergarten through Twelfth  
Grade and Child Care

**Attachment A:** Colleges and Universities

**Supplement 4:** Special Populations

**I. Purpose:**

To lower the peak numbers of cases during a pandemic wave by preventing opportunities for widespread viral transmission in crowded group settings.

**II. Situation and Assumptions:**

**A. Principle of social distancing:**

In the absence of an effective vaccine, the most effective means of slowing the spread of a pandemic influenza virus are strategies known collectively as “social distancing.” Social distancing involves a range of policies designed to prevent opportunities for the virus to spread in crowded settings where ill and well people mingle.

Large, crowded gatherings accelerate the spread of the virus through communities, leading to a steep rise in the daily number of cases and deaths. Sharply increasing case counts exacerbate the strain on the healthcare system, further reducing the resources available to seriously ill patients and increasing the likelihood of poor outcomes.

**B. History of social distancing for pandemics:**

In the 1918 pandemic, communities around the world practiced social distancing strategies by suspending discretionary public gatherings when pandemic influenza was spreading in their area. Policies varied, but included closing bars/restaurants, pool halls, theaters, sporting events, public transportation, schools and suspending congregative services in houses of worship. In many cases, the effectiveness of interventions was diminished by the absence of defined trigger criteria to initiate such strategies, resulting in implementation only after the virus was already causing widespread disease in the community.

**C. Present need for social distancing:**

Given that the current capacity to manufacture vaccine will yield late and limited supplies, social distancing measures again will play a central role in minimizing illness and deaths in Tennessee. State-imposed measures will affect discretionary public gatherings and schools (preK-12). The epidemiologic criteria for implementation of such measures will be developed by the State Epidemiologist and his staff and approved by the Commissioner of Health, or his designee, upon consultation with the Governor. Such measures shall be implemented by local communities once these criteria are met. It is expected that individuals, businesses and colleges may adopt additional social distancing policies beyond those

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recommended by the state, based upon their judgment and their own pandemic plans.

**D. Mandated versus recommended social distancing measures:**

All social distancing procedures outlined in this plan reflect a worse-case scenario of a 1918-like pandemic (illness is fatal in about 1 in 50 affected persons). In milder pandemics (as defined in the core plan), avoiding crowded public settings may be strongly recommended, rather than mandated. Discretionary public gatherings of  $\leq 100$  persons are not expected to be affected by mandatory suspension. Based upon experience with modern quarantine during the 2003 outbreak of Severe Acute Respiratory Syndrome (SARS), cooperation with Department of Health (TDH) emergency regulations to control disease is expected to be good, though law enforcement support may be used to ensure compliance where necessary; civil arrest is possible pursuant to regulations outlined in 1200-14-4.

**E. Legal Authority for Social Distancing:**

Pursuant to T.C.A. § 4-5-208, the Commissioner of Health is authorized to issue the emergency rules and regulations he or she deems necessary to protect the public and control the spread of an epidemic disease in the state. The Commissioner, upon consultation with the Governor, may issue emergency rules once a pandemic is imminent establishing the terms and conditions for mandatory suspension of discretionary public gatherings.

In addition to the emergency rule-making procedures, executive orders from the Governor during a state of emergency may be used to authorize such measures. Additional information may be found in Section 7, Supplement 1.

**F. Criteria for implementation:**

Social distancing measures will be implemented only when the standard criteria are met in a county or a neighboring county.

Social distancing policies and procedures for schools (preK-12) and licensed child care facilities are outlined in Section 7, Supplement 3.

**G. Supplements to Section 7:**

Attachment 1: Business Planning Recommendations (advisory document)  
Supplement 1: Overview of legal authority for social distancing, isolation and quarantine

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Supplement 2: Case management of sporadic cases during the pre-pandemic period

Supplement 3: Policies and procedures involving child care facilities and pre-Kindergarten through twelfth grade (pre-K to 12) schools

Supplement 3: Attachment A: College Planning Recommendations (advisory document)

Supplement 4: Special populations

**III. Concept of Operations:**

**A. Discretionary public gatherings defined:**

Discretionary public gatherings of >100 persons may be included for cancellation during a pandemic wave in a county or neighboring county.

**B. Very large discretionary public gatherings (additional considerations):**

Very large discretionary public gatherings of >10,000 persons may be subject to cancellation during a pandemic, even in the absence of disease activity in the county where the event is held.

1. Such cancellations will be ordered by the Commissioner or his designee (e.g., a Regional Health Officer), upon consultation with the Governor, on a case-by-case basis in light of the pandemic conditions at the time
2. Local pandemic plans should address mechanisms for notification and subsequent approval or disapproval of such events by the Regional Health Officer using criteria established by the Commissioner of Health at the time

**C. Exceptions not subject to suspension:**

1. Facilities or events where patrons are not intended to mingle, but are seated at separate tables for service (e.g., seated restaurants)
2. Facilities which offer unaffected services in addition to events or venues mandated for closure may continue to offer the unaffected services
3. Businesses not affected by closure should consider other means necessary to minimize the risks of spreading infection in the workplace (see Section 7, Attachment 2)

**D. Roles and responsibilities:**

The Commissioner of Health, or his designee, is responsible for determining when to initiate and lift social distancing measures, upon consultation with the Governor. These decisions will be based upon the recommendations of the State Epidemiologist, using the best available epidemiologic information on pandemic disease severity and spread. The regional health officer is responsible for implementing and lifting mandatory interventions when informed that state criteria for implementation or discontinuance have been met.

**E. Criteria for implementation:**

The criteria for initiating local social distancing measures are:

1. The pandemic virus causes morbidity and mortality in excess of normal seasonal influenza, and
2. Laboratory confirmation of the pandemic virus in the county or neighboring county, and
3. Epidemiologic evidence from a state surveillance system indicating community spread of the pandemic virus in the county or neighboring county

Measures will be implemented on a county-by-county basis when criteria are met in a county or in a neighboring county.

**F. Criteria for lifting restrictions:**

Measures will be lifted when surveillance systems indicate a return to essentially baseline influenza-like activity in the community (e.g., based on sentinel provider reports). The established criteria may be modified if additional information becomes available indicating the optimal time to lift restrictions.

**G. Stages of social distancing:**

**Stage 1.** Domestic transmission of pandemic virus with a loss of epidemiologic links among cases is confirmed in the United States by the CDC

- a. Measures taken by Department of Health (TDH)
  - i. Commissioner of Health, or his designee, upon consultation with the Governor, will activate this protocol and promulgate any

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- necessary emergency rules to carry out protocol
- ii. Communicable and Environmental Disease Services (CEDS) epidemiologists will begin daily monitoring of all available influenza surveillance systems in place in Tennessee (e.g., sentinel provider network, syndromic surveillance, hospital surveillance).
- iii. Commissioner, or his designee, may approve the cancellation of certain defined very large discretionary public gatherings to reduce the opportunities for importation and rapid spread of disease from other affected areas
- iv. Communicate these measures to the public and to local officials (see Section 8 [Communications])
- b. Measures recommended to the public:
  - i. Stay abreast of news of developments and advice of authoritative agencies (e.g., CDC and TDH)
  - ii. Educate children and adults about good health habits necessary to help prevent illness, such as hand hygiene, respiratory etiquette and staying home when sick.
  - iii. Encourage families that have not already done so to prepare themselves for anticipated challenges (e.g., have at least 1 week of non-perishable food and water stored, ensure adequate supply of essential medications, anticipate school and business closures)
  - iv. Prepare for the next steps to prevent spread of disease in communities, such as cancellation of discretionary public gatherings, as defined in this section, for the

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duration of the pandemic waves in the community.

- v. Strongly encourage persons with febrile illnesses to stay home until well, except to seek medical care, if needed.
- vi. Communities and businesses may prepare to make hygiene materials (tissues, hand sanitizers) publicly available and encourage the public to use them appropriately.

**Stage 2.** Domestic transmission of pandemic virus with a loss of epidemiologic links among cases is laboratory-confirmed in Tennessee by CDC or the State Laboratory

a. Department of Health

- i. Commissioner, or his designee, upon consultation with the Governor, will declare the suspension of discretionary public gatherings to be implemented on a county-by-county basis, when advised by the State Epidemiologist that triggering criteria have been met.
- ii. All very large discretionary public gatherings (>10,000 persons) in the state designed to attract participants from out of state or from affected regions of the state should be suspended

b. Regional Health Officer

- i. Implement social distancing measures under conditions defined by Commissioner of Health or his designee.

**Stage 3.** Pandemic wave ends in an affected county

a. Department of Health

- i. Commissioner or his designee will declare when discretionary public gatherings may be resumed on a county-by-county basis, when advised by the State Epidemiologist that the

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established criteria for the suspension of social distancing measures have been met.

**Stage 4.** Period between pandemic waves

Normal activities resume.

**Stage 5.** Resumption of restrictions in subsequent pandemic waves.

a. Department of Health

- i. The same criteria and procedures will be used during each pandemic wave (at least a second, and possibly a third wave are expected)
- ii. The Department of Health will review and adjust recommendations for social distancing, in light of the increasing or waning virulence of the strain and evidence of best practices for protecting health.

**Tennessee Department of Health Pandemic Influenza Response Plan  
Section 7 Attachment A: Business Planning Recommendations**

**I. Purpose:**

To guide businesses in obtaining resources for pandemic planning to reduce opportunities for transmission of disease in the workplace and provide for business continuity.

**II. Assumptions:**

Every business will be affected by a pandemic. Businesses of all sizes will be better prepared to cope with such an event if they incorporate pandemic planning into their business contingency plans. Challenges include the following:

- A. Cancellation or discouragement of non-essential public gatherings during a local pandemic wave (see Section 7 [Community Interventions])
- B. Global business recession
- C. Disruptions of supply chains due to illness and interruptions in international travel
- D. Employee illness and absenteeism that could reach 40% during the peak weeks of a pandemic wave in a community because of illness, childcare, fear or ill dependents.
- E. The availability or timing of federal or state government assistance cannot be predicted; the national scope of the problem will preclude significant federal assistance in any given local response. Federal, state and local pandemic plans provide information about what to expect from government response.

**III. Issues:**

The planning steps listed below are not comprehensive, but are intended to stimulate thinking and further examination of business needs:

- A. Designating a person to be responsible for pandemic contingency planning and having that person review the Tennessee Pandemic Influenza Plan and other pandemic planning resources.
- B. Minimizing the risk of contagious employees infecting others in the workplace; for example, by temporarily modifying sick leave policies during the pandemic to allow employees with flu-like illness to stay away from work until non-infections (5-7 days).

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**Section 7 Attachment A: Business Planning Recommendations**

- C. Developing strategies to accommodate the need to restrict business travel, if national or international travel restrictions are imposed.
- D. Developing the capacity to allow employees responsible for critical functions to work from home if unable to come to the workplace.
- E. Preparing for employee child care challenges when/if schools and daycare facilities close in the community for as long as 6-8 weeks (Community Interventions, Section 7).
- F. Examining the risk of supply-chain problems and taking measures to address them.
- G. Making tissues and hand hygiene supplies easily available at the workplace.
- H. Accessing up-to-date, accurate information from authoritative sources (see resources listed below).
- I. Determining conditions for business closure and how to cope with a period of closure. Mandatory closure of non-essential public gatherings of >100 persons is possible during a local pandemic wave during a severe pandemic (one that kills roughly 1 in 50 ill persons) (Section 7 [Community Interventions]).
- J. Reviewing the terms of any applicable insurance policies.
- K. Engaging as appropriate with community pandemic planning groups through health departments, chambers of commerce, and other groups.

**IV. Resources:**

- A. Tennessee State Pandemic Response Plan
- B. Federal pandemic website, including business planning checklists, National Pandemic Response Plan, and other planning resources for businesses at [www.pandemicflu.gov](http://www.pandemicflu.gov)
- C. Centers for Disease Control and Prevention (CDC) at [www.cdc.gov](http://www.cdc.gov)
- D. National professional associations
- E. Chambers of Commerce

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**Section 7 Attachment A: Business Planning Recommendations**

- F. County Economic and Community Development groups
- G. New Zealand business pandemic plan (pages 13 and following):  
[http://www.med.govt.nz/templates/MultipageDocumentTOC\\_\\_14455.aspx](http://www.med.govt.nz/templates/MultipageDocumentTOC__14455.aspx)

**Tennessee Department of Health Pandemic Influenza Response Plan  
Section 7 Supplement 1: Legal Authority for Social Distancing**

**I. Purpose:**

To define the legal authority and options for social distancing measures, focusing on the isolation and quarantine orders that may be issued as part of case management during the pre-pandemic period (World Health Organization [WHO] phases 3-5).

**II. Definitions:**

**Isolation:** to restrict the liberty of a **sick** person reasonably suspected of having a communicable disease in order to prevent the spread of that disease to others.

**Quarantine:** to restrict the liberty of a **well** person suspected of having been exposed to a communicable disease until the incubation period has passed or until they become ill and are isolated. This is used to prevent people from spreading disease before they realize they are sick.

**Quarantine laws** cover both isolation and quarantine as described above and any other restrictions.

Sick people under investigation will be isolated in the hospital, at home, or in an alternative facility. Most people exposed to a probable or confirmed patient will be asked to monitor their own symptoms and will be given instructions about what to do if they develop a fever or respiratory symptoms.

**Note:**

The legal authority for public health actions are outlined below and have been paraphrased for clarity. These laws and Department of Health (TDH) rules and regulations apply state-wide. Cities or counties may have additional local laws that will apply.

**III. Authority to write and enforce new rules and regulations:**

Tennessee Code Annotated (TCA) 68-1-201 (2): Commissioner of Health has the power to declare quarantine and prescribe rules or regulations deemed necessary to prevent the introduction of an epidemic disease into the state or to control the spread of an epidemic disease within the state, with the least inconvenience to commerce and travel. TCA 4-5-208: If needed immediately, “emergency rules” can be written and go into effect for up to 165 days. See also 68-5-104 a (2).

**IV. Authority to control a communicable disease:**

TCA 68-5-104(a)(1) It is the duty of the local health authorities, on receipt of a report of a case, or suspected case...to confirm or establish the diagnosis, to determine the source or cause of the disease and to take such steps as may be necessary to isolate and/or quarantine the case or premise upon which the case,

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cause or source may be found, as may be required by the rules and regulations of the state department of health.

Tennessee Rules and Regulations 1200-14-1-.15: It is the duty of the local health officer, Commissioner, or his designated representative (upon getting a report of a communicable disease case or a suspected case) to:

- A. Confer with physician, hospital, laboratory, or person reporting
- B. Collect specimens necessary to confirm diagnosis or identify source of epidemic or infection
- C. Make a complete epidemiologic investigation including but not limited to: review medical and relevant non-medical records, interview affected people and controls, and create a communicable disease field record
- D. Implement appropriate control measures which may include: isolation, quarantine, exclusion, disinfection, immunization, disease surveillance, closure of establishment, education, and other measures considered appropriate by medical experts (e.g., Red Book, Centers for Disease Control and Prevention [CDC]) for the protection of the public's health.

**V. Authority to review medical and non-medical records without delay:**

Tennessee Rules and Regulations 1200-14-1-.15(2): Medical and relevant non-medical records shall be made available when requested, for inspection and copying, by an authorized representative of the Department when investigating a case, suspect case, or epidemic. The original medical records will not be removed from the health facility, and the information will be treated as confidential and sensitive.

**VI. Duty of health professionals to report potential health threats:**

Tennessee Rules and Regulations 1200-14-4-.03: any licensed practitioner of the healing arts must report to the Commissioner or a health officer any person they have reason to believe is or may be a health threat to others by potentially exposing them to an infection that causes serious illness.

**VII. Legal control measures:**

The Commissioner of Health or a designee may take steps to contain the spread of a novel influenza virus with enforcement ranging from unsupervised voluntary measures to court-ordered measures enforceable by law enforcement. The declaration of a state of emergency by the Governor of Tennessee may alter the requirements necessary to quarantine or isolate individuals and would likely streamline actions required for quarantine and isolation by the TDH.

**VIII. Voluntary quarantine or isolation :**

The first, and usually only, step is to ask affected persons to comply with requests of the health department. In the experience of countries affected by severe acute respiratory syndrome (SARS) in 2003, the vast majority of affected persons did comply voluntarily.

- A. If time permits, a letter explaining the requested action on health department letterhead facilitates voluntary actions. This letter may assist the person in explaining their needs with employers or school and provides a written record of the actions they are expected to take.
- B. The person should be given written material about infection control and symptoms, and instructed in the proper steps to prevent exposing others. If resources permit, they should be provided with surgical masks. They should be given a contact phone number for the health department and should have instructions for what to do and where to go in case they need medical attention. Post-exposure prophylaxis may be provided, along with instructions for use.

**IX. Health directive :**

**A. Definition:**

A public health directive is issued by a local or regional health officer but does not require a court order. It is a written statement of evidence that the person may be a health threat and a statement of actions the health officer is directing the individual to take to cooperate with public health authorities.

**B. Steps:**

It is not necessary to issue a health directive first if a court-ordered public health measure or temporary hold order is required. However, if a health measure is sought, a health directive should be issued before a petition is filed with the court.

- 1. A health directive must be issued to an individual (not a group) and is a written statement specifically listing the clinical or epidemiological evidence that the person may be a health threat, and directing them to cooperate with health authorities' instructions to prevent or control a communicable disease. They may be directed to undergo medical examinations and tests, receive education, or to be isolated or quarantined.

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2. If non-clinical evidence of possible infection exists, but a person refuses to be examined, one can presume a health threat and a health officer may issue a health directive requiring examination and testing.
3. A health directive is limited to the least restrictive alternative that, based on reasonable medical judgment, will adequately prevent the spread of the disease.
4. A health directive can be issued verbally, but if so, a written one must follow within 3 days.
5. When a health directive is issued, a copy of Tennessee Rules and Regulations, Chapter 1200-14-4, (which outlines communicable disease control health threat procedures) should be attached, and both should be provided to the individual.
6. When a health directive is issued, the affected person has the right to request a review of the decision by the State Chief Medical Officer or his/her designee. The reviewing official must notify the person in writing of the review decision within 5 business days of receipt of the request.
7. The affected person can also ask that the conditions of the directive be given in the form of a court-ordered public health measure, but the health directive is in force during the time it takes to get the court order.
8. A court-ordered public health measure may be sought against a person who does not or cannot comply with a health directive for any reason.

**X. Court-ordered public health measure:**

**A. Definition:**

A public health measure is sought by a health officer to require actions of a person who is considered a public health threat; it is signed by a General Sessions judge following a hearing. Failure to comply with instructions in a court-ordered public health measure is considered contempt of court.

**B. Steps:**

Tennessee Rules and Regulations 1200-14-4-.06: this order is issued by a court and should be undertaken with the consultation of the TDH or metropolitan attorney for public health. Rapid action is required, and

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health officers should keep the after hours contact information of their consulting attorney available at all times. To obtain a court order, the health officer must:

1. File a petition with the General Sessions Court where the affected person lives or is found. An affidavit must include the specific facts of why the order is needed, including clear and convincing evidence that the person is substantially likely to be a health threat to others. It must also state what the person needs to be required to do. The health officer is responsible for making the necessary arrangements to carry out a judge's order.
2. The person may be required to receive education, to be tested, examined, treated, or confined. The person may be isolated in a setting supervised by the department or committed to the Commissioner's custody in an institutional facility or supervised living condition.
3. The court hearing must take place not before 5 business days after the petition is served on the patient.
4. The affected person has the right to come to the hearing and to call and examine witnesses and to have a personally selected physician examine them and the test results presented as evidence. The health officer is responsible for advising on, preparing for, and overseeing safety precautions at the hearing.
5. The person has a right to an attorney, or, if indigent, a court-appointed one.
6. When a health measure is issued, a copy must be provided to the individual, along with a copy of the Tennessee Department of Health Rules 1200-14-4.

**XI. Temporary hold in an emergency situation :**

**A. Definition:**

A temporary order sought by a health officer and issued by a General Sessions judge with an ex parte hearing (a hearing in which only the petitioner is heard), requiring actions of a person considered to be a public health threat. These are usually sought in emergency situations while going through the process of obtaining a court-ordered public health measure.

**B. Steps:**

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1. Tennessee Rules and Regulations 1200-14-4-.05. In the case of an emergency, a health officer may petition the General Sessions Court of the county where an affected person lives or is found to order a law enforcement officer to make a civil arrest and take the person to a health care facility for examination, isolation and treatment, or to prevent or restrict access to premises. Health officers should know what procedure to use if such an action must be carried out after hours. This may involve talking with county sheriff's office or a county judge in advance to make them aware of this possibility.
2. The health officer must prepare an affidavit outlining the facts of the situation, why there is reasonable cause to believe the person is an imminent threat to others and what they want the judge to order.
3. This emergency hold can last for no more than 5 business days without a court hearing (unless the affected person consents to delay the hearing) to determine the appropriateness of continuing the hold. At that time, the health officer may petition the court for a public health measure (outlined above). The emergency hold also can be extended for 10 more business days if further examinations or tests need to be completed.
4. When a temporary hold is issued, a copy must be provided to the individual, along with a copy of the TDH Rules 1200-14-4.

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**I. Purpose:**

To use individual case management, including legal isolation or quarantine orders and contact tracing, during the pre-pandemic period (World Health Organization [WHO] Phases 3-5) to prevent the spread of an influenza virus with pandemic potential in Tennessee.

**II. Assumptions:**

- A. Definition of community transmission: transmission without clear epidemiologic links among cases
- B. Individual case management to prevent or slow spread of a virus with pandemic potential will be used before community transmission begins in the United States
- C. Suspected cases of infection with a novel influenza virus with pandemic potential in Tennessee are likely to be
  - 1. Travelers identified during, or only days after, their travel to an affected area, or
  - 2. Persons exposed to animals infected with a novel influenza virus capable of causing human disease
- D. Initial reports of suspected cases will come from both medical and non-medical persons
- E. Once community transmission of a pandemic virus in the United States is under way, individual case management and contact tracing will be rendered inefficient and ineffective at controlling disease spread because of the rapidly increasing number of cases and speed of spread
- F. After community transmission begins, the emphasis will shift to generally-applied social distancing strategies (see Section 7 [Community Interventions])

**III. Objectives:**

- A. To minimize the number of people who have unprotected exposure to a person with a novel influenza virus with pandemic potential in order to prevent community transmission from beginning
- B. To impose the least restrictive measures necessary to protect the public's health

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- C. To use the Outbreak Management System (OMS) or other database program for efficient and effective data management for case and contact investigations

**IV. Sources for recommendations and case definitions:**

Tennessee will follow national standard case definitions and recommendations for control measures provided by the Centers for Disease Control and Prevention (CDC) or other national epidemiologic advisory body. Case definitions and recommendations will be posted on the state pandemic website. If multiple case definitions are in use nationally, the State Epidemiologist or his designee will communicate the case definition and interventions to be used in Tennessee. Interventions for individual cases will be tailored to the specific situation.

**V. Individual Case Management (WHO Phase 3-5, Pandemic Alert):**

Individuals suspected of meeting the case definition published by the Department of Health (TDH) should be reported by telephone immediately to the local health department or the Communicable and Environmental Disease Services Section (CEDS) at 615-741-7247 (toll-free 1-800-404-3006). The report will be evaluated by the state hospital epidemiologist or another CEDS physician who will provide guidance for testing and contact management. Case report forms for CEDS and/or CDC will be completed by regional public health staff or the reporting healthcare provider and submitted to CEDS immediately, if indicated.

Recommendations for protecting others from suspected cases will be published through news outlets, the internet, and publications of the TDH.

**A. Case management for suspect cases on an airplane (adapt to other transit):**

When persons fitting the case definition are reported on an airplane arriving in Tennessee, these events may be managed in collaboration with the nearest CDC Quarantine Station, identified by contacting the CDC Director's Emergency Operations Center at 770-488-7100. CDC has the legal authority to impose quarantine orders on travelers potentially exposed to novel influenza viruses under certain conditions. The terms of federal quarantine are currently being revised and proposed rules have not taken effect at this writing; federal quarantine protocols will be attached to this section and disseminated to local and state response planners once finalized. Local and state public health officials are responsible for housing contacts in their state requiring quarantine until they can be released. General steps are as follows:

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1. The suspect patient will be isolated from others to prevent disease transmission and provided a surgical mask to wear and medical evaluation.
2. Other contacts will be quarantined and contact information collected pending evaluation of the suspect patient and laboratory testing, if necessary.
3. Local health officials, with the assistance (as needed) of state health officials, will meet the plane and clinically evaluate passengers according to protocols developed by the CDC (to be attached to this section when released).
4. Emergency public health measures to confine quarantined persons or compel testing will be prepared against uncooperative individuals in accordance with state regulations (1200-14-4) with the assistance of a public health attorney, and under the authority of the health officer or the Commissioner, only if the suspect case patient or contacts are unwilling to cooperate with the instructions of public health officials.
5. Clinical samples from the suspect case will be obtained and taken to the nearest public health laboratory capable of conducting rapid testing for the virus. At this writing, specimens must be taken to the state public health laboratory in Nashville for preliminary testing using polymerase chain reaction (PCR), with results available in hours (see Section 3 and its Attachment A for details).
6. Until quarantined contacts are cleared to leave, local public health officials are responsible for their personal needs (communication, shelter, food, psychosocial support).
7. Quarantined contacts should be assessed for symptoms of illness at least every 12 hours and provided information about symptoms and how to report them as soon as they develop.
8. Irrespective of preliminary laboratory results, names and contact information of all contacts will be collected by public health officials before quarantined contacts are discharged (in the event that confirmatory testing is positive).
9. If the patient is confirmed to have the novel influenza virus, quarantine of contacts and post-exposure prophylaxis will be provided as recommended by the State Epidemiologist, or his designee, in collaboration with the CDC.

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10. State public health officials in CEDS will be responsible for ensuring information on contacts identified in other states is communicated to the state health department authorities in those states.
11. Case management data will be collected in OMS or other database program, available for field deployment on laptop computers in all regional health department offices.

**B. Case management for suspect cases not currently in transit:**

Persons fitting the case definition should be reported to CEDS or the local health department immediately.

1. Suspect case patients should be isolated using current accepted precautions (e.g., droplet plus contact precautions in a hospital) or at home until: (1) the person is excluded as a case, or (2) the recommended number of days have elapsed following the onset of symptoms in persons with laboratory-confirmed disease (currently 7-10 days).
2. If the patient is being referred by public health authorities to a treatment facility for evaluation, the referring public health department is responsible for communicating with the receiving medical facility in advance to prevent inadvertent unprotected exposures.
3. Clinical laboratory specimens should be obtained and delivered as quickly as possible to the State Public Health Laboratory in Nashville. See Section 3 for laboratory specimen information. Courier service may be arranged with the State Laboratory, if needed.
4. Local public health personnel, with the assistance of regional and state public health personnel will conduct rapid contact tracing to identify and evaluate close contacts for evidence of disease. Because of the short incubation period, contact tracing should not be delayed for laboratory confirmation in cases where the patient meets the clinical/epidemiologic case definition. It is recommended that contact tracing be conducted with individuals with expertise in this area (e.g., sexually-transmitted disease [STD] or tuberculosis [TB] case investigators).
5. Public health clinical staff should have daily contact with a designated point of contact at the treating facility for any

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confirmed cases to monitor clinical outcome and appropriate isolation procedures.

6. Contacts should be quarantined at home or in an alternate facility (e.g., hotel). Quarantined contacts should be assessed for symptoms of illness in person or by phone by a public health nurse or physician at least every 12 hours and provided with information about symptoms, how to report them as soon as they develop, and how to protect household contacts from exposure. Post-exposure prophylaxis or early treatment with an appropriate antiviral medication will be initiated as indicated by the State Epidemiologist or a designee.
7. Case and contact management data will be collected using OMS or another database program. Details provided in separate OMS guidance.
8. Persons who are quarantined because of exposure to a confirmed case will remain quarantined until the incubation period has lapsed or will be offered post-exposure prophylaxis according to standard recommendations at the time as approved by the State Epidemiologist or his designee.
9. Non-hospitalized patients should be clinically monitored in person or by phone daily by a public health physician or nurse to assess symptoms, ensure compliance with isolation instructions, and facilitate safe evaluation by medical personnel when necessary.
10. Patients or contacts unwilling to cooperate with necessary public health instructions for isolation, quarantine, or medical testing may be issued written health directives or temporary emergency hold orders by the local health officer, prepared with the assistance of a Department of Health attorney, to compel their immediate compliance, in accordance with state public health regulations (Rules and Regulations 1200-14-4).
11. Daily follow-up should be documented by public health in the OMS system or other database in use.

**C. Information Management:**

1. Information on all cases and contacts will be managed using OMS or other database system.

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2. For OMS, specimens approved for laboratory testing at the State Public Health Laboratory should be documented the system before testing.
3. Laboratory results for specimens submitted will be entered into OMS or other database by state public health laboratory staff.

**VI. Contact Management (WHO Phases 3-5):**

**A. Objectives:**

1. To identify and treat contacts of cases
2. To identify previously unrecognized cases resulting from the index case
3. To educate contacts about health monitoring, post-exposure prophylaxis, protecting their families, and when to seek care

**B. Key Points:**

1. Interviews to identify contacts should be conducted as soon as the probable diagnosis is made. These should be carried out by health department personnel familiar with contact identification (e.g., STD or TB disease investigators).
2. Interviews of contacts of probable cases meeting the epidemiologic and clinical criteria should not be delayed for laboratory confirmation.
3. CEDS personnel will provide assistance as needed.
4. If the patient cannot be interviewed, household and other contacts should be interviewed.
5. Where the source of the case's infection is known, the time period of interest is from the date of onset of symptoms. Because patients may shed virus before the onset of symptoms, interviewers should elicit close contacts and activities starting 24 hours before the reported onset of illness.
6. If the source of the case's infection is not known, the investigator also must elicit events attended and any ill contacts in the ten days prior to the onset of symptoms (2 weeks may be used for simplicity of recall).

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7. Contacts may be stratified as High, Medium, or Low Risk in order to guide the prioritization of follow-up for these contacts. Examples of people in each broad category:
  - a. **High Risk:** Healthcare workers with unprotected exposure to the patient, especially during an aerosol-generating procedure; unprotected caregivers of the patient; household contacts.
  - b. **Moderate Risk:** Close contacts that do not meet high risk criteria, but spent at least some unprotected time within 6 feet of the patient or in unprotected contact with contaminated environment.
  - c. **Low Risk:** People who do not meet moderate risk criteria but who had some lesser degree of contact with the patient.
8. All individually identified contacts, especially those at high and medium risk, should be traced, notified of their exposure and given instructions for symptom monitoring, follow-up, and post-exposure prophylaxis, if indicated (e.g., high-moderate risk).
9. Public announcements may be necessary to alert previously unidentified contacts and inform them how to identify themselves and report symptoms.
10. Antiviral medications will be obtained from state or federal stockpiles through the SNS system according to federally-established protocols.

**C. All contacts should be instructed:**

1. To take antiviral medication as instructed, if provided by TDH.
2. To take their temperature and document it if they feel febrile.
3. To be vigilant for early signs of illness (fever, myalgia, headache, cough, runny nose, diarrhea).
4. At the first sign of illness, to isolate themselves from other people, put on a surgical mask, and call a number provided by the health department for clinical assistance.
5. If ill, to wear a surgical mask when going out of the house to seek medical attention.

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6. To alert healthcare providers in advance of their arrival for medical evaluation and at the time of arrival that the person has been exposed to a novel influenza virus.
7. Close contacts of asymptomatic persons are not restricted in their activities.
8. Contacts should be notified when the period of quarantine ends.

**D. Legal measures:**

See Section 7, Supplement 1, Legal Authority, for details on legal measures that may be imposed by the Regional/ Local Health Officer upon uncooperative isolated or quarantined individuals, including:

1. Health Directive (signed by Health Officer)
2. Temporary Emergency Hold (signed by judge with only an ex parte hearing – only the health officer petition is heard)
3. Court-Ordered Public Health Measure (signed by judge after a hearing)

**VII. Home Isolation: Pre-pandemic:**

If a patient, still considered infectious, is to be isolated at home, instead of in a hospital, the following steps should be taken:

**A. Confirm the suitability of home environment for safe isolation of patient.** This may be done by the discharge planner for the patient being released from the hospital in consultation with the health department. If there is a question about the suitability of the home for isolation, a home visit by a designated public health home monitor may be necessary.

1. The home should have:
  - a. Telephone, electricity, running water, and
  - b. Another adult to act as the primary caregiver
2. Household members other than the caregiver should be advised to live elsewhere for the duration of isolation, if feasible. If not, these household members should have minimal contact with the isolated patient. Household contacts at high risk of complications, if infected, should not have contact with the patient or the patient's environment.

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3. If health department or hospital personnel believe the patient to be unable or unwilling to be isolated safely at home, then alternative housing should be used or the patient should remain in the hospital for the duration of isolation.

**B. Regional health department should provide clear written instructions and educational materials.**

The following materials should be provided:

1. Written instructions specific to this patient: date isolation ends, phone number for a health department contact person, when they will be contacted by the health department, and what to do in case of acute medical care needs. If provided on health department letterhead with the patient's name written in, this information could be used as verification to employers or aid organizations.
2. Contact list of regional or local volunteer resources for social support (food, child care, emotional and spiritual needs, emergency financial needs).
3. Instructions on how to prevent the spread of illness to others (hand hygiene, surgical mask use).
4. Instructions to the household contacts on monitoring themselves for symptoms and instructions to wear a surgical mask and call the health department as soon as they develop symptoms.
5. If a health directive or other legal public health measure is issued, a copy must be provided along with a copy of the TDH Rules 1200-14-4.

**C. Guidelines for infection control in the home.**

1. Masks
  - a. All persons in contact with (in the same room as) a patient should wear a surgical mask.
  - b. The patient should wear a surgical mask when in contact with uninfected people, if feasible, and any time they have to go outside the home.
  - c. Any time the patient needs to go to a doctor's office or to a hospital, the patient and caregiver should wear a surgical

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mask and should alert the facility that they are coming so that the patient does not wait in a public waiting area.

2. Hand hygiene
  - a. Hand hygiene can be defined as thorough hand washing with soap and water or the use of an alcohol-based hand sanitizer when hands are not visibly soiled.
  - b. Patients should wash their hands frequently, especially after coughing and sneezing or using the restroom.
  - c. Caregivers and contacts of patients should wash their hands before and immediately after any contact with the patient or their belongings or body fluids, whether or not gloves are worn.
  
3. Environment
  - a. Household waste, such as facial tissues and surgical masks, can be thrown away as normal garbage.
  - b. Laundry can be cleaned safely in a washing machine using normal detergent.
  - c. Cleaning of household items or surfaces that the patient has touched can be achieved by wiping surfaces down with any EPA-registered disinfectant (see label), according to manufacturer's instructions, or with a dilute bleach solution (a quarter cup of household bleach in a gallon of water). Examples of EPA-registered disinfectants include: Vani-Sol™, Scrubbing Bubbles™, Tilex™ Instant Mildew or Soap Scum Removers, Lysol Disinfectant™.

**D. Monitoring of household contacts and caregiver.** At the earliest sign of illness, they should contact the health department. Antiviral medication should be used as directed.

**VIII. Quarantine:**

**A. Three types of quarantine:**

1. **Home quarantine** where basic needs can be met and where household contacts can be protected if the person develops symptoms.

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2. **Quarantine in designated facility** may be arranged by the regional health department when home quarantine is not possible.
3. **Work quarantine** for healthcare or other essential personnel who work while wearing surgical masks and gloves and using proper infection control precautions, but are quarantined at home or in a designated facility when not working. If symptoms develop, they stop working and are isolated.

**Note:** There are no restrictions on the activities of asymptomatic household contacts of quarantined individuals.

**B. Steps of enacting home quarantine:**

1. Decide if home quarantine is appropriate
  - a. The home has basic utilities, including a telephone, and
  - b. The quarantined person can minimize contact with other household members and contact emergency services if the person becomes ill.
  - c. There is a means of getting food and medications.
2. Contact regimen

In addition to providing the patient contact information for the health department, health department personnel should contact the patient once daily, at minimum, to evaluate for symptoms and record findings in OMS.
3. Provide written materials
  - a. Patient-appropriate materials on influenza and the date quarantine ends.
  - b. Information on taking antiviral medication, if provided.
  - c. Contact information for health department and for medical services if symptoms develop.
  - d. Written information about social support resources in the community.
  - e. If a legal health directive, health measure or temporary hold is ordered, a written copy along with a copy of the TDH Rules 1200-14-.04 must be given.
  - f. Provide instructions on who to contact if the temperature is >100.4°F.

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4. Instructions
  - a. Be vigilant for fever (temperature >100.4°F), muscle aches, malaise, or respiratory symptoms for prescribed number of days following exposure.
  - b. Immediately begin wearing a surgical mask, practice good hand hygiene, and contact the health department if fever or respiratory symptoms develop.
  - c. Before going to a healthcare facility, ensure that the medical care provider knows that they may have been exposed to a novel influenza virus to prevent unprotected exposure to the patient at the facility. (If the person calls their public health contact, this public health official should contact the receiving medical facility, instead of the patient).
  
5. Give instructions to household members:
  - a. Household members can continue routine activities with no special precautions.
  - b. The health department will provide additional instructions to these household members if the quarantined person develops symptoms.

**IX. Alternative Housing:**

Regional health departments should pre-select facilities where infectious persons can be **isolated** until they are non-infectious (i.e. “patients”) or **quarantined** contacts for the prescribed number of days after exposure (i.e. “contacts”). Staffing, food and communications needs must be arranged for by the health department. Such arrangements may be necessary for the following groups of persons:

1. Homeless or indigent persons
2. Travelers without an in-state residence
3. Persons whose homes are inadequate for safe isolation or quarantine (e.g. a dormitory, a home without a separate bedroom for the patient, etc.)

Regional health department personnel may want to consult with tuberculosis program staff with experience in housing homeless TB patients as they plan for alternative housing for patients and their contacts.

An example of alternative housing is a hotel. Regional health department emergency planners will want to anticipate the agreements necessary and the work needed to overcome any shortcomings, such as food services, in order to use

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an identified facility. The TDH should keep the identity of persons housed by the Department confidential. The facility operator should be informed of any steps necessary to protect the facility staff; the health department should keep confidential the details of the reasons for quarantine or isolation.

**A. Patient isolation facilities outside homes or hospitals:**

Regional health departments are encouraged to identify facilities that have the following characteristics:

1. Separate rooms for patients
2. Functioning telephone, electricity, and potable water
3. A separate bedroom for the patient, if a caregiver is staying with the patient. The bedroom should have a floor-to-ceiling wall with a door that remains closed at all times.
4. A separate bathroom designated for the patient
5. The ability to control access to the facility and to each room (i.e. fencing around the facility with limited access to outside parking, locking exterior doors, or the ability to post a security guard)
6. Areas that can be designated for patient evaluation, treatment, and monitoring
7. Rooms and corridors that can be disinfected
8. Facilities for accommodating staff (i.e. lounge, break room, living quarters)
9. Bagged garbage cans and regular garbage pick-up for disposal of waste
10. Facilities for collecting and laundering linens and clothing
11. Easy access for delivery of patients and supplies
12. Availability of food services and supplies

**B. Quarantine facilities outside homes or hospitals:**

Facilities for quarantine should be identified near airports in the event that a symptomatic traveler is detected and contacts must be housed during the investigation. Such a facility may be required for other persons who

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cannot be quarantined at home or homeless persons with high risk exposures to a confirmed or probable case.

Regional health departments are encouraged to consider a local motel for a very small number of people requiring housing, and to consider obtaining the assistance of the American Red Cross or similar local agency to provide temporary shelters for larger groups. Facilities should meet the same conditions as are outlined for home quarantine, and persons quarantined in these facilities should be provided the same materials given to those quarantined at home.

**I. Purpose:**

Interventions in schools are designed to minimize transmission of pandemic influenza virus among school children in crowded settings. This will help minimize morbidity and mortality among school children and their household contacts.

**II. Introduction and Assumptions:**

**A. Influenza in children:**

The Centers for Disease Control and Prevention (CDC) estimates that attack rates among school-aged children will be the highest of any age group (about 40%). Factors that contribute to this rate include children's immune system characteristics, hygiene practices, and prolonged close contact in congregate school settings. Ill children are generally more infectious than adults, shedding larger quantities of virus for a longer time, and will expose their household contacts to the virus. A pandemic influenza virus is expected to cause more deaths and severe illness than seasonal influenza among school-aged children; however, under current manufacturing conditions, vaccine and antiviral medications will not be widely available – prevention of exposure will be the primary means of protecting children's health.

Once a pandemic virus is confirmed present in the United States, spread throughout the country is expected to be inevitable and rapid, occurring in a matter of weeks. It also is possible that illness caused by the pandemic strain could occur sporadically for weeks before the beginning of the actual pandemic wave, as occurred in 1957 and 1968. For this reason, interventions to protect school children in Tennessee would be initiated in a stepwise fashion as soon as the virus is present in the United States.

**B. Mandated versus recommended school interventions:**

Procedures outlined in this plan reflect a worse-case scenario of a 1918-like pandemic (illness is fatal in about 1 in 50 affected persons). Decisions to implement all social distancing measures, such as school closure, will be reviewed and revised based upon the virulence of a particular wave and evidence of the effectiveness of disease control strategies.

**C. Colleges and Universities:**

Colleges and universities are affected by state policies concerning non-essential public gatherings, but not by specific school closure requirements affecting preK-12 schools. College students are older and have less

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continuous group contact than school-aged children. Closing dormitories or suspending classes at a college or university would be considered on a case-by case basis. Colleges and universities are expected to develop campus plans and to collaborate with local/regional pandemic planning officials for community pandemic plans. Recommendations for college and university internal pandemic planning are available in Attachment A of this Supplement.

**D. Licensed child care facilities:**

The youngest children are the most likely to spread influenza once infected. They have higher viral loads than adults, are not capable of good hand hygiene and respiratory etiquette, and are infectious for longer than adults are. In addition, those under two years are more likely to suffer complications or require hospitalization if infected. If schools are closed by the Department of Health (TDH) (as opposed to closure by the local educational authorities), child care facilities licensed by the Department of Education and the Department of Human Services to care for 13 or more children also would be closed.

**E. Routine authority to close schools and child care facilities:**

Nothing in this pandemic response plan is intended to interfere with the authority of local educational authorities (LEAs), private schools, colleges and child care facilities to choose to close for reasons other than meeting the criteria for public health-ordered closure. Routine reasons for closure, such as high absenteeism rates, may result in local school closure decisions by such authorities and do not require the involvement of public health officials.

**III. Concept of Operations:**

**A. Agency responsibilities:**

The Commissioner of Health, or his designee, is responsible for determining when school interventions should be initiated and lifted based upon the State Epidemiologist's recommendations using the best available epidemiologic information on pandemic disease severity and spread. The Commissioner of Education is responsible for implementing necessary interventions, up to and including closure of public and private preK-12 schools in affected areas for the duration of the pandemic wave in those areas. If the TDH does not require school closure, the Department of Education or a private school may still choose to close local schools for absenteeism or other reasons.

**B. Private versus public schools:**

Private schools will be subject to the same public health requirements as public schools, including school closure, non-essential gathering cancellation and hygiene recommendations.

**C. Criteria for closure:**

The Commissioner of Health, or his designee, will declare when child care facilities and public and private schools in a county (pre-kindergarten through twelfth grades) should be closed, when advised by the State Epidemiologist that criteria for the closure of schools have been met. This will be implemented by the regional/local health officer.

The criteria for school closure by the TDH are:

1. The pandemic virus causes morbidity and mortality in excess of routine seasonal influenza, and
2. Laboratory confirmation of the pandemic virus in the county or a surrounding county, and
3. Epidemiologic evidence from a state surveillance system indicating community spread of the pandemic virus in the county or a surrounding county

**D. Criteria for re-opening:**

Schools and child care facilities will be reopened when state surveillance systems indicate that the pandemic wave has subsided (based upon sentinel provider and hospital surveillance).

**IV. Summary of protocol for licensed child care facilities ( $\geq 13$  children):**

Licensed child care facilities will be closed at the same time local schools are closed and re-opened when schools are open. Steps other than closure that may be strongly recommended or required include:

1. Providing hand hygiene supplies and tissues for children and staff
2. Providing hygiene education to children and staff
3. Strictly excluding from the facility all sick children until they have fully recovered (at least one week from symptom onset).

**V. Protocol for schools (public and private, preK-12):**

Depending upon the severity and epidemiologic characteristics of the pandemic influenza virus, school interventions will begin as soon as the virus is present in the United States. Control measures will be consistent with the best available evidence of effectiveness at the time, and proportional to the risk (determined by the virulence of the virus) up to and including the following steps:

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**Stage 1.** Domestic transmission of pandemic virus is identified in the United States by the CDC

- c. Measures taken by TDH:
  - i. Commissioner of Health, or his designee, will activate this protocol
  - ii. Communicable and Environmental Disease Services epidemiologists will begin daily tracking of school absenteeism data available through the Department of Education at the state level to monitor for unusual patterns of absenteeism.
- d. Measures taken by Department of Education:
  - i. In all schools, educate children and staff about good health habits necessary to help prevent illness, such as hand hygiene, respiratory etiquette and staying home when sick.
  - ii. Prepare staff, parents and students for the next steps to prevent spread of disease among school systems, up to and including school closure for the duration of the pandemic waves in the community.
  - iii. Strongly encourage parents to keep children with febrile illnesses home from school; encourage teachers and school administrators to separate children with febrile illnesses at school from others and send them home.
  - iv. Suspend school attendance incentive programs that would encourage parents to send children to school despite illness.
  - v. Ensure all students and employees have access to hygiene materials and are encouraged to use them appropriately; materials should include toilet paper, facial tissues, soap and alcohol-based hand sanitizers.

**Stage 2.** Domestic transmission of pandemic virus is laboratory-confirmed by CDC or the TDH Laboratory in Tennessee

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- a. Measures taken by the TDH:
  - i. Monitor state surveillance data to determine criteria for local school closure have been met. Information will be shared between regional health departments and CEDS to assure that the public health need for school closure is quickly recognized and communicated.
  - ii. Initiate canceling very large non-essential school gatherings (as defined in Section 7, Community Interventions), such as spectator attendance at school-based sporting events throughout the state, including both public and private pre-schools, preK-12 grades, and colleges and universities.
  - iii. Counties meeting school closure criteria (counties with documented community transmission and neighboring counties) will have all schools and licensed child care facilities within them closed. Once notified by TDH that the criteria have been met, closure will be communicated through Department of Education.
  - iv. The Regional or Local Health Officer shall communicate control measures and public health closure of these facilities to all appropriate local school and child care facility officials in accordance with local pandemic plans.
- b. Measures taken by the Department of Education and Private School Administrators:
  - i. Cancel all non-essential school gatherings and spectator attendance at sporting events for all schools in a county, preK-12. Schools may determine whether sporting events should continue without spectators or whether they should be canceled.
  - ii. Continue Stage 1 interventions in counties where schools are open, including health education and hygiene supplies.
  - iii. Prepare for imminent and prolonged school closure in other counties.

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- iv. The Department of Education will communicate TDH school closure orders to affected Local Educational Authorities within each county and will assure that these orders are communicated with private schools in the affected area.

**Stage 3a.** Pandemic wave ends in an affected county

- b. TDH
  - ii. The Commissioner or his designee will declare when all schools in a county (pre-kindergarten through twelfth grades) and child care facilities should be re-opened, when advised by the State Epidemiologist that criteria for the re-opening of schools have been met (i.e., surveillance indicates the local pandemic wave has ended).
  - iii. The Regional/Local Health Officer will be responsible for communicating this information publicly in the community to assure that child care facilities and private schools are aware of the re-opening.
- c. Department of Education
  - i. Commissioner or a designee will implement the re-opening of schools as they are cleared to re-open by the TDH.

**Stage 3b.** Re-closure of schools in a county in the event of ILI among children after schools are re-opened

- b. TDH
  - i. Upon notification by the Department of Education or other school or daycare that children are coming to school with ILI, local or regional health department officials will investigate the cause
  - ii. If the cause is the pandemic influenza virus, schools in the county (and neighboring counties, if appropriate) may be re-closed by the TDH for one week. Surveillance data will be re-evaluated weekly to determine when to open schools.

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- c. Department of Education
  - i. Re-close school upon recommendation of the Commissioner of Health or his designee.
  - ii. Re-open school upon recommendation of Commissioner of Health, or his designee.
  - iii. Private or public school authorities and child care facility operators may choose to close under their own authority in the absence of a recommendation to close by the TDH

**Stage 4.** Period between pandemic waves in Tennessee

Resume normal activities.

**Stage 5.** Subsequent pandemic waves:

- a. Repeat stages of closure and re-opening, as needed, for successive pandemic waves.
- b. The TDH will review and adjust recommendations for school closure, in light of the increasing or waning virulence of the strain and evidence of best practices for protecting health.

**I. Purpose:**

To guide colleges and universities to appropriate resources and strategies for pandemic planning for these institutions.

**II. Assumptions:**

Colleges and universities are subject to state policies concerning the suspension of discretionary public gatherings (defined in Section 7), but not by specific school closure requirements affecting preK-12 schools. College students are older, have less continuous group contact than school-aged children, and are not considered a significant source of influenza spread in a community. Closing dormitories or suspending classes at a college or university may be recommended by regional or state health officers in collaboration with university officials in light of specific outbreak conditions. Colleges and universities are encouraged to develop campus plans and to collaborate with local and regional pandemic planning officials for community pandemic plans.

**III. Issues to consider:**

- A. Each college and university should designate a person or group to be responsible for monitoring updated information and preparing for a pandemic; it is recommended that one person be designated to liaise with regional and state health officials.
- B. Pandemic response plans for colleges and universities should address the unique conditions of their institutions. Planners should be familiar with policies outlined in federal and state plans. For example, government plans will outline the anticipated use of antiviral medications and vaccines, as well as government policies for social distancing to slow the spread of the virus (see Sections 5, 6, 7).
- C. Examples of issues unique to colleges and universities include:
  - 1. Authorizing student trips to affected areas or to international programs
  - 2. How students' health should be monitored
  - 3. Provision of hygiene supplies and education throughout campus
  - 4. Care of ill students on campus
  - 5. Classroom attendance policies when influenza is circulating

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6. Communication with students and families
  7. Housing of international students and others without other homes if the facility is closed
  8. Conditions under which the college or university would cancel classes
- A. How to implement state policies to cancel non-essential public gatherings (Section 7).
  - B. Representatives are encouraged to participate in local pandemic planning, as appropriate, along with public health and other community leaders to assure that the needs and resources of the college or university are considered into local plans.

**IV. Resources:**

- A. Federal pandemic planning checklist for colleges and universities at [www.pandemicflu.gov](http://www.pandemicflu.gov)
- B. National College Health Association plans (under development at this writing)
- C. Tennessee State Pandemic Response Plan
- D. Local or regional pandemic response plan

**I. Purpose:**

To provide planning guidance and outline statewide Department of Health (TDH) policies for populations at special risk because of confinement or language barrier.

**II. Correctional facilities (prisons and jails):**

**Responsible Agency:** The Tennessee Department of Corrections is responsible for developing pandemic response procedures for prisons in Tennessee. The Department of Corrections does not administer local jails; those who oversee local jails are responsible for the response to a pandemic in these facilities. Local pandemic response plans should include plans for jailed populations, developed in conjunction with Sheriffs' Offices or other officials responsible for local jails. The TDH is responsible for sharing medical recommendations and information on disease spread and effective strategies for prevention.

Basic principles should include:

1. Access to hand hygiene products and tissues
2. Segregation of ill and well inmates
3. Suspension of visiting privileges during a pandemic wave in the community
4. Screening of employees for fever, respiratory infection symptoms, to assure that they do not work while ill
5. Screening and segregation of persons with fever and respiratory symptoms required to be confined to jail
6. Provision for transport and guards of inmates requiring hospitalization

Antiviral medication and vaccine provided through the state will be provided under the same standards as the general population.

**III. Nursing homes:**

**Responsible Agency:** Like hospitals, individual nursing homes are responsible for creating their own pandemic response plans; local or regional pandemic planners should engage representatives from this type of facility in local planning efforts. The Department of Health will share the latest guidance on infection control and pandemic planning and response with these facilities through website links, through local public health departments, through the Bureau of Health Licensure and through the Tennessee Health Care Association (THCA), which represents approximately 90% of licensed nursing homes.

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THCA has e-mail, fax and mailing addresses for members (only fax and mailing addresses reach all members) and is willing to disseminate information to member and non-member nursing homes. The Department of Health's Bureau of Health Licensure also will communicate with all licensed facilities, including assisted care living facilities and residential homes for the aged.

Planners should be aware that healthcare providers caring for nursing home residents are eligible for vaccine; however, nursing home residents are excluded from the highest priority medical risk groups for vaccination, largely because of their poor immune response to vaccination. Studies of seasonal influenza have shown that vaccinating nursing home staff only protected residents from influenza death essentially as well as vaccinating both staff and residents. In addition, the vaccine is not expected to elicit a protective immune response in these patients. Finally, alternative measures can effectively protect these residents. Such measures include:

1. Vaccination of health care workers as available
2. Assuring that all patients for whom it is recommended have received pneumococcal vaccine to protect them from pneumococcal infections that may complicate influenza infections (all >64 years and those with chronic health problems)
3. Hand hygiene
4. Restriction of visitors, except in essential situations, and strict exclusion or isolation of anyone with fever or other respiratory illness symptoms

Nursing home residents needing medical care may face special challenges during a pandemic wave in a community because health care facilities will be overwhelmed. If hospitals are unable to accept nursing home residents, health care may need to be provided on site by the staff of the nursing home facility.

Senior staff responsible for nursing home pandemic planning are encouraged to communicate with others planning for local or regional public health and hospital pandemic response to help assure that needs and resources are incorporated in local plans. As appropriate, nursing homes should be involved in pandemic preparedness drills. To assist in facility planning, it is recommended that planners be familiar with the state pandemic plan and review federal healthcare planning resources available at [www.pandemicflu.gov](http://www.pandemicflu.gov).

**IV. Other long-term residential care facilities:**

Other types of long-term residential health and mental health facilities, such as group homes, should follow the same guidance as nursing homes, adapted as needed to their specific settings. They should designate staff to coordinate pandemic preparedness and response and engage with hospital and community planners as needed to collaborate to meet the needs and use the resources of the

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facilities in local plans. They also should keep up with official pandemic information updates from the state and federal government for the latest recommendations.

**V. Non-English speakers:**

Every effort will be made to provide resources in Spanish and links to resources in other languages on the Department of Health pandemic influenza website. A telephone-based translation service will be used by health department personnel to communicate with non-English speakers. Local health departments should consider such populations when planning for and responding to a pandemic.

# **Section 8: Public Health Communications**

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**I. Introduction:**

Coordinated, accurate and timely communication is critical to effective pandemic response. Regional and local health departments directly and indirectly affected by pandemic influenza will experience an influx of requests for information; regional and local communications plans are outlined in their pandemic response plans. An array of communications strategies will be required to meet these needs. Informational needs include:

1. Private citizens seeking information on the status of the pandemic
2. Members of the media
3. Patients requiring medical advice
4. Quarantined persons requiring active monitoring for signs of disease (pre-pandemic during active case investigation and contact monitoring phase)
5. Physicians needing individual clinical consultation
6. Healthcare providers needing up-to-date recommendations or research findings
7. Community leaders requiring information to direct community response activities
8. Volunteers needing information on how to help
9. Public health and other government agencies involved in response that need to share information with each other

**II. Purposes:**

- A. Respond to information needs efficiently and consistently
- B. Communicate accurate and timely information to relevant healthcare providers
- C. Route callers rapidly to appropriate staff
- D. Reduce the burden of general public inquiries on regional health departments in order to allow them to focus on outbreak management
- E. Reduce public fear and increase the public trust by delivering accurate public health messages and updating information regularly

**III. Assumptions:**

This section outlines state-level communications plans; regional and local communications plans will address similar issues and will be detailed in their pandemic response plans. Communication often is the weakest link in disaster response; unless prepared in advance, communications among agencies

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unfamiliar with each other can be difficult as is timely and accurate communication with the public. Such challenges should be a major focus of pandemic response drills. The demand for information from all channels will be great once the pandemic becomes imminent. Regularly updated, accurate and current information must be readily available in a variety of formats to meet these information needs. Routine methods of handling public inquiries will rapidly be overwhelmed and surge capacity is required. The Department of Health (TDH) will collaborate with other trusted sources for health information, such as the Extension Service and community pharmacists, to assure that accurate and consistent information is readily available.

Scheduled briefings with designated spokespersons will be needed to assure that subject matter experts and response leadership are able to manage the response to the pandemic and to assure the uniformity and accuracy of information provided. Communications by the TDH are overseen by the TDH Communications Director; once the Tennessee Emergency Management Plan (TEMP) is activated, communication will be coordinated in accordance with ESF 5 of the TEMP.

**IV. Specific communications tools of the State Department of Health:**

**A. Pandemic Influenza Website:**

The Department of Health will establish and maintain a website specifically for pandemic influenza. This website will contain regularly updated information for healthcare providers and the general public. It also will contain links to authoritative national and international sources of information. The risk communications specialist in the Public Health Preparedness Program of TDH's Communicable and Environmental Disease Services (CEDS) will be responsible for assuring that the content of the website is current and that up to date materials approved by subject matter experts within CEDS are posted and that links to national and international resources are accurate.

**B. Pandemic Influenza Electronic Updates:**

On the pandemic influenza website, members of the public will have the opportunity register for free electronic updates on pandemic influenza distributed from the TDH. Two types of electronic updates will be available: one intended for non-medical persons and one for the distribution of clinical information intended for health care providers. These are intended to provide swift, accurate, updates to those seeking the latest pandemic information.

Both electronic updates will be available to the public; all materials distributed will be approved for unrestricted public dissemination. The

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content of the electronic update and its use will be managed by the risk communications coordinator of the public health preparedness program within CEDS, with input from CEDS subject matter experts. Approval for distribution will be obtained through the State Epidemiologist, the TDH Director of Communications or a designee. Information already in the public domain (e.g., media reports, publications of the federal government, World Health Organization, or scientific journals) is presumed to be approved for unrestricted public dissemination, within the limits of copyright. State-specific information not otherwise publicly available must be approved for content and distribution through the responsible authorities listed above.

The electronic updates are designed to supplement and increase use of the Tennessee Health Alert Network (T-HAN - available only to registered clinician users). Those who sign up and are eligible to register for T-HAN will have the opportunity to indicate interest in obtaining information on and registering for T-HAN.

Development and implementation of the electronic updates will proceed in advance of a pandemic and they will be used to share information on pandemic preparedness and additional pandemic alert information (e.g., surveillance guidance for clinicians).

**C. Pandemic Influenza Clinical Hotline for Patients:**

During a pandemic, up to 30% of the state population will become ill with influenza. Under ordinary circumstances, half of ill persons would seek outpatient medical attention. In order to reduce the burden on outpatient clinics, TDH will establish a clinical hotline staffed by nurses for persons ill with influenza; this service may be contracted through services such as "Ask a Nurse," used to provide basic clinical information to TennCare disenrollees. The purpose of this hotline is to provide clinical assessment and healthcare advice over the phone for patients with mild or moderate illness who do not need further medical evaluation. Based on responses to standard assessment questions, phone nurses can provide recommendations to persons needing to seek professional medical care. The hotline nurses also will be able to advise patients about how to protect their family and close contacts from infection.

**D. CDC Information Hotline:**

The Centers for Disease Control and Prevention (CDC) offers an information line for callers around the United States. Callers with general questions may be directed to the CDC information line when call volume exceeds local capacity.

**E. Pandemic Influenza Hotline (non-clinical):**

A state-wide, toll-free, hotline number based at CEDS will be available for the general public. Recorded information will provide the answers to basic questions. Calls requiring further attention will be distributed among qualified personnel for response; those requiring the attention of a regional health department or health officer would be forwarded to the appropriate contact person. Contractors may be recruited to answer basic questions from the public if current resources are overwhelmed, in order to enable pandemic responders to carry on essential work. All responses to public inquiries about disease activity in a region would be based on information already released to the public.

**F. Non-Clinical Hotline Stages:**

There would be several stages of support at the central office to cover increasing public needs:

1. Stage 1 (Routine): The published number is answered by front desk staff at central office. Calls are directed to central office personnel trained to answer questions. After hours coverage of calls to central office would remain usual with a central office physician responding to pages.
2. Stage 2 (Overflow Hotline): Use a national phone bank vendor contracted with CDC to provide a help desk service for receiving mass quantities of basic public health inquiries. In addition, calls may be routed to additional Department of Health staff provided with written answers to common questions. A running loop message for callers placed on hold will provide basic influenza information.
3. Stage 3 (Enhanced): As inquiries increase, the central office transitions to a communications center, including the phone bank operated by Tender Care, to increase handling capacity.
4. At every stage, calls requiring immediate regional response (specific to an investigation or a clinical situation) can be routed back to the regional health office, Regional Health Officer, or to the physician on call for immediate response.

**G. Communication with Key Professional Groups:**

Urgent communications to healthcare providers and other groups will be necessary as rapidly changing conditions necessitate rapid information dissemination. The T-HAN will be used for this purpose to reach all T-

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HAN participants. Information that is unrestricted will be posted on the pandemic influenza web page and shared through the public clinical electronic update as appropriate. Professional organizations (e.g., state associations, academies and Boards) will be notified to forward information to their memberships. Additional direct communication measures will be taken as capacity is developed.

**H. Media Briefings:**

Media contacts will be managed by the Department Communications Director; during a state of emergency, they will be coordinated with the State Emergency Information Director and/or the Joint Information Center Director or their designee. Regular briefings will be scheduled during a pandemic: up to daily briefings will be conducted, as needed. The objective will be to provide accurate, current information and to limit the media time required of subject matter experts and response personnel. Local communication planning must address how to coordinate updates on local situations with public health, hospital, local political leadership, and state and federal officials, as appropriate.

**I. Department of Health Communications:**

Regular conference calls will be held among health department personnel and other emergency responders to update the situation. In addition, contact lists of key persons in other agencies will be developed and distributed to facilitate cross-communication throughout the pandemic. The Tennessee Emergency Management Agency, the Office of Homeland Security and the TDH are responsible for development of these lists.

# **Section 9: Workforce and Social Support**

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**I. Purpose:**

Although not the primary role of the health department (TDH), the department's efforts to facilitate access to these services will help achieve the following important objectives:

1. To readily provide information and contact numbers for local volunteer groups or agencies willing to assist in meeting the physical, financial, emotional and spiritual needs of individuals affected by pandemic influenza as responders or as victims
2. Minimize the emotional, physical, social, and financial stresses placed upon individuals requested or required to be isolated because of illness or quarantined because of exposure to a pandemic influenza case
3. Minimize the barriers that could prevent individuals from complying with health department instructions to stay home when sick or to be quarantined
4. Minimize the burden of legal actions carried out by health department legal counsel to compel cooperation
5. Minimize fear and resistance to social distancing measures imposed in the affected community
6. Facilitate meeting the physical, mental and spiritual needs of responders in the community (e.g., healthcare workers)

**II. Key preparedness tasks:**

- A. Each regional or local health department should create a list of groups that can and are willing to provide important support services in the region as part of local planning; to help each region create this list, this section includes internet links and examples of service groups in Tennessee.
- B. Describe what each organization is willing and able to do and provide contact information (use titles and main numbers, as personnel may change).
- C. Provide pandemic influenza educational materials or give talks to interested groups. Education should address concerns about personal safety when providing service to ill persons.
- D. In the pre-pandemic phase when active individual case management and quarantine are implemented, it will be helpful to provide a list of mental health, spiritual and physical support services in the area to each person isolated or quarantined and to other response personnel, such as healthcare providers.

**III. General information:**

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The major providers of support services include volunteer organizations, profit or not-for-profit non-government organizations, and government agencies. Names and contact information of multi-service and single service organizations are listed.

The presence of pandemic influenza in a community will affect the community in ways similar to other natural disasters, except that the response to pandemic influenza may be sustained for weeks and it may be 1-2 years before the disease is eliminated and the risk is over. Extreme stress will fatigue persons involved in responding officially or unofficially to the pandemic. This section does not address long term support services or issues of recovery; regions may wish to consider the availability of local resources for long term support.

Examples of affected groups include:

1. Patients
2. Healthcare workers
3. Families of patients and healthcare workers
4. General public

Support service needs in this section are grouped into 6 categories:

1. Major multi-disciplinary organizations
2. Social support, including mental health
3. Food and medication
4. Financial issues
5. Child care
6. Employment and school issues

The health department cannot over-emphasize the vital importance of social distancing, including self-imposed isolation (staying home when sick until not contagious) to protect the community. Support for patients and families experiencing serious illness and deaths will be vital to helping them cope. In addition to resources listed here, the federal government posts information about pandemic preparedness and response at [www.pandemicflu.gov](http://www.pandemicflu.gov).

**A. Implementation during pandemic influenza response:**

1. A list of local support services available in the community should be widely available and published in easily accessible local newspapers and local television media (e.g., food bank, local churches).
2. In cases where immediate needs are evident to the health department personnel interacting with a patient, the staff person should offer to refer the patient to these resources.

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3. The health department can recommend appropriate resources to healthcare facilities to provide relief to healthcare facility staff.

**IV. Regional pandemic response resource for workforce and social support may be developed using the list of organizations below as a starting point.**

Regional health department pandemic planners may consider consulting the health department's HIV and tuberculosis personnel for additional resources; these personnel are likely to have experience with meeting the needs of their patient populations through community organizations.

**Major Multi-Disciplinary Organizations:**

**A. Volunteer/ Non-government:**

**1. American Red Cross (ARC):**

- a. Provides shelter, food, and health and mental health services to address basic human needs.
- b. <http://www.redcross.org/where/chapts.html#TN>
- c. American Red Cross – Tennessee Chapters:  
[Blount County Chapter, Maryville](#)  
[Chattanooga - Hamilton County Chapter, Chattanooga](#)  
[Clarksville - Montgomery County Chapter, Clarksville](#)  
[Heart of Tennessee Chapter, Murfreesboro](#)  
[Jackson Area Chapter](#)  
[Johnson City, Washington County](#)  
[Kingsport Area/Hawkins County Chapter, Kingsport](#)  
[Knoxville Area Chapter, Knoxville](#)  
[Mid-South Chapter, Memphis](#)  
[Nashville Area Chapter, Nashville](#)  
[Tennessee Valley Blood Services Region, Nashville](#)  
[Williamson County Chapter, Franklin](#)

**2. Boy Scouts of America (BSA):**

- a. Already partnered with Department of Homeland Security Emergency Preparedness to assist in emergencies
- b. Local councils throughout TN  
<http://www.scouting.org/nav/enter.jsp?c=xs>

**3. The Governor's Citizen Corps Advisory Committee:**

Contact: Director of Volunteer Programs  
Tennessee Office of Homeland Security  
215 Eighth Ave., North

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Nashville, TN 37243  
615-741-1085

**4. Salvation Army:**

- a. Provides disaster relief, emergency assistance, and child care.
- b. There is a divisional headquarters for Kentucky and TN, located in Louisville, and 4 local offices in TN  
[www.salvationarmysouth.org/kt/](http://www.salvationarmysouth.org/kt/)

**5. Tennessee Association of Community Action (TACA):**

- a. The mission of TACA is to empower the local agencies through advocacy, training, the provision of technical assistance and the development of quality services to promote self-sufficiency and personal growth in the individuals, families and communities of Tennessee.
- b. Members are generally action commissions or human resource agencies, both public and private
- c. TACA has members in 23 different TN counties or regions  
<http://www.tacaa.com/map.html>
- d. The TACA website should be reviewed by the regional health department personnel creating the local resource lists because it includes the names and contact information for local member agencies.

**6. United Way:**

- a. Local chapters exist in all major metropolitan areas and rural regions. Some “rural” area chapters serve a single county (i.e. Putnam) while others serve multiple counties (e.g., West Tennessee).
- b. An advanced search from the National United Way website can quickly identify your local chapter  
<http://national.unitedway.org/myuw/>

**7. Volunteer Organizations Active in Disasters (VOAD):**

- a. The TN VOAD is an umbrella group consisting of 15 organizations, including Red Cross, which are regularly represented at meetings and (approximately 40 are registered). Approximately 90% of the organizations are church-affiliated. Other organizations include Civil Air Patrol and Ham radio operators. The number of registered volunteers within the organizations is unknown.

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- b. Chapters in Davidson, Shelby, Hamilton and East Tennessee:

**B. Government / quasi-state:**

**1. TN Emergency Management Agency (TEMA):**

- a. Provides assistance to individuals and households through coordinated relief programs from federal (U.S. Departments of Homeland Security, Small Business Administration, Farm Service Agency, and the Internal Revenue Service) and State (Tennessee Departments of Human Services, Labor & Workforce Development, Mental Health and Developmental Disabilities) agencies. TEMA helps mobilize major volunteer groups, such as ARC and VOAD. TEMA also helps support government operations and staff.
- b. Main webpage: <http://www.tnema.org/index.htm>
- c. Regional offices:  
[http://www.tnema.org/Regions/Reg\\_Map.htm](http://www.tnema.org/Regions/Reg_Map.htm)

**2. TN Office of Homeland Security:**

- a. Develops and coordinates the implementation of a comprehensive strategy to secure against terrorist threats and attacks
- b. Organizes Citizen Corps

**3. TN Department of Human Services:**

- a. Administers the majority of basic support services, including child care and food programs.
- b. The DHS has 130 office locations, and is one of the few state agencies with offices in all 95 counties  
[http://www.state.tn.us/humanserv/st\\_map.htm](http://www.state.tn.us/humanserv/st_map.htm)

**V. Social Support (Mental Health):**

Social support refers to all services pertaining to the prevention or control of distress and anxiety, in addition to more serious mental health issues. Proactive efforts to address anxiety among both well and affected individuals during a pandemic will help prevent more serious mental health problems.

During an acute outbreak, most anxiety can be relieved effectively by current and accurate medical information. The availability of a public pandemic information

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hotline and website will reduce public anxiety by making accurate and timely information available statewide.

In addition, many of the key multi-disciplinary agencies listed above are able to provide basic social support, such as staffing crisis counseling hotlines. There are several other resources focused on mental health which can provide more advanced counseling and drop-in services.

**A. Tennessee Department of Mental Health and Developmental Disabilities:**

1. Provides and/or contracts for treatment and support services throughout TN, overseeing and monitoring five regional mental health centers (RMHIs) which provide in-patient psychiatric services to persons with serious mental illness
2. <http://www.state.tn.us/mental/tnreslinks.html>

**B. TennCare Partners:**

1. TennCare mental health and substance abuse component which is managed by Behavioral Health Organizations
2. Advocacy Line helps consumers of mental health and substance abuse services (1-800-758-1638 statewide).

**C. Local religious organizations and congregations:**

1. These may offer a wide variety of support resources for physical, emotional, and spiritual needs.

**D. Grief counselors:**

1. Licensed grief counselors may be available through the Red Cross or local hospitals. Such local resources may be considered for inclusion in local plans

**VI. Food and Medication:**

There are several options for fulfilling food and medication needs unmet by families and friends. In addition to the major volunteer organizations and the TN Department of Human Services, there are several local level options:

**A. MealCall:**

1. helps provide necessary resources to local senior meal delivery organizations and congregate meal sites through direct financial support, helping to find volunteers, and providing online contact

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support between organizations and the people that need their services. [www.mealcall.org](http://www.mealcall.org)

**B. Online grocers:**

1. offer delivery throughout the 48 states [www.netgrocer.com](http://www.netgrocer.com)
2. Consult website for availability

**C. Pharmacies:**

1. All local pharmacies may be identified through the locator website: <http://coventry.formularies.com/locator/locator.asp?plancode=1682>
2. The National Association of Boards of Pharmacy lists verified internet pharmacies: <http://www.nabp.net/vipps/consumer/listall.asp>

Consider including the phone numbers of local pharmacies and grocery stores that provide home delivery services.

**VII. Financial and Economic Issues:**

In the absence of a declared state of emergency, the ability of the state or Federal governments to provide financial compensation to affected individuals or to relax late payment penalties for utilities or other essential services is not known at this time. For that reason, persons in need of economic assistance will have to turn to local volunteer relief organizations.

**VIII. Child and Elder Care:**

In some cases, housing and care will be required for several days or weeks for the children or elderly dependents of ill individuals where family or friends are not available to care for them. Placement can be difficult if the dependents are exposed and must be monitored for signs of disease.

**A. TN Department of Human Services:**

1. There are approximately 5,600 child care providers in TN with a total capacity of 340,000. Most are child care centers; home care and drop-in care are also available. This list can be found at:
2. [www.state.tn.us/humanserv/childcare/providers-map.htm](http://www.state.tn.us/humanserv/childcare/providers-map.htm)

**B. Child Care Resource & Referral Centers:**

1. Provides parents and the community referrals and resources for child care at the local level.

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2. <http://www.state.tn.us/humanserv/ccr&r-numbers.pdf>

**IX. Employment and School :**

The risk of losing a job or falling behind or out of school is an important barrier to compliance with social distancing orders, such as staying home if sick. Local planning efforts should consider strategies with local businesses and schools to encourage compliance with social distancing instructions.